SAFETY DATA SHEET



Triethylenetetramine, TETA

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1 Product identifier

: Triethylenetetramine, TETA **Product name**

Index number : 612-065-00-8 **EC** number : 292-588-2

REACH Registration number

Registration number	Legal entity
01-2119487919-13-0000	Delamine BV

CAS number : 90640-67-8 **Product description** : Not applicable

: Liquid. **Product type**

1.2 Relevant identified uses of the substance or mixture and uses advised against

: Adhesives, binding agents Dye. Pigments. Complexing agents Corrosion inhibitor. **Product use**

> Fixing agents Blowing agent. Fuel. Fuel additive. Heat transfer agents Intermediate. Laboratory activities Lubricants and additives Pharmaceuticals. Surface-active agents

: Industrial applications. Area of application

Identified uses

Consumer uses of ethyleneamines

Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0. 5% - Professional

Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0. 5% - Industrial

Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Industrial

Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% - Professional

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -

Use of preparations containing EA up to 25% - Industrial Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -

Use of preparations containing EA up to 15% - Industrial

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 2% - Industrial

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 0.5% - Industrial

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 25% - Professional

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 15% - Professional

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 2% - Professional

Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form -Use of preparations containing EA up to 0.5% - Professional

Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0. 5% - Professional

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0. 5% - Industrial

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% - Industrial

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Industrial

Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% - Professional

1.3 Details of the supplier of the safety data sheet

DELAMINE B.V.
Barchman Wuytierslaan 10
3818 LH Amersfoort
The Netherlands
Tel.:31-334676897

e-mail address of person responsible for this SDS

: SDS.Delamine@delamine.com

1.4 Emergency telephone number

Supplier

Telephone number : GBK/Infotrac ID 104075 : International (001) 352 323 3500 (24 hours per day)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Multi-constituent substance

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Acute Tox. 4, H302 Acute Tox. 4, H312

Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317

Aquatic Chronic 3, H412

Classification according to Directive 67/548/EEC [DSD]

Xn; R21/22 C; R34 R43 R52/53

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms





Signal word : Danger

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SECTION 2: Hazards identification

Hazard statements

Harmful if swallowed or in contact with skin.
 Causes severe skin burns and eye damage.
 May cause an allergic skin reaction.
 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention

: Wear protective gloves: > 8 hours (breakthrough time): neoprene. Wear eye or face protection. Wear protective clothing. Avoid release to the environment.

Response

: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a POISON CENTER or physician. IF IN EYES: Immediately call a POISON CENTER or physician.

Storage

: Store locked up.

Disposal

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

: Not applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

: No.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

: No.

Other hazards which do not result in classification

: None known.Not applicable.

SECTION 3: Composition/information on ingredients

Substance/mixture

: Multi-constituent substance



			Clas	Classification		
Product/ingredient name	Identifiers	%	67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	Туре	
Amines, polyethylenepoly-,	REACH #: 01-2119487919-13	100	Xn; R21/22	Acute Tox. 4, H302	[*]	
triethylenetetramine fraction	EC: 292-588-2 CAS: 90640-67-8 Index: 612-065-00-8		C; R34 R43 R52/53	Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412		
3, 6-diazaoctanethylenediamin	EC: 203-950-6 CAS: 112-24-3 Index: 612-059-00-5	50 - 100	Xn; R21 C; R34 R43 R52/53	Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[A]	
N,N-bis(2-aminoethyl) ethylenediamine	EC: 223-857-4 CAS: 4097-89-6	0 - 20	T; R24 Xn; R22 C; R34	Acute Tox. 4, H302 Acute Tox. 3, H311 Skin Corr. 1B, H314	[A]	

riethylenetetramine, TETA						
SECTION 3: Composition/inform	SECTION 3: Composition/information on ingredients					
	Eye Dam. 1, H318 STOT SE 1, H370					
	See Section 16 for See Section 16 for the					

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

Type

- [*] Substance
- [A] Constituent
- [B] Impurity
- [C] Stabilising additive

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact

: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

phrases declared

statements declared

Inhalation

: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact

: Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

: Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders

: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed Potential acute health effects

SECTION 4: First aid measures

Eye contact

: Causes serious eye damage.

Inhalation

: May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious

effects may be delayed following exposure.

Skin contact

: Causes severe burns. Harmful in contact with skin. May cause an allergic skin

reaction.

Ingestion

: Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact

: Adverse symptoms may include the following:

pain watering redness

Inhalation

: No specific data.

Skin contact

: Adverse symptoms may include the following:

pain or irritation

redness

blistering may occur

Ingestion

: Adverse symptoms may include the following:

stomach pains

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments

: No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing

media

: Use an extinguishing agent suitable for the surrounding fire.Dry sand or other suitable absorbent. Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing

media

Halones

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture

: In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products

: Decomposition products may include the following materials:

carbon dioxide carbon monoxide nitrogen oxides

5.3 Advice for firefighters

Special precautions for fire-:

fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable

training.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

: Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections

See Section 1 for emergency contact information.
 See Section 8 for information on appropriate personal protective equipment.
 See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations : No s
Industrial sector specific : No s
solutions

No specific data.No specific data.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Recommended monitoring procedures

: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived effect levels

Product/ingredient name	Туре	Exposure	Value	Population	Effects
Amines, polyethylenepoly-,	DNEL	Short term	5380 mg/	Workers	Systemic
triethylenetetramine fraction		Inhalation	m³		
	DNEL	Long term Dermal	0.57 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.028 mg/ cm ²	Workers	Local
	DNEL	Short term Dermal	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	1600 mg/ m ³	Consumers	Systemic
	DNEL	Short term Oral	20 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1 mg/cm ²	Consumers	Local
	DNEL	Long term Dermal	0.25 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.29 mg/m ³	Consumers	Systemic
	DNEL	Long term Oral	0.41 mg/ kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.43 mg/	Consumers	Local

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SECTION 8: Exposure controls/personal protection

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
Amines, polyethylenepoly-, triethylenetetramine fraction	PNEC	Secondary Poisoning	0.18 mg/kg	Assessment Factors
,	PNEC	Fresh water	0.19 mg/l	Assessment Factors
	PNEC	Marine	0.038 mg/l	Assessment Factors
	PNEC	Fresh water sediment	95.9 mg/kg dwt	-
	PNEC	Marine water sediment	19.2 mg/kg dwt	-
	PNEC	Soil	19.1 mg/kg dwt	-
	PNEC	Sewage Treatment	4.25 mg/l	Assessment Factors
		Plant		

8.2 Exposure controls

Appropriate engineering controls

: If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

cm²

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): neoprene

Body protection

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: neoprene Boots.

Respiratory protection

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: ammonia filter (Type K) ammonia (Type K) and particulate filter

Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour Off-white. Clear. **Odour** Faint odour. : Not available. **Odour threshold**

: 13.2 Melting point/freezing point : <-20°C Initial boiling point and boiling : 274.6°C

range

Flash point : Closed cup: 118°C **Evaporation rate** Not available. Flammability (solid, gas) : Not applicable. **Burning time** : Not applicable. **Burning rate** : Not applicable.

Upper/lower flammability or

explosive limits

: Not available.

: <0.002 kPa [room temperature] Vapour pressure

Vapour density Not available.

Relative density 0.971

Solubility(ies)

>1000 g/l

Partition coefficient: n-octanol/: -2.65

water

Auto-ignition temperature : 325°C

Decomposition temperature : Not available. **Viscosity** : Not available. **Explosive properties** : Not applicable.

Oxidising properties : None.

9.2 Other information

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Keep away from sources of ignition - No smoking, aerosol or mist formation

10.5 Incompatible materials

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Amines, polyethylenepoly-, triethylenetetramine fraction	LD50 Dermal	Rat	1465 mg/kg	-
	LD50 Oral	Rat	1716 mg/kg	-

Conclusion/Summary

: Oral Harmful if swallowed.

Dermal Harmful in contact with skin.

Inhalation No applicable toxicity data Cannot be classified.

Irritation/Corrosion

Conclusion/Summary

Skin : Corrosive to the skin.

Eyes : Corrosive to eyes.

Respiratory : No data available for this end-point, hence this classification is not considered to be

applicable.

Sensitiser

Product/ingredient name	Route of exposure	Species	Result
Amines, polyethylenepoly-, triethylenetetramine fraction	skin	Guinea pig	Sensitising

Conclusion/Summary

Skin : May cause skin sensitisation.

Respiratory: No data available for this end-point, hence this classification is not considered to be

applicable.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Amines, polyethylenepoly-, triethylenetetramine fraction	-	Experiment: In vivo Subject: Mammalian-Animal	Negative

Conclusion/Summary

: No mutagenic effect.

Carcinogenicity

Carcinogenicity

Conclusion/Summary

: skin No carcinogenic effect.

Reproductive toxicity

Conclusion/Summary

: Developmental Toxicity: Data inconclusive. Cannot be classified.

NOAEL Oral= 750 mg/kg bw/day NOAEL Dermal= 125 mg/kg bw/day

Developmental effects have been observed in an animal study with high doses of a related salt. The relevance of those effects are currently under investigation.

Teratogenicity

Conclusion/Summary: Data inconclusive. Cannot be classified.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
N,N-bis(2-aminoethyl)ethylenediamine	Category 1		gastrointestinal tract and respiratory tract

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

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SECTION 11: Toxicological information

Information on the likely routes of exposure

: Routes of entry anticipated: Oral.

Potential acute health effects

Inhalation

May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious

effects may be delayed following exposure.

Ingestion

: Harmful if swallowed. May cause burns to mouth, throat and stomach.

Skin contact

: Causes severe burns. Harmful in contact with skin. May cause an allergic skin

reaction.

Eye contact : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation

: No specific data.

Ingestion

: Adverse symptoms may include the following:

stomach pains

Skin contact

: Adverse symptoms may include the following:

pain or irritation

redness

blistering may occur

Eye contact

Adverse symptoms may include the following:

pain watering redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate

effects

: No specific data.

Potential delayed effects: No specific data.

Long term exposure

Potential immediate

effects

: No specific data.

Potential delayed effects: No specific data.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Amines, polyethylenepoly-, triethylenetetramine fraction	Sub-chronic LOAEL Oral	Rat	50 mg/kg	-

Conclusion/Summary

: No known significant effects or critical hazards. Not classified as dangerous

General

: Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

No known significant effects or critical hazards.

Absorption: Slowly absorbed.Metabolism: Rapidly metabolised.Elimination: Rapidly excreted.Other information: No specific data.

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SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Amines, polyethylenepoly-, triethylenetetramine fraction	EC50 800 mg/l	Micro-organism	30 minutes
·	NOEC 42.5 mg/l	Micro-organism	30 minutes
	Acute EC50 20 mg/l	Algae	72 hours
	Acute EC50 31.1 mg/l	Daphnia	48 hours
	Acute LC50 330 mg/l	Fish	96 hours
	Acute NOEC 1.34 mg/l	Algae	72 hours
	Chronic NOEC 1.9 mg/l	Daphnia	21 days

Conclusion/Summary

: AQUATIC TOXICITY (CHRONIC) PNEC Intermittent release.= 0.2 mg/l

12.2 Persistence and degradability

Conclusion/Summary

: This substance is not expected to bioaccumulate through food chains in the environment. Persistent Toxic Not readily biodegradable.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Amines, polyethylenepoly-, triethylenetetramine fraction	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Amines, polyethylenepoly-, triethylenetetramine fraction	-2.65	-	low

12.4 Mobility in soil

Soil/water partition

: 4000

coefficient (Koc)

Mobility : No specific data.

12.5 Results of PBT and vPvB assessment

PBT : No.

vPvB : No.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal

: The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

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SECTION 13: Disposal considerations

Hazardous waste

Packaging

: The classification of the product may meet the criteria for a hazardous waste.

Methods of disposal

: The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions

: This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN2259	UN2259	UN2259	UN2259
14.2 UN proper shipping name	TRIETHYLENETETRAMINE	TRIETHYLENETETRAMINE	TRIETHYLENETETRAMINE	Triethylenetetramine
14.3 Transport hazard class(es)	8	8	8	8
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	Yes.	No.	No.
14.6 Special precautions for user	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Additional information	Hazard identification number 80 Limited quantity 1 L Tunnel code (E)	-	Emergency schedules (EmS) F-A, S-B	Passenger and Cargo Aircraft Quantity limitation: 1 L Packaging instructions: 851 Cargo Aircraft Only Quantity limitation: 30 L Packaging instructions: 855 Limited Quantities - Passenger Aircraft Quantity limitation: 0.5 L Packaging instructions: Y840

SECTION 14: Transport information

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions

: Not applicable.

on the manufacture, placing on the market and use of certain dangerous substances, mixtures and

articles

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed
Priority List Chemicals : Not listed
Integrated pollution : Not listed

prevention and control

list (IPPC) - Air

: Not listed

Integrated pollution prevention and control

list (IPPC) - Water

Chemical Weapons : N

Convention List Schedule I

Chemicals

: Not listed

Chemical Weapons

Convention List Schedule II

Chemicals

: Not listed

Chemical Weapons

Convention List Schedule

III Chemicals

: Not listed

15.2 Chemical Safety

Assessment

: Complete.

15.3 Registration status : Applicable.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate

CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No.

1272/2008]

DNEL = Derived No Effect Level

EUH statement = CLP-specific Hazard statement PNEC = Predicted No Effect Concentration RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Date of issue/Date of revision : 21 September 2012

SECTION 16: Other information

Justification
Expert judgment

Full text of abbreviated H

statements

H302 Harmful if swallowed.
 H311 Toxic in contact with skin.
 H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.H317 May cause an allergic skin reaction.

H318 Causes serious eye damage. H370 Causes damage to organs.

H412 Harmful to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]

: Acute Tox. 3, H311 ACUTE TOXICITY: SKIN - Category 3
Acute Tox. 4, H302 ACUTE TOXICITY: ORAL - Category 4
Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 4

Aquatic Chronic 3, H412 AQUATIC TOXICITY (CHRONIC) - Category 3

Eye Dam. 1, H318 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 Skin Corr. 1B, H314 SKIN CORROSION/IRRITATION - Category 1B

Skin Corr. 1B, H314 SKIN CORROSION/IRRITATION - C Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1

STOT SE 1, H370 SPECIFIC TARGET ORGAN TOXICITY (SINGLE

EXPOSURE) [gastrointestinal tract and respiratory tract] -

Category 1

Full text of abbreviated R phrases

: R24- Toxic in contact with skin.

R21- Harmful in contact with skin.

R22- Harmful if swallowed.

R21/22- Harmful in contact with skin and if swallowed.

R34- Causes burns.

R43- May cause sensitisation by skin contact.

R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the

aquatic environment.

Full text of classifications [DSD/DPD]

: T - Toxic C - Corrosive Xn - Harmful

Date of issue/ Date of

revision

: 21 September 2012

Date of previous issue

: 25 February 2011

Version : 9

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Annex to the extended Safety Data Sheet (eSDS)

Consumer

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1: Title

Short title of the exposure Identified use name: Consumer uses of ethyleneamines scenario/List of use descriptors Sector of end use: SU21

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC08a, ERC08b, ERC08c, ERC08d, ERC08e, ERC08f

Market sector by type of chemical product: PC01, PC09b Article category related to subsequent service life: Not applicable.

Processes and activities covered

by the exposure scenario **Assessment Method**

Not applicable.

See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0:

Operational conditions: Not determined

Indoor/Outdoor use. **Product characteristics:**

Amounts used:

Fraction of EU tonnage used in region: Not available 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day) Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use: **Emission Days (days/year):** Not available.

Environment factors not influenced by risk

management:

Local freshwater dilution factor: Not available. Local marine water dilution factor: Not available.

Other given operational conditions affecting

environmental exposure:

Release fraction to air from process (initial release prior Not available.

to RMM):

Release fraction to soil from process (initial

release prior to RMM):

Not available.

Release fraction to wastewater from process (initial

release prior to RMM):

Not available.

Conditions and measures related to municipal sewage

treatment plant:

Estimated substance removal from wastewater via on-

site sewage treatment (%):

Not available.

Total efficiency of removal from wastewater after on-site Not available.

and off-site (domestic treatment plant) RMMs (%): Maximum allowable site tonnage (Msafe) based on

release following total wastewater treatment removal (kg/d):

Assumed domestic sewage treatment plant flow (m³/d):

Not available.

Not available.

Identified use name: Consumer uses of ethyleneamines Triethylenetetramine, TETA

Sector of end use: SU21

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC08a, ERC08b, ERC08c, ERC08d,

ERC08e, ERC08f

Market sector by type of chemical product: PC01, PC09b Article category related to subsequent service life: Not applicable.

Section 2.2: Control of consumer exposure

Contributing scenario controlling consumer exposure for 0: Use of coatings and adhesives

Physical state:

Physical state: liquid Molecular weight: 146.23 g/mole Vapour pressure: 0.346 Pa*s at 25°C

Contributing scenarios: Operational conditions and risk management measures

Product Category(ies) 1: Adhesives, sealants Mixing and loading

Operations Conditions (consumer):

- Covers use up to 3 days/Year
- Covers use up to 25%
- For each use event, covers use amounts up to 20 g
- Covers exposure up to 5 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 25%

Product Category(ies) 1: Adhesives, sealants Application

Operations Conditions (consumer):

- Covers use up to 3 days/Year
- Covers use up to 5%
- For each use event, covers use amounts up to 20 g
- Covers use in room size of 20 m3
- Covers exposure up to 90 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 5%

Product Category(ies) 9b: Fillers, putties, plasters, modelling clay

Operations Conditions (consumer):

- Covers use up to 2 days/Year
- Covers use up to 25%
- For each use event, covers use amounts up to 200 g
- Covers exposure up to 5 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 25%

Product Category(ies) 9b: Fillers, putties, plasters, modelling clay Application

Operations Conditions (consumer):

- Covers use up to 2 days/Year
- Covers use up to 5%
- For each use event, covers use amounts up to 200 g
- Covers use in room size of 20 m³
- Covers exposure up to 90 minutes/event

Risk Management Measures (consumer): No specific risk management measure identified beyond those operational conditions stated. Avoid using at a product concentration greater than 5%

Total release for regional

Section 3: Exposure estimation and reference to its source

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0:

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0.0561	28	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	0	14	Not applicable.
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10-3	3.17x10-3	EUSES calculation
Marine water mg/l	2.78x10-4	4.20x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation

Release from point source

Triethylenetetramine, TETA

Identified use name: Consumer uses of ethyleneamines

Sector of end use: SU21

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC08a, ERC08b, ERC08c, ERC08d,

ERC08e, ERC08f

Market sector by type of chemical product: PC01, PC09b Article category related to subsequent service life: Not applicable.

Justification

Local concentration PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 4.75x10-10 0.114 **EUSES** calculation Grassland averaged mg/kg dwt 9.40x10-10 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification **EUSES** calculation During emission mg/m³ 2 22x10-11 Not evaluated. **EUSES** calculation Annual average mg/m³ 2 22x10-11 2 93x10-8 Annual deposition mg/m²/d 4.01x10-11 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Not applicable. Not applicable. Micro-organism mg/l Not applicable.

Section 3:.2 Exposure estimation - Consumers

Exposure estimation and reference to its source - Consumers: 2: Use of coatings and adhesives

Contributing Frequency (1/Year): Weight fraction of

Scenario: substance in the

article::

25%; 5%; 25%; 5%

Body weight:

60 kg

Calculation method:

ConsExpo 4.1

Exposure estimation and reference to its source -

Consumers: 0: Use of coatings and adhesives

Adhesives, sealants -3; 3; 2; 2 Mixing and loading;

Adhesives, sealants -Application(s); Fillers, putties, plasters, modelling clay -

Mixing and loading; Fillers, putties, plasters, modelling clay - Application(s)

Inhalation:

Mode of release: evaporation

Exposure estimation and reference to its source -Consumers: 1: Use of coatings and adhesives

20

Application duration: Exposure (minutes): Amount/concentration Room volume (m³): Room volume x

3.09E+03

applied (g): ventilation rate: (I/h):

5; 90; 5; 90 5; 30; 5; 30 20; 20; 200; 200 0.6 1: 20: 1: 20

Release area (cm2): Temperature (°C): Mass transfer rate: Contributing Uptake fraction Inhalation rate:

(Update model): **Scenario Molecular**

weight (g/mole): 20; 500; 100; 50

550 32.9 1

Dermal:

Application methods: instant

Surface area (Skin contact **Uptake fraction (Update** Product amount (g): Inhalation event (mg/m³):

model):

area) cm2:

2; 43; 2; 22 0.05; 0.1; 0.02; 1 1 11.2; 3.0; 11.5; 3.1

Inhalation mg/m³ Dermal load (mg/cm2): Dermal External dose (mg/kg Dermal (Internal dose) mg/kg

(Concentration on day of bw): bw/day:

exposure): 0.039; 0.188; 0.040; 0.191 6.25; 0.12; 2.5; 0.46 0.208; 0.08; 0.08; 1.67 0.002; 0.001; 5E-4; 0.001

Dermal (External dose) mg/kg Inhalation event/Exposure mg/ **Dermal systemic exposure** Inhalation (mg/kg/day) Long

(external dose) with gloves bw/day: m³ (Short term exposure): term exposure: (90% efficiency) mg/kg bw/day

(Long term exposure): 0.002; 0.001; 5E-4; 0.001 0.0002; 0.0001; 5E-5; 0.0001 11.2; 3.0; 11.5; 3.1 0.039; 0.188; 0.040; 0.191

Identified use name: Consumer uses of ethyleneamines Triethylenetetramine, TETA

Sector of end use: SU21

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC08a, ERC08b, ERC08c, ERC08d,

ERC08e, ERC08f

Market sector by type of chemical product: PC01, PC09b Article category related to subsequent service life: Not applicable.

	•	of coatings and adhesives	
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Oral	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable		Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Oral	Not applicable.	Not applicable.	Not applicable.

Section 4:: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Environment	Not available.
Health	Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment	Not applicable.
Health	Not applicable.
Additional guidance	Not applicable



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance Product name Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of

preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Indoor. industrial setting

1.0x10-4

4.03x10-5

Not available.

Not available.

Not available.

Not applicable.

=>37.4

Not available.

wastewater.

Section 2:: Operational conditions and risk management measures

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

300 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate:>= 2.0x10 6 m³/d

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to 1.1x10-3

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Prevent discharge of undissolved substance to or recover from onsite

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

20/240

Triethylenetetramine, TETA

Assumed domestic sewage treatment plant flow (m3/d): 2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000

Local marine water dilution factor: Not applicable.

Indoor. industrial setting

4.03x10-5

Not available.

Not available.

Not available.

Not applicable.

=>37.4

Not available.

wastewater.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to 1.1x10-3

RMM):

Release fraction to soil from process (initial release prior to 1 0x10-4

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 2418 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2684

Maximum daily site tonnage (kg/day): Not available Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Prevent discharge of undissolved substance to or recover from onsite

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: Not available.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

(%): Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not available

Indoor, industrial setting

1.1x10-3

Not available.

Not available.

Not available

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11378 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year): 225

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor:

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

only): Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Not applicable.

Not available.

Continuous release.

Indoor, industrial setting

1.1x10-3

5.0x10-5

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

No air emission controls required; required removal efficiency is 0%. Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Conditions and measures related to municipal sewage treatment

2000 Assumed domestic sewage treatment plant flow (m³/d):

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

Not available.

(multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Not applicable.

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release: Technical conditions and measures to control dispersion

from source towards the worker:

dispersion and exposure:

Organisational measures to prevent/limit releases,

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

removal efficiency of (%): 90%

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Use the following local exhaust ventilation types: Treat air emission to provide a typical

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Not applicable. **Amounts used:**

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used:

Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management:

Default breathing volume Light work 10: m^3/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Indoor. industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

Not applicable.

from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Justification

management supervision controls.

Total release for regional

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

. Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	Justinication
Waste water	0	0.513	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	3.0	14	EUSES calculation
Soil (direct releases only)	Not evaluated.	1.27	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43.x10-3	EUSES calculation
Marine water mg/l	0	1.43x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0108	0.125	EUSES calculation
Grassland averaged mg/kg dwt	0.0214	0.135	EUSES calculation
Groundwater mg/l	Not evaluated.	1.24x10-3	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Justification

Total release for regional

. Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

PEC air (local+regional) **Local concentration Justification** During emission mg/m³ 8.2x10-4 Not evaluated. **EUSES** calculation Annual average mg/m³ 5.1x10-4 5.1x10-4 **EUSES** calculation Annual deposition mg/m²/d 9.1x10-4 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.568	0.35	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.5	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.178	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	269	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.77x10-2	1.91x10-2	EUSES calculation
Marine water mg/l	1.77x10-3	1.91x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	9.64	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.96	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0458	0.16	EUSES calculation
Grassland averaged mg/kg dwt	0.0907	0.20	EUSES calculation
Groundwater mg/l	Not evaluated.	1.6x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.5x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.1x10-3	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	3.9x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact	ct)		
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.005	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal		Not applicable.	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Not applicable Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. **Combined** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. 1.22 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Contributing scenarios Justification Route of exposure **Dose/Concentration** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.005 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.31 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable. Combined

Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable. Long term exposure, Local, Not applicable Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL Inhalable has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for

Dermal acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for

Inhalable acute effects and therefore, no acute DNEL has been derived.

Not applicable. Since the substance is not classified for Not applicable

Short term exposure, Systemic, Combined acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable. Since the substance is not classified for Not applicable

acute effects and therefore, no acute DNEL

has been derived.

The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. 0.61

Inhalable estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Route of exposure **Contributing scenarios Dose/Concentration** Justification

Long term exposure, Systemic, Not applicable. 0.005 The ECETOC TRA tool has been used to **Dermal**

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Identified use name: Use of ethylenamines in closed system with little Triethylenetetramine, TETA opportunity for exposure - Use of preparations containing EA up to 2% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Long term exposure, Systemic, Not applicable. 0.61 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Contributing scenarios Justification Route of exposure **Dose/Concentration** Long term exposure, Systemic, Not applicable. 0.005 The ECETOC TRA tool has been used to **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.61 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable.

Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to

Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of

preparations containing EA up to 100% - Industrial

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09,

PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control of	environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate: >=2.0x10 6m3/d

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Not applicable.

Continuous release.

Indoor. industrial setting

1.1x10-3

1.0x10-4

4.03x10-5

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

Triethylenetetramine, TETA Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100%

=>37.4

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05,

PROC08a, PROC08b, PROC09, PROC15 Substance supplied to that use in form of: As such

Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a 29/240

Conditions and measures related to municipal sewage treatment plant:

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year):

Fraction of Regional tonnage used locally:

Annual site tonnage (tonnes/year):

Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day):

Not available.

Frequency and duration of use:

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate: >=2.0x10 6m³/d

Indoor, industrial setting

4.03x10-5

Not available.

Not available.

Not applicable.

Not available.

wastewater.

Not available.

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

xposure

Release fraction to air from process (initial release prior to 1.1x10-3

RMM):

Release fraction to soil from process (initial release prior to 1.0x10-4

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

nlv)·

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit Soil emission controls are not applicable as there is no direct release to soil.

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of ³ (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year):

Fraction of Regional tonnage used locally:

Annual site tonnage (tonnes/year):

Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day):

Not average Local Daily Tonnage (kg/day):

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

No air emission controls required; required removal efficiency is 0%.

Prevent discharge of undissolved substance to or recover from onsite

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Not available. Local marine water dilution factor: Not available.

Other given operational conditions affecting environmental Indoor. industrial setting

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

225

1.1x10-3

n

Not available.

Not available.

Not available

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not applicable as there is no release to wastewater.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11378 Maximum daily site tonnage (kg/day): Not available.

Frequency and duration of use: Emission Days (days/year): 225

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Continuous release.

Indoor. industrial setting

1.1x10-3

5.0x10-5

Not available.

Not available.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100%

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Soil emission controls are not applicable as there is no direct release to soil.

Treat air emission to provide a typical removal efficiency of

No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide Not available. the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

Not applicable.

Conditions and measures related to municipal sewage treatment

plant:

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Use in closed process, no likelihood of exposure

Product characteristics: Liquid. Covers percentage substance in the product up to 100%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting exposure:

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Use in closed, continuous process with occasional controlled exposure

Product characteristics: Liquid. Covers percentage substance in the product up to 100%

Amounts used: Not applicable.

Frequency and duration of use: Do not use for more than 4 hours

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Use in closed batch process (synthesis or formulation)

Product characteristics: Liquid. Covers percentage substance in the product up to 100%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05. PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics:

Liquid. Covers percentage substance in the product up to 100%

Amounts used:

Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Other given operational conditions affecting workers Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

Use the following local exhaust ventilation types: Treat air emission to provide a typical

from source towards the worker:

removal efficiency of (%): 90%

Organisational measures to prevent/limit releases, dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a

minimum efficacy of 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact) **Product characteristics:**

Liquid. Covers percentage substance in the product up to 100%

Amounts used:

Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management:

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Indoor. industrial setting

exposure:

Not applicable.

Technical conditions and measures at process level (source) to prevent release:

Local exhaust ventilation should be provided. with a minimum efficacy of 90%

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection, with a minimum efficacy of 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities **Product characteristics:**

Liquid. Covers percentage substance in the product up to 100%

Amounts used:

Not applicable

Frequency and duration of use:

Do not use for more than 1 hours

Human factors not influenced by risk management:

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers exposure:

Indoor, industrial setting

Technical conditions and measures at process level (source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion from source towards the worker:

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Organisational measures to prevent/limit releases, dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95%

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05. PROC08a, PROC08b, PROC09, PROC15

> Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics:

Amounts used:

Frequency and duration of use:

Human factors not influenced by risk management:

Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers percentage substance in the product up to 100%

Not applicable.

Avoid carrying out operation for more than 4 hours.

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 7: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Amounts used:

Product characteristics:

Frequency and duration of use:

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Liquid. Covers percentage substance in the product up to 100%

Not applicable.

Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity Personal protection: training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 8: Use as laboratory reagent

Product characteristics:

Frequency and duration of use:

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Amounts used:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Covers daily exposures up to 8 hours (unless stated differently). Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Liquid. Covers percentage substance in the product up to 100%

Indoor, industrial setting

Not applicable.

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls. Wear appropriate respiratory protection. with a

minimum efficacy of 90%

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05. PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Release from point source

(local exposure estimation) kg/	exposure estimation kg/day	oustineation
0.625	73.1	EUSES calculation
Not evaluated.	18.3	EUSES calculation
17.1	47.3	EUSES calculation
Not evaluated.	29.3	EUSES calculation
Value	Justification	
0.196	EUSES calculation	
295	EUSES calculation	
Local concentration	PEC aquatic (local+regional)	Justification
1.94x10-4	1.63x10-3	EUSES calculation
1.94x10-3	2.08x10-3	EUSES calculation
Not applicable	Not applicable	Not applicable.
Local concentration	PEC sediment (local+regional)	Justification
Not evaluated.	0.82	EUSES calculation
Not evaluated.	1.05	EUSES calculation
Local concentration	PEC soil (local+regional)	Justification
	day 0.625 Not evaluated. 17.1 Not evaluated. Value 0.196 295 Local concentration 1.94x10-4 1.94x10-3 Not applicable Local concentration Not evaluated. Not evaluated.	(local exposure estimation) kg/day exposure estimation kg/day 0.625 73.1 Not evaluated. 18.3 17.1 47.3 Not evaluated. 29.3 Value Justification 0.196 EUSES calculation 295 EUSES calculation Local concentration PEC aquatic (local+regional) 1.94x10-4 1.63x10-3 1.94x10-3 2.08x10-3 Not applicable Not applicable Local concentration PEC sediment (local+regional) Not evaluated. 0.82 Not evaluated. 1.05

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Justification

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0.513	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	3.0	14	EUSES calculation
Soil (direct releases only)	Not evaluated.	1.27	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43.x10-3	EUSES calculation
Marine water mg/l	0	1.43x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0108	0.125	EUSES calculation
Grassland averaged mg/kg dwt	0.0214	0.135	EUSES calculation
Groundwater mg/l	Not evaluated.	1.24x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	8.2x10-4	Not evaluated.	EUSES calculation
Annual average mg/m³	5.1x10-4	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	9.1x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.568	0.35	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.5	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	TableR16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.178	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	269	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.77x10-2	1.91x10-2	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Marine water mg/l	1.77x10-3	1.91x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	9.64	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.96	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0458	0.16	EUSES calculation
Grassland averaged mg/kg dwt	0.0907	0.20	EUSES calculation
Groundwater mg/l	Not evaluated.	1.6x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.5x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.1x10-3	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	3.9x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.
Section 3:.2 Workers - Exposure est Contributing scenario controlling w		closed process, no likelihood of	exposure
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.007	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.06	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.12	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 1: Use in closed, continuous process with occasional controlled exposure

Route of exposure Contributing scenarios Dose/Concentration

Long term exposure, Systemic,

Dermal

Not applicable.

0.14

Justification

below this value

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

exposure estimates for other PROC are

below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Long term exposure, Systemic, Not applicable. 0.548 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Combined** Not applicable. Not applicable. Not applicable. Long term exposure, Local, Dermal Long term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. 0.55 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 2: Use in closed batch process (synthesis or formulation)

Contributing scenarios Dose/Concentration Route of exposure **Justification** Long term exposure, Systemic, Not applicable. 0.14 The ECETOC TRA tool has been used to estimate workplace exposures unless **Dermal** otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.30 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. 0.62 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 3: Use in batch and other process (synthesis) where opportunity for exposure arises

Contributing scenarios Route of exposure **Dose/Concentration**

Long term exposure, Systemic,

Dermal

Not applicable.

0.14

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

highest exposure level is given since the exposure estimates for other PROC are

below this value

below this value

below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -Industrial

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Long term exposure, Systemic, Inhalable	Not applicable.	0.30	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.62	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
(multistage and/or significant contact	orker exposure for 4: Mixing	or blending in batch processes	for formulation of preparations* and articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.27	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.30	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for

0.60

Not applicable.

acute effects and therefore, no acute DNEL

has been derived.

The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Triethylenetetramine, TETA

Short term exposure, Local,

Combined

Inhalable

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Section 3:.2 Workers - Exposure esti Contributing scenario controlling wo		er of substance or preparation (c	harging/discharging) from/to vessels/large
containers at non-dedicated facilities Route of exposure		Deca/Concentration	luctification
Long term exposure, Systemic, Dermal	Contributing scenarios Not applicable.	Dose/Concentration 0.27	Justification The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.37	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.74	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
		er of substance or preparation (c	harging/discharging) from/to vessels/large
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.14	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.548	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal Long term exposure, Local, Inhalable	Not applicable. Not applicable	Not applicable. Not applicable.	Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 100% -

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

has been derived.

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.55	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure esti Contributing scenario controlling we including weighing)		er of substance or preparation in	to small containers (dedicated filling line,
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.14	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.30	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.62	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure esti			
Contributing scenario controlling wo Route of exposure	•	•	luctification
Long term exposure, Systemic, Dermal	Contributing scenarios Not applicable.	Dose/Concentration 0.14	Justification The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the
Long term exposure, Systemic,	Not applicable.	0.30	highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to
Inhalable	ног аррисаше.	0.50	estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Triethylenetetramine, TETA			Use of ethylenamines in closed system with little - Use of preparations containing EA up to 100% - Industrial

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Long term exposure, Local, Not applicable. Not applicable. Not applicable. Not applicable.

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable.

Not applicable.

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable.

Inhalable
Short term exposure, Systemic, Not applicable. Not applicable. Not applicable.
Combined

Not applicable.

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Not applicable. 0.62 The ECETOC TRA tool has been used to Inhalable exposures unless

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

EnvironmentNot available.HealthNot available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC15

Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

1000a



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of

preparations containing EA up to 0.5% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such Sector of end use: SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Section 2:: Operational conditions and risk management measures

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor:

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to 1.0x10-4

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Assumed domestic sewage treatment plant flow (m³/d): Triethylenetetramine, TETA

Not applicable.

10%

300

1000

Indoor. industrial setting

1.1x10-3

4.03x10-5

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

2000

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5%

Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% 4650 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 15500 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

1000 Local freshwater dilution factor:

Local marine water dilution factor: Not applicable.

Indoor, industrial setting Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%): Conditions and measures related to municipal sewage treatment

Assumed domestic sewage treatment plant flow (m³/d):

1.1x10-3

1.0x10-4

4.03x10-5

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available

2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. 2418 Regional use tonnage (tonnes/year): 25% Fraction of Regional tonnage used locally: 604 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2684

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environment factors not influenced by risk management:

Local freshwater dilution factor: Not available. Local marine water dilution factor: Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5%

Professional Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM): Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to Not applicable.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

Soil emission controls are not applicable as there is no direct release to soil.

No wastewater treatment required.

Indoor, industrial setting

1.1x10-3

Not available.

Not available.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11378 Maximum daily site tonnage (kg/day): Not available. Continuous release.

Frequency and duration of use:

Emission Days (days/year): 225

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor:

Indoor. industrial setting Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM): Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

1.1x10-3

5.0x10-5

Not available.

Not available

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Professional

Process Category: PROC08a Substance supplied to that use in form of: As such

Sector of end use: SU22

If discharging to domestic sewage treatment plant, provide Not available. the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

2000 Assumed domestic sewage treatment plant flow (m³/d):

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, professional setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Justification

management supervision controls.

Total release for regional

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	day 0	0.513	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	3.0	14	EUSES calculation
Soil (direct releases only)	Not evaluated.	1.27	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43.x10-3	EUSES calculation
Marine water mg/l	0	1.43x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0108	0.125	EUSES calculation
Grassland averaged mg/kg dwt	0.0214	0.135	EUSES calculation
Groundwater mg/l	Not evaluated.	1.24x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Justification

. Professional

Process Category: PROC08a Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

During emission mg/m³ **EUSES** calculation 8.2x10-4 Not evaluated. Annual average mg/m³ 5.1x10-4 5.1x10-4 **EUSES** calculation Annual deposition mg/m²/d 9.1x10-4 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.568	0.35	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.5	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.178	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	269	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.77x10-2	1.91x10-2	EUSES calculation
Marine water mg/l	1.77x10-3	1.91x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	9.64	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.96	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0458	0.16	EUSES calculation
Grassland averaged mg/kg dwt	0.0907	0.20	EUSES calculation
Groundwater mg/l	Not evaluated.	1.6x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.5x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.1x10-3	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	3.9x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

. Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Short term exposure, Systemic, Inhalable

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Short term exposure, Systemic,
Combined

Not applicable.

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Not applicable. 1.52 The ECETOC TRA tool has been used to Inhalable 1.52 The ECETOC TRA tool has been used to estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available.

Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance Product name Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of

preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09

Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate: >= 2.0x10 6m3/d

Local marine water dilution factor:

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Triethylenetetramine, TETA

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

10%

Not applicable.

Indoor. industrial setting

1.1x10-3

1.0x10-4

4.03x10-5

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5%

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Assumed domestic sewage treatment plant flow (m3/d): 2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate: >= 2.0x10 6m3/d

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Assumed domestic sewage treatment plant flow (m³/d):

1.1x10-3

Indoor. industrial setting

1 0x10-4

4.03x10-5

Not available.

Not available.

Not available.

Not available

Not available.

Not available.

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

2000

225

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

2418 Regional use tonnage (tonnes/year): 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2684

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): Environment factors not influenced by risk management:

Local freshwater dilution factor: Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5%

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a 51/240 Local marine water dilution factor: Not available.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Indoor, industrial setting

1.1x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Indoor. industrial setting

1.1x10-3

5.0x10-5

Not available.

Not available.

Not available.

Not applicable.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 11378 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

225

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

No air emission controls required; required removal efficiency is 0%.

Soil emission controls are not applicable as there is no direct release to soil.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5%

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Prevent discharge of undissolved substance to or recover from onsite wastewater.

Not available.

Conditions and measures related to municipal sewage treatment

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Product characteristics:

Amounts used: Not applicable.

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers concentrations up to 0.5%

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor. industrial setting

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large

Indoor. industrial setting

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

Not applicable.

Not applicable.

Not applicable.

dispersion and exposure:

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Amounts used:

Product characteristics:

Human factors not influenced by risk management:

Other given operational conditions affecting workers

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers concentrations up to 0.5%

Not applicable.

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor. industrial setting

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0	0.513	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	3.0	14	EUSES calculation
Soil (direct releases only)	Not evaluated.	1.27	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43.x10-3	EUSES calculation
Marine water mg/l	0	1.43x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0108	0.125	EUSES calculation
Grassland averaged mg/kg dwt	0.0214	0.135	EUSES calculation
Groundwater mg/l	Not evaluated.	1.24x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Justification

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

During emission mg/m³ 8.2x10-4 **EUSES** calculation Not evaluated. Annual average mg/m³ 5.1x10-4 5.1x10-4 **EUSES** calculation Annual deposition mg/m²/d 9.1x10-4 Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Justification Local concentration** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.568	0.35	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.5	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.178	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	269	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.77x10-2	1.91x10-2	EUSES calculation
Marine water mg/l	1.77x10-3	1.91x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	9.64	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.96	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0458	0.16	EUSES calculation
Grassland averaged mg/kg dwt	0.0907	0.20	EUSES calculation
Groundwater mg/l	Not evaluated.	1.6x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.5x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.1x10-3	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	3.9x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Triothylonototramino TETA		Identified use name	Llsa of athylonominos in clased system with little

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such Sector of end use: SU03

Not applicable. Not applicable. Not applicable. Short term exposure, Systemic, Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. The ECETOC TRA tool has been used to 1.52 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Route of exposure **Contributing scenarios Dose/Concentration Justification** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.001 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value 0.76 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable. Long term exposure, Local, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL **Dermal** has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Combined has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. The ECETOC TRA tool has been used to 1.52 Short term exposure, Local, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities **Route of exposure Contributing scenarios Dose/Concentration Justification** The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.001 Dermal estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.76 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Not applicable. Long term exposure, Local, Dermal Not applicable. Not applicable.

Not applicable.

Triethylenetetramine, TETA

Long term exposure, Local,

Inhalable

Not applicable.

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Not applicable.

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09
Substance supplied to that use in form of: As such

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable

Not applicable.

Short term exposure, Systemic,

Combined

Not applicable.

Not applicable.

Short term exposure, Local, Dermal

Short term exposure, Local, Inhalable

Not applicable. Not applicable. Not applicable.

1.52

Not applicable.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Contributing scenarios Justification Route of exposure **Dose/Concentration** The ECETOC TRA tool has been used to Not applicable.

Long term exposure, Systemic, **Dermal**

0.001

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic, Inhalable

Not applicable.

0.76

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Combined

Inhalable

Not applicable.

Not applicable.

Not applicable. Not applicable.

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Not applicable. Not applicable. Not applicable. Not applicable.

Not applicable.

Short term exposure, Systemic, **Dermal**

Not applicable.

Not applicable.

Not applicable. Not applicable.

Short term exposure, Systemic, Inhalable

Not applicable. Not applicable. Not applicable. Not applicable.

Not applicable.

Short term exposure, Systemic, Combined

Short term exposure, Local,

Short term exposure, Local, Dermal Not applicable.

Not applicable.

Not applicable.

1.52

Not applicable.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: As such

Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a 58/240



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance Product name Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of

preparations containing EA up to 2% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Indoor. industrial setting

1.0x10-4

4.03x10-5

Not available.

Not available.

Not available.

Not applicable.

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 Average Local Daily Tonnage (kg/day): 15500 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 1000 River flow rate: >=2.0x10 6m3/d

Local marine water dilution factor: Not applicable.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to 1.1x10-3

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Assumed domestic sewage treatment plant flow (m³/d):

2000

=>37.4

Not available.

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

59/240

Professional

Triethylenetetramine, TETA

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: 10% 4650 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 4650 15500 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

1000 River flow rate: >=2.0x10 6m3/d Local freshwater dilution factor:

Local marine water dilution factor: Not applicable.

Indoor, industrial setting Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Assumed domestic sewage treatment plant flow (m³/d):

Continuous release.

1.1x10-3

1.0x10-4

4.03x10-5

Not available.

Not available

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available

=>37.4

2000

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. 2418 Regional use tonnage (tonnes/year): 25% Fraction of Regional tonnage used locally: 604 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2684

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environment factors not influenced by risk management:

Local freshwater dilution factor: Not available. Local marine water dilution factor: Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Professional

Process Category: PROC08a Substance supplied to that use in form of: As such

Sector of end use: SU22

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Indoor, industrial setting

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11378 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor:

Indoor. industrial setting Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) =>37.4 to provide the required removal efficiency of 3 (%):

Not applicable.

Not available.

1.1x10-3

5.0x10-5

Not available.

Not available

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2%

Professional Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

Assumed domestic sewage treatment plant flow (m³/d): 2000

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large

Not available.

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Justification

management supervision controls.

Total release for regional

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Manufacture of substances

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m ³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Professional Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a 62/240

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an intermediate

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.625	73.1	EUSES calculation
Surface water	Not evaluated.	18.3	EUSES calculation
air (direct + STP)	17.1	47.3	EUSES calculation
Soil (direct releases only)	Not evaluated.	29.3	EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.196	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	295	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.94x10-4	1.63x10-3	EUSES calculation
Marine water mg/l	1.94x10-3	2.08x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.82	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	1.05	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0832	0.197	EUSES calculation
Grassland averaged mg/kg dwt	0.165	0.279	EUSES calculation
Groundwater mg/l	Not evaluated.	1.98x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.7x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	3.9x10-3	3.9x10-3	EUSES calculation
Annual deposition mg/m²/d	7.0x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Formulation of preparations*

Release from point source

Triothydau atatua maina. TETA	Local concentration	I Lo all (local Fregional)	
_	Local concentration	PEC air (local+regional)	Justification
Groundwater mg/l	Not evaluated.	1.24x10-3	EUSES calculation
Grassland averaged mg/kg dwt	0.0214	0.135	EUSES calculation
Agricultural soil averaged mg/kg dwt	0.0108	0.125	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
	Local concentration	PEC sediment (local+regional)	Justification
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
Marine water mg/l	0	1.43x10-4	EUSES calculation
Fresh water mg/l	0	1.43.x10-3	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
	Value	Justification	
Soil (direct releases only)	Not evaluated.	1.27	EUSES calculation
air (direct + STP)	3.0	14	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
Waste water	0	0.513	EUSES calculation
	day	exposure estimation kg/day	
	(local exposure estimation) kg/	exposure estimation kg/day	Custimoution

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

Justification

Professional Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

During emission mg/m³ **EUSES** calculation 8.2x10-4 Not evaluated. Annual average mg/m³ 5.1x10-4 5.1x10-4 **EUSES** calculation Annual deposition mg/m²/d 9.1x10-4 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Not applicable. Not applicable. Micro-organism mg/l Not applicable.

Release from point source

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Manufacture of coatings, adhesives and inks (and powder products)

Total release for regional

Justification

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0.568	0.35	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.5	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.178	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	269	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.77x10-2	1.91x10-2	EUSES calculation
Marine water mg/l	1.77x10-3	1.91x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable	Not applicable	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	9.64	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.96	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.0458	0.16	EUSES calculation
Grassland averaged mg/kg dwt	0.0907	0.20	EUSES calculation
Groundwater mg/l	Not evaluated.	1.6x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.5x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.1x10-3	5.1x10-4	EUSES calculation
Annual deposition mg/m²/d	3.9x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.005	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.31	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in closed system with little opportunity for exposure - Use of preparations containing EA up to 2% -

. Professional

Process Category: PROC08a

Substance supplied to that use in form of: As such

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC06a

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Combined acute effects and therefore, no acute DNEL

has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL

has been derived.

Not applicable. Short term exposure, Local, 0.61 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% -

Industrial

Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12.74

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Not available.

1.1x10-3

n

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% 604 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Not available.

1.1x10-5

0.02

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

If discharging to domestic sewage treatment plant, provide

Conditions and measures related to municipal sewage treatment plant:

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Other given operational conditions affecting workers Indoor. industrial setting exposure: Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

PROC13. PROC16

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Calendering operations

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting Indoor, professional setting exposure:

Technical conditions and measures at process level Not applicable.

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting Indoor. professional setting exposure:

Technical conditions and measures at process level Not applicable.

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

Personal protection:

Not applicable. dispersion and exposure:

> Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Use the following local exhaust ventilation types: Treat air emission to provide a typical

management supervision controls.

removal efficiency of (%): 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting exposure: Indoor. professional setting

Technical conditions and measures at process level

Not applicable. (source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity Personal protection:

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

PROC13. PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b 68/240 Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used:

Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management:

Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Indoor, industrial setting

exposure:

Indoor, professional setting

Technical conditions and measures at process level

Not applicable.

(source) to prevent release:

Technical conditions and measures to control dispersion

Not applicable.

from source towards the worker: Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Treatment of articles by dipping and pouring

Product characteristics:

Amounts used:

Liquid. Covers concentrations up to 2%

Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management:

Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Indoor, industrial setting Indoor. professional setting

exposure: Technical conditions and measures at process level

Not applicable.

(source) to prevent release:

Technical conditions and measures to control dispersion

Use the following local exhaust ventilation types: Treat air emission to provide a typical

from source towards the worker:

removal efficiency of (%): 90% Not applicable.

Organisational measures to prevent/limit releases, dispersion and exposure: Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Using material as fuel sources, limited exposure to unburned product to be

expected

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently). Human factors not influenced by risk management: Default breathing volume Light work 10: m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Other given operational conditions affecting workers exposure:

Indoor, professional setting

Technical conditions and measures at process level

Not applicable.

(source) to prevent release: Technical conditions and measures to control dispersion

Not applicable.

from source towards the worker: Organisational measures to prevent/limit releases,

Not applicable.

dispersion and exposure: Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

PROC13. PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Contributing scenario controlling environmental exposure for 0: Fuel additive.

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	1.04x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	2.06x10-5	1.13x10-3	EUSES calculation
Groundwater mg/l	Not evaluated.	0.114	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.87x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	4.87x10-7	5.16x10-7	EUSES calculation
Annual deposition mg/m²/d	8.78x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Wood preservative.

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	2.47	33.1	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.24x10-3	1.66x10-2	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.775	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	1.17x10-3	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.077	0.078	EUSES calculation
Marine water mg/l	7.69x10-3	7.83x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	39.5	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	3.95	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16

Justification

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Agricultural soil averaged mg/kg 4.44x10-6 0.114 **EUSES** calculation dwt Grassland averaged mg/kg dwt 8 79x10-6 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation PEC air (local+regional) **Local concentration** Justification During emission mg/m³ Not evaluated. 3.44x10-7 **EUSES** calculation Annual average mg/m³ 2.07x10-7 2.36x10-7 **EUSES** calculation Annual deposition mg/m²/d 3.75x10-7 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Route of exposure **Contributing scenarios Dose/Concentration** Justification

Long term exposure, Systemic,

Dermal

Not applicable.

0.055

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.61

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Not evaluated. Not applicable

Not evaluated.

Not applicable. Not applicable. Not applicable.

Not applicable.

Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic,

Dermal

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Inhalable

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived

Short term exposure, Systemic,

Combined

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

1.22

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 1: Calendering operations

Route of exposure Long term exposure, Systemic,

Dermal

Contributing scenarios

Dose/Concentration

Justification

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

Long term exposure, Systemic, Inhalable

Not applicable.

Not applicable.

0.61

0.055

highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Combined

Not evaluated.

Not applicable.

Not applicable.

Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13. PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Long term exposure, Local, nhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEI has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Se	ction 3:.2 v	vorkers - E	xposure e	stimation	
		_		_	_

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.110	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.305	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

		er of substance or preparation (c	charging/discharging) from/to vessels/large
containers at dedicated facilities Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.055	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
Contributing scenario controlling wo including weighing)	orker exposure for 4: Transfe	er of substance or preparation in	to small containers (dedicated filling line,
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.055	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC13, PROC16

has been derived.

Substance supplied to that use in form of: In a mixture **Sector of end use:** SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
Contributing scenario controlling we	orker exposure for 5: Treatm	ent of articles by dipping and p	ouring
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.110	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.305	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic,	Not evaluated.	Not applicable.	Not applicable.
Combined Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
	orker exposure for 6: Using r	naterial as fuel sources, limited	exposure to unburned product to be
Route of exposure	Contributing scenarios	Dose/Concentration	Justification The SOCIAL TRANSPORTER AND ADMINISTRATION TO A CONTRACT OF THE SOCIAL TRANSPORTER AND
Long term exposure, Systemic, Dermal	Not applicable.	0.055	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic,	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Triethylenetetramine, TETA		processes with low exposure form - Use Process Category: PRO Substa	e of preparations containing ethylenamines in open exposure potential and evaporation as most likely of preparations containing EA up to 2% - Industrial OC05, PROC06, PROC08a, PROC08b, PROC13, PROC16 PROC13, PROC16 In a mixture Sector of end use: SU03, SU22
			ubsequent service life relevant for that use: No. ease Category: ERC01, ERC02, ERC04, ERC10b 74/240

Long term exposure, Local, Not applicable. Inhalable

Not applicable.

Not applicable.

Not applicable.

Short term exposure, Systemic,

Dermal

Not applicable.

Not applicable.

Short term exposure, Systemic, Inhalable

Not applicable.

Not applicable.

Not applicable.

Short term exposure, Systemic, Not applicable.

Not applicable.

Not applicable.

Combined

Not applicable.

Short term exposure, Local, Dermal Short term exposure, Local, Inhalable

Not applicable. Not applicable. Not applicable. 1.22

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

PROC13, PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control o	f environmental e	exposure
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Contributing scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12.74

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

1.1x10-3

n

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% 604 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

Organisational measures to prevent/limit release from site:

plant:

Not available.

10

None.

1.1x10-5

0.02

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting exposure: Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Calendering operations

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting Indoor, professional setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion Not applicable.

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting Indoor. professional setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting

exposure:

(source) to prevent release:

Indoor. professional setting

Technical conditions and measures at process level Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity Personal protection:

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

PROC10. PROC13. PROC16 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Indoor, professional setting

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Roller application or brushing

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers Indoor. industrial setting Indoor. professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Indoor. professional setting

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 7: Using material as fuel sources, limited exposure to unburned product to be

expected

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Indoor, industrial setting

exposure: Indoor, professional setting

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09,

PROC10. PROC13. PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Fuel additive.

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	1.04x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	2.06x10-5	1.13x10-3	EUSES calculation
Groundwater mg/l	Not evaluated.	0.114	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.87x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	4.87x10-7	5.16x10-7	EUSES calculation
Annual deposition mg/m²/d	8.78x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Wood preservative.

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	2.47	33.1	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.24x10-3	1.66x10-2	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.775	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	1.17x10-3	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.077	0.078	EUSES calculation
Marine water mg/l	7.69x10-3	7.83x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	39.5	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	3.95	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.44x10-6	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.79x10-6	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.44x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	2.07x10-7	2.36x10-7	EUSES calculation
Annual deposition mg/m²/d	3.75x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2	Workers -	Exposure	estimation
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Section 3:.2 Workers - Exposure estimation

Dermal

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Route of exposure **Contributing scenarios Dose/Concentration** Justification The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.027

Dermal estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are below this value

Long term exposure, Systemic, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

0.76

exposure estimates for other PROC are below this value

Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined

Not applicable. Not applicable. Long term exposure, Local, Dermal Not applicable.

Long term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal**

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Not applicable. 1.52 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Contributing scenario controlling worker exposure for 1: Calendering operations **Route of exposure Contributing scenarios Dose/Concentration Justification**

Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.027

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are

The ECETOC TRA tool has been used to

below this value

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10. PROC13. PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the
			highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Inhalable	Not applicable.	1.52	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Containers at non-dedicated facilities	•		
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.027	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.52	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 3:.2 Workers - Exposure est	imation		
Contributing scenario controlling we containers at dedicated facilities	orker exposure for 3: Transfe	r of substance or preparation (c	charging/discharging) from/to vessels/large
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.027	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal Short term exposure, Local, Inhalable	Not applicable. Not applicable.	Not applicable. 1.52	Not applicable. The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling wo including weighing)		r of substance or preparation in	nto small containers (dedicated filling line,
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.027	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

1.52

Triethylenetetramine, TETA

Short term exposure, Systemic,

Short term exposure, Systemic,

Short term exposure, Systemic,

Short term exposure, Local,

Short term exposure, Local, Dermal

Dermal

Inhalable

Combined

Inhalable

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

Not applicable.

Not applicable.

Not applicable.

Not applicable.

below this value

The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Substance supplied to that use in form of: In a mixture **Sector of end use:** SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 3:.2 Workers - Exposure est			
Contributing scenario controlling we			lundification
Route of exposure Long term exposure, Systemic, Dermal	Contributing scenarios Not applicable.	Dose/Concentration 0.027	Justification The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.52	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling we		ent of articles by dipping and po	ouring
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.027	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless

Route of exposure	Contributing Scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.027	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Short term exposure, Local, Inhalable

Not applicable.

1.52

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 7: Using material as fuel sources, limited exposure to unburned product to be

expected

Route of exposure Contributing scenarios Dose/Concentration Justification

Long term exposure, Systemic, **Dermal**

Not applicable.

Not applicable.

0.027

The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

0.76

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Short term exposure, Systemic,

Dermal

Short term exposure, Systemic, Inhalable

Short term exposure, Systemic, Combined

Short term exposure, Local, Dermal Short term exposure, Local,

Inhalable

Not applicable.

Not applicable. 1.52

Not applicable.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10. PROC13. PROC16

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% -

Professional

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control o	f environmental e	exposure
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Contributing scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12.74

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

1.1x10-3

n

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% 604 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

220

None.

1.1x10-5

0.02

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

the required onsite wastewater removal efficiency of ³ (%):

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics: Amounts used: Not applicable.

Frequency and duration of use:

Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker: Organisational measures to prevent/limit releases,

dispersion and exposure:

Liquid. Covers concentrations up to 2%

Covers daily exposures up to 8 hours (unless stated differently).

Indoor. professional setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Roller application or brushing

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. professional setting exposure:

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Fuel additive.

Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC aquatic (local+regional)	Justification
Annual deposition mg/m²/d	8.78x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	4.87x10-7	5.16x10-7	EUSES calculation
During emission mg/m³	4.87x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
Groundwater mg/l	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	2.06x10-5	1.13x10-3	EUSES calculation
Agricultural soil averaged mg/kg dwt	1.04x10-5	0.114	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
	Local concentration	PEC sediment (local+regional)	Justification
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
Marine water mg/l	0	1.42x10-4	EUSES calculation
Fresh water mg/l	0	1.43x10-3	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
	Value	Justification	
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
Waste water	day 0	0	EUSES calculation
	Release from point source (local exposure estimation) kg/	Total release for regional exposure estimation kg/day	Justification

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Section 3:.1	Environment -	 Exposure 	estimation
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Contributing scenario controlling environmental exposure for 1: Wood preservative.

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	2.47	33.1	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.24x10-3	1.66x10-2	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.775	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	1.17x10-3	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.077	0.078	EUSES calculation
Marine water mg/l	7.69x10-3	7.83x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	39.5	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	3.95	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.44x10-6	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.79x10-6	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.44x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	2.07x10-7	2.36x10-7	EUSES calculation
Annual deposition mg/m²/d	3.75x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.110	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.305	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

has been derived.

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL

0.61

has been derived.

The ECETOC TRA tool has been used to estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Short term exposure, Local,

Short term exposure, Systemic,

Inhalable

Inhalable

Contributing scenario controlling worker exposure for 1: Roller application or brushing

Not applicable

Not applicable.

Route of exposure **Contributing scenarios Dose/Concentration** Justification

The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.110

Dermal estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic, 0.305 The ECETOC TRA tool has been used to Not applicable. Inhalable estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable.

Combined Long term exposure, Local, Dermal Not evaluated.

Not applicable. Not applicable. Long term exposure, Local, Not applicable Not applicable.

Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL

has been derived

Short term exposure, Systemic, Not applicable. Not applicable Since the substance is not classified for **Dermal**

acute effects and therefore, no acute DNEL has been derived.

Not applicable. Since the substance is not classified for

Inhalable acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Combined acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL

has been derived

0.61 The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable.

> estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC10

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% -

Professional

Process Category: PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12.74

Maximum daily site tonnage (kg/day): Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%): Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Not available.

2418

Not available.

Continuous release.

365

None.

1.1x10-3

n

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: None.

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Continuous release.

Other given operational conditions affecting environmental

1.1x10-5

0.02

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available

Conditions and measures related to municipal sewage treatment plant:

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg Other given operational conditions affecting workers Indoor, professional setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Fuel additive.

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	1.04x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	2.06x10-5	1.13x10-3	EUSES calculation
Groundwater mg/l	Not evaluated.	0.114	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	4.87x10-7	Not evaluated.	EUSES calculation
Annual average mg/m³	4.87x10-7	5.16x10-7	EUSES calculation
Annual deposition mg/m²/d	8.78x10-7	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Wood preservative.

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	2.47	33.1	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	1.24x10-3	1.66x10-2	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.775	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	1.17x10-3	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.077	0.078	EUSES calculation
Marine water mg/l	7.69x10-3	7.83x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	39.5	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	3.95	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

Agricultural soil averaged mg/kg 4.44x10-6 0.114 **EUSES** calculation dwt Grassland averaged mg/kg dwt 8.79x10-6 **EUSES** calculation 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification During emission mg/m³ 3.44x10-7 Not evaluated. **EUSES** calculation Annual average mg/m³ 2.07x10-7 2.36x10-7 **EUSES** calculation Annual deposition mg/m²/d 3.75x10-7 Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration** Justification Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Route of exposure **Contributing scenarios Dose/Concentration** Justification

Long term exposure, Systemic,

Dermal

Not applicable.

0.027

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.76

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal

Long term exposure, Local, Inhalable

Not evaluated. Not applicable

Not evaluated.

Not applicable. Not applicable. Not applicable.

Not applicable.

Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Since the substance is not classified for

Short term exposure, Systemic, **Dermal**

Not applicable.

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Inhalable

Not applicable

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic,

Combined

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

1.52

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control of	i environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25%

Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

1.10x10-3

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

1.10x10-3

Not available.

Not available.

Not available.

No wastewater treatment required.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to Not applicable.

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not available. the required onsite wastewater removal efficiency of ³ (%):

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Continuous release.

Frequency and duration of use:

Emission Days (days/year):

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

preparations containing EA up to 25% - Industrial Process Category: PROC05, PROC08a, PROC08b, PROC09

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

1.1x10-3

None.

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

10

None.

6.88x10-4

6.88x10-3

1.38

Not available.

Not available.

Not available.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Not available

None.

1.1x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 7014 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Continuous release. Frequency and duration of use:

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Not available

10

None.

5.00x10-3

0.01

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Product characteristics: Liquid. Covers percentage substance in the product up to 25%.

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 15 min. to < 1 hour

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting

exposure:

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics:

Amounts used:

Frequency and duration of use:

Human factors not influenced by risk management: Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers percentage substance in the product up to 25%.

Not applicable.

Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics:

Frequency and duration of use:

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Amounts used:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers percentage substance in the product up to 25%.

Not applicable.

Avoid carrying out operation for more than 1 hour.

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor. industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Amounts used:

Product characteristics:

Frequency and duration of use:

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers percentage substance in the product up to 25%.

Not applicable.

Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09
Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Justification Local concentration PEC soil (local+regional) Agricultural soil averaged mg/kg Not evaluated. 0.114 **EUSES** calculation Not evaluated. 0.114 **EUSES** calculation Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. **EUSES** calculation 1.13x10-3 **Local concentration** PEC air (local+regional) Justification Not evaluated. During emission mg/m³ Not evaluated. **EUSES** calculation 2.93x10-8 Annual average mg/m³ Not evaluated. **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Release from point source

	(local exposure estimation) kg/ day	exposure estimation kg/day	
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	Not evaluated.	6.88x10-3	Local: Table R16.23[REACH], Total release for regional exposure estimation: EUSES calculation

Total release for regional

Value Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Justification

Justification

Process Category: PROC05, PROC08a, PROC08b, PROC09
Substance supplied to that use in form of: In a mixture

Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Concentration in sewage (PECstp) 0.157 **EUSES** calculation Concentration in sewage sludge 237 **EUSES** calculation mg/kg dwt **Local concentration** PEC aquatic (local+regional) **Justification** 0.016 **EUSES** calculation Fresh water mg/l 0.017 Marine water mg/l 1.56x10-3 1.70x10-3 **EUSES** calculation Intermittent release. mg/l Not applicable. Not applicable. Not applicable. **Local concentration** PEC sediment (local+regional) **Justification** Fresh water sediment mg/kg dwt Not evaluated. **EUSES** calculation Marine water sediment mg/kg dwt Not evaluated. **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 8.20x10⁻⁸ 0.114 **EUSES** calculation Grassland averaged mg/kg dwt 1.62x10⁻⁷ **EUSES** calculation 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation Local concentration PEC air (local+regional) **Justification EUSES** calculation During emission mg/m³ 6.98x10⁻⁸ Not evaluated. Annual average mg/m³ 3.82x10⁻⁹ 3.31x10⁻⁸ **EUSES** calculation Annual deposition mg/m²/d 6.92x10⁻⁹ Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Justification Local concentration** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m ³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.1	Environment - I	Exposure estimation
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Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation
Grassland averaged mg/kg dwt	0.091	0.204	EUSES calculation
Groundwater mg/l	Not evaluated.	1.60x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.55x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.14x10-3	2.14x10-3	EUSES calculation
Annual deposition mg/m²/d	3.86x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

`	•		
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0685714	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.3656	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09
Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Combined has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. The ECETOC TRA tool has been used to 0.73115 Short term exposure, Local, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **Contributing scenarios Dose/Concentration** Justification Route of exposure Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.0685714 Dermal estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.365575 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Not applicable. Not applicable. Long term exposure, Systemic, Not evaluated. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Since the substance is not classified for Not applicable Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Dermal** acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Not applicable. Short term exposure, Systemic, Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Combined has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for

acute effects and therefore, no acute DNEL

has been derived.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Route of exposure

Short term exposure, Local,

Contributing scenarios Not applicable.

Dose/Concentration

Justification

Long term exposure, Systemic,

Dermal

Not applicable.

0.034286

0.73115

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Inhalable

Not applicable.

0.548325

The ECETOC TRA tool has been used to estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial

Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.096725	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

including weighing)	•		•
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0685714	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.365575	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.73115	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial Process Category: PROC05, PROC08a, PROC08b, PROC09

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available.
Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Industrial Process Category: PROC05, PROC08a, PROC08b, PROC09

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of

preparations containing EA up to 0.5% - Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC11a

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

4650 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Continuous release.

None.

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Triethylenetetramine, TETA

exposure:

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

109/240

Industrial

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

1.1x10-3

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor/Outdoor use.

Product characteristics:

Amounts used:

prevent release:

Not available. Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM): Release fraction to air from wide dispersive use (regional

only): Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not applicable.

4650

Continuous release.

10

1.10x10-3

0

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: None. Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region: 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 7014 Maximum daily site tonnage (kg/day): Not available.

Frequency and duration of use: Continuous release.

365 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Local freshwater dilution factor:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

10

5.00x10-3

0.01

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4 Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 0.5%

Amounts used: Not applicable. Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Other given operational conditions affecting workers exposure:

Technical conditions and measures at process level

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

(source) to prevent release:

Organisational measures to prevent/limit releases,

Not applicable.

dispersion and exposure:

Personal protection:

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

Indoor, professional setting

Product characteristics: Solid. Covers concentrations up to 0.5%

Amounts used: Not applicable. Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure: **Personal protection:**

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation **Local concentration Justification** PEC air (local+regional) During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Not applicable. Micro-organism mg/l Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local: Table R16.23 [REACH], Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Triethylenetetramine, TETA			lling of solid products with small amoun

unbound ethylenamines - Use of preparations containing EA up to 0.5% -Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Intermittent release. mg/l	Not applicable. Local concentration	Not applicable. PEC sediment (local+regional)	Not applicable. Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

Release from point source

	(local exposure estimation) kg/ day	exposure estimation kg/day	Justinication
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.
I			

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp)	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -Industrial

Justification

Total release for regional

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation
Grassland averaged mg/kg dwt	0.091	0.204	EUSES calculation
Groundwater mg/l	Not evaluated.	1.60x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.55x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.14x10-3	2.14x10-3	EUSES calculation
Annual deposition mg/m²/d	3.86x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Micro-organism mg/i	пот аррисавіе.	пот аррпсавте.	Not applicable.
Section 3:.2 Workers - Exposure es Contributing scenario controlling w		ergy manipulation of substance	s bound in materials and/or articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.06	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL

Short term exposure, Local, Not applicable. 0.12 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Not applicable.

Short term exposure, Local, Dermal Not applicable

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

has been derived.

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.06	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Inhalable	Not applicable.	0.12	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment	Not available.
Health	Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

ſ	Environment	Not applicable.
١	Health	Not applicable.
1	Additional Good Practices	Not applicable.



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of

preparations containing EA up to 2% - Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC11a

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

4650

Not available.

Continuous release.

10

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Industrial

> Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Continuous release.

10

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental

exposure:

None.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2%

Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

1.1x10-3

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

prevent release:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM): Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

None.

6.88x10-4

6.88x10-3

1.38

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: None. Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to Not applicable.

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available

Not available

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region: 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

365 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2%

Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Local freshwater dilution factor:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

5.00x10-3

0.01

10

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 2%

Amounts used: Not applicable. Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Other given operational conditions affecting workers exposure:

Technical conditions and measures at process level

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

(source) to prevent release:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

Indoor, professional setting

Product characteristics: Solid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Not applicable. Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

122/240

Industrial

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Grassland averaged mg/kg dwt Not evaluated. **EUSES** calculation 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Not applicable. Micro-organism mg/l Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local: Table R16.23 [REACH], Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Triethylenetetramine, TETA		Identified use name: Hand	lling of solid products with small amoun

unbound ethylenamines - Use of preparations containing EA up to 2% -Industrial

Process Category: PROC21, PROC24

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Intermittent release. mg/l Fresh water sediment mg/kg dwt	Not applicable. Local concentration Not evaluated.	Not applicable. PEC sediment (local+regional) 8.6	Not applicable. Justification EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
Micro-organism mg/l	Local concentration Not applicable.	PEC aquatic (local+regional) Not applicable.	Justification Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

Release from point source

	day		
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

(local exposure estimation) kg/ exposure estimation kg/day

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp)	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Industrial

Justification

Total release for regional

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation
Grassland averaged mg/kg dwt	0.091	0.204	EUSES calculation
Groundwater mg/l	Not evaluated.	1.60x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.55x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.14x10-3	2.14x10-3	EUSES calculation
Annual deposition mg/m²/d	3.86x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure e Contributing scenario controlling Route of exposure		ergy manipulation of substance Dose/Concentration	s bound in materials and/or articles Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0003	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.02	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

			below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic,	Not applicable	Not applicable.	Since the substance is not classified for

Inhalable acute effects and therefore, no acute DNEL has been derived. Not applicable Not applicable. Since the substance is not classified for Short term exposure, Systemic,

Combined acute effects and therefore, no acute DNEL has been derived.

Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Short term exposure, Local, Not applicable. 0.03 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are below this value

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0003	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.02	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.03	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 4:: Guidance to check comp	oliance with the exposure so	enario	
Environment	N	ot available.	
Health	N	ot available.	

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of

preparations containing EA up to 0.5% - Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%): Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

4650

Not available.

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Frequency and duration of use:

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to 1.10x10-3

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to Not applicable.

prevent release:

Technical on-site conditions and measures to reduce or limit Soil emission controls are not applicable as there is no direct release to soil. discharges, air emissions and releases to soil:

Not available.

Not available

Not available.

Continuous release.

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental 220 exposure:

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5%

No air emission controls required; required removal efficiency is 0%.

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

1.1x10-3

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%): Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

10

None.

6.88x10-4

6.88x10-3

1.38

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

2418

Not available.

None.

1.1x10-3

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region: 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

365 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5%

Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to Not applicable.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

0.01

5.00x10-3

10

Not available. Not available

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 0.5%

Amounts used: Not applicable. Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, professional setting

exposure: Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

prevent release:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure: **Personal protection:**

Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Release from point source

	(local exposure estimation) kg/ day	exposure estimation kg/day	Custimodion
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% - Professional

Justification

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Grassland averaged mg/kg dwt **EUSES** calculation Not evaluated. 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local : Table R16.23, Total release for regional exposure estimation : EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -

Justification

Total release for regional

Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	0	14	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 0.5% -Professional

Justification

Total release for regional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10-3	3.17x10-3	EUSES calculation
Marine water mg/l	2.78x10-4	4.2x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10-10	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10-10	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	2.22x10-11	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10-11	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	4.01x10-11	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

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Section 3:.2 Workers - Exposure est Contributing scenario controlling w		ergy manipulation of substance	s bound in materials and/or articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.06	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic,	Not applicable	Not applicable.	Since the substance is not classified for

|--|

Not applicable.

Short term exposure, Local, Dermal Not applicable

acute effects and therefore, no acute DNEL

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

has been derived.

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.001	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.06	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Inhalable	Not applicable.	0.12	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Section 4:: Guidance to check compliance with the exposure scenario

Environment	Not available.
Health	Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment	Not applicable.
Health	Not applicable.
Additional Good Practices	Not applicable.

below this value



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of

preparations containing EA up to 2% - Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment

plant:

Not applicable.

4650

1.10x10-3

Not available.

Not available

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% Professional

> Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

None.

1.10x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% Professional

> Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

139/240

Triethylenetetramine, TETA

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

1.1x10-3

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM): Release fraction to air from wide dispersive use (regional

only): Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

Not available.

None.

6.88x10-4

6.88x10-3

1.38

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%): Organisational measures to prevent/limit release from site:

Not applicable.

Not available.

2418

Not available.

None.

1.1x10-3

Not available

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region: 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

365 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2%

Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM): Release fraction to wastewater from process (initial release

prior to RMM): Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

0.01

5.00x10-3

10

Not available. Not available

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Not available.

=>37.4

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Low energy manipulation of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 2%

Amounts used: Not applicable. Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Indoor, professional setting

Other given operational conditions affecting workers exposure:

(source) to prevent release:

Technical conditions and measures at process level Not applicable.

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

Product characteristics: Solid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Not applicable.

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg Other given operational conditions affecting workers Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -. Professional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Grassland averaged mg/kg dwt **EUSES** calculation Not evaluated. 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	Cuomiculon .
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local : Table R16.23, Total release for regional exposure estimation : EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Professional

Justification

Total release for regional

Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Intermittent release. mg/l	Not applicable. Local concentration	Not applicable. PEC sediment (local+regional)	Not applicable. Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	0	14	Table R16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -Professional

Justification

Total release for regional

Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10-3	3.17x10-3	EUSES calculation
Marine water mg/l	2.78x10-4	4.2x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10-10	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10-10	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	2.22x10-11	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10-11	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	4.01x10-11	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

wicro-organism mg/r	пот аррисавіе.	погаррисаріе.	пот арріїсавіе.
Section 3:.2 Workers - Exposure est Contributing scenario controlling we		ergy manipulation of substance	s bound in materials and/or articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0003	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.02	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.03	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

	•		ubstances bound in materials and/or articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0003	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.02	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.03	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 4:: Guidance to check comp	pliance with the exposure s	scenario	
Environment	l	Not available.	
Health		Not available.	

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.



Industrial

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control of	environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor:

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Not available.

4650

100

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 11636 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None. Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

Continuous release.

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region: 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Frequency and duration of use: Continuous release. 220

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to Not applicable.

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

10

None.

1.1x10-3

Not available.

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Not available. Fraction of EU tonnage used in region:

100 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% 25.1 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional only):

Not available.

1.38

6.88x10-4

6.88x10-3

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Technical conditions and measures at process level (source) to prevent release:

Release fraction to wastewater from wide dispersive use:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

Not available

2418

Not available.

220

None.

1.1x10-3

Not available.

Not available.

Not available

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Not applicable. Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 7014 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Continuous release.

5.00x10-3

0.01

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Calendering operations

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use:

Covers daily exposures up to 8 hours (unless stated differently). Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Indoor, industrial setting

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

management supervision controls.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Industrial spraying

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a

minimum efficacy of 90%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 1-4 hours

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Other given operational conditions affecting workers Indoor, industrial setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics:

Amounts used:

Frequency and duration of use:

Human factors not influenced by risk management:

Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Liquid. Covers concentrations up to 15%

Not applicable.

Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor, industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Liquid. Covers concentrations up to 15%

Covers daily exposures up to 8 hours (unless stated differently).

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Transfer of substance or preparation into small containers (dedicated filling line,

Not applicable.

Indoor. industrial setting

including weighing)

Product characteristics:

Amounts used:

Frequency and duration of use:

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 1-4 hours Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Indoor, industrial setting

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion,

pelletisation

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Indoor. industrial setting

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Justification

management supervision controls.

Total release for regional

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	Custinoution
Waste water	day 0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,

PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 155/240

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Justification

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,

PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. **EUSES** calculation 1.13x10-3 **Local concentration** PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	Not evaluated.	6.88x10-3	Local: Table R16.23[REACH] Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	(local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation
Grassland averaged mg/kg dwt	0.091	0.204	EUSES calculation
Groundwater mg/l	Not evaluated.	1.60x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.55x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	2.14x10-3	2.14x10-3	EUSES calculation
Annual deposition mg/m²/d	3.86x10-3	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

preparations containing EA up to 15% - Industrial **Process Category:** PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC011a, ERC12a, ERC12b

Section 3:.2 Workers - Exposure est			
Contributing scenario controlling we (multistage and/or significant contact)		or blending in batch processes	for formulation of preparations* and articles
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.914	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling we		ering operations	
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Triethylenetetramine, TETA		Identified use name: U	Ise of ethylenamines in open processes with high

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,
PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Not applicable Not applicable. Since the substance is not classified for Short term exposure, Systemic, acute effects and therefore, no acute DNEL Combined has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. The ECETOC TRA tool has been used to 0.914 Short term exposure, Local, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 2: Industrial spraying **Route of exposure Contributing scenarios** Justification **Dose/Concentration** The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.1286 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.457 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Not applicable Since the substance is not classified for Long term exposure, Local, Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. Combined acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, 0.914 The ECETOC TRA tool has been used to Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Route of exposure **Contributing scenarios Dose/Concentration** Justification Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.0411 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.548 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, nhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.097	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling w containers at dedicated facilities		er of substance or preparation (c	charging/discharging) from/to vessels/large
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

containers at dedicated facilities Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.914	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

below this value

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,

PROC09, PROC13, PROC14

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.2 Workers - Exposure est			
including weighing)	orker exposure for 5: Transfe	r of substance or preparation in	to small containers (dedicated filling line,
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.914	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling w		ent of articles by dipping and po	uring
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0411	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.548	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
01	N	Mark and Park I	

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Short term exposure, Systemic,

Short term exposure, Systemic,

Dermal

Inhalable

Not applicable

Not applicable

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

has been derived.

has been derived.

preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b,
PROC09, PROC13, PROC14

Since the substance is not classified for

Since the substance is not classified for

acute effects and therefore, no acute DNEL

acute effects and therefore, no acute DNEL

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Combined acute effects and therefore, no acute DNEL

has been derived.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

1.097

Not applicable.

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Short term exposure, Local, Dermal Not applicable.

Contributing scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion,

pelletisation

Dermal

Route of exposure **Contributing scenarios Dose/Concentration** Long term exposure, Systemic, Not applicable. 0.0822

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic, Inhalable

Not applicable.

0.457

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Not applicable. Not applicable

Not evaluated.

Not applicable.

Not applicable.

Not applicable. Not applicable.

Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, **Dermal**

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Inhalable

Short term exposure, Systemic,

Combined

Not applicable Not applicable Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Since the substance is not classified for acute effects and therefore, no acute DNEL

Not applicable.

Not applicable.

has been derived. acute effects and therefore, no acute DNEL

Since the substance is not classified for

Short term exposure, Local, Dermal Not applicable.

Short term exposure, Local,

Inhalable

Not applicable.

0.914

has been derived. The ECETOC TRA tool has been used to estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Industrial

Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14,

PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to 1.10x10-3

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

No air emission controls required; required removal efficiency is 0%.

Soil emission controls are not applicable as there is no direct release to soil.

No wastewater treatment required.

Not available.

Not available.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics:

Amounts used:

Not available. Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Not applicable.

Continuous release.

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Organisational measures to prevent/limit release from site:

plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional only):

Not available. Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100 None. Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

6.88x10-3

6.88x10-4

Release fraction to wastewater from process (initial release prior to RMM):

1.38

Release fraction to air from wide dispersive use (regional

only):

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not available. Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not applicable.

Not available.

Not available.

220

None.

1.1x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Not applicable. Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 7014 Average Local Daily Tonnage (kg/day):

Maximum daily site tonnage (kg/day): Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Not available.

10

None.

0.01

5.00x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Industrial spraying

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

dispersion and exposure:

Organisational measures to prevent/limit releases,

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Other given operational conditions affecting workers Indoor. industrial setting exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line,

Not applicable.

Not applicable.

Not applicable.

Indoor, industrial setting

including weighing)

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management:

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Roller application or brushing

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

removal efficiency of (%): 90%

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers

exposure:

Indoor, industrial setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion,

pelletisation

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Indoor, industrial setting

Not applicable.

Not applicable.

Not applicable.

Other given operational conditions affecting workers

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	TableR16.23 [REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
Marine water mg/l	Not evaluated.	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Justification

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
Marine water mg/l	Not evaluated.	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC011a, ERC12a, ERC12b

Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
Marine water mg/l	Not evaluated.	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local: Table R16.23[REACH], Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
Marine water mg/l	Not evaluated.	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
Marine water mg/l	Not evaluated.	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Justification

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Grassland averaged mg/kg dwt 0.091 0.204 **EUSES** calculation Groundwater mg/l Not evaluated. 1.60x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification During emission mg/m³ **EUSES** calculation 3.55x10-3 Not evaluated. Annual average mg/m³ 2.14x10-3 2.14x10-3 **EUSES** calculation Annual deposition mg/m²/d 3.86x10-3 Not evaluated. **EUSES** calculation Local concentration PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Route of exposure **Contributing scenarios Dose/Concentration Justification**

Long term exposure, Systemic,

Dermal

Not applicable.

0.05

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

The ECETOC TRA tool has been used to

below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.61

The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Combined

Not applicable.

Not applicable.

Not applicable.

Long term exposure, Local, Dermal

Long term exposure, Local, Inhalable

Not evaluated. Not applicable Not applicable. Not applicable.

Since the substance is not classified for

acute effects and therefore, no acute DNEL has been derived.

Not applicable.

Short term exposure, Systemic,

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived

Short term exposure, Systemic,

Inhalable

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic,

Combined

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

1.22

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 1: Industrial spraying

Route of exposure Long term exposure, Systemic, Dermal

Contributing scenarios Not applicable.

Dose/Concentration

Justification

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.61

0.09

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Not applicable.

Not applicable.

Not applicable.

Not evaluated. Not applicable. Long term exposure, Local, Dermal Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2	Workers -	Exposure	estimation
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Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

containers at non-dedicated facilitie	S		
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.09	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.2 Workers - Exposure est	imation		
		r of substance or preparation (c	harging/discharging) from/to vessels/large
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.05	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
including weighing)	orker exposure for 4: Transfe	r of substance or preparation in	to small containers (dedicated filling line,
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.05	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 177/240

Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est Contributing scenario controlling we		annlication or bruching	
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.09	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
Contributing scenario controlling we	orker exposure for 6: Treatme	ent of articles by dipping and pouring	
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.09	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Triethylenetetramine, TETA		exposure potential and evapor prep	ethylenamines in open processes with high ation as most likely exposure form - Use of parations containing EA up to 2% - Industrial PROC07, PROC08a, PROC08b, PROC09,

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local,	Not applicable.	Not applicable.	Not applicable.
Inhalable			
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, nhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Local, Dermal		Not applicable.	Not applicable.
Short term exposure, Local, Inhalable	Not applicable.	1.22	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
			Delow this value
Contributing scenario controlling we pelletisation	orker exposure for 7: Product		by tabletting, compression, extrusion,
pelletisation Route of exposure	orker exposure for 7: Product Contributing scenarios	Dose/Concentration	by tabletting, compression, extrusion, Justification
Contributing scenario controlling wo pelletisation Route of exposure Long term exposure, Systemic,	orker exposure for 7: Product		by tabletting, compression, extrusion, Justification
Contributing scenario controlling wo pelletisation Route of exposure Long term exposure, Systemic, Dermal	orker exposure for 7: Product Contributing scenarios	Dose/Concentration	by tabletting, compression, extrusion, Justification The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are
Contributing scenario controlling we pelletisation	Contributing scenarios Not applicable.	Dose/Concentration 0.05	by tabletting, compression, extrusion, Justification The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Long term exposure, Systemic, Combined
Long term exposure, Local, Dermal Not applicable.

Dermal

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined

Short term exposure, Local, DermalNot applicable.Not applicable.Not applicable.Short term exposure, Local,Not applicable.1.22The ECETOC TI

Short term exposure, Local, Not applicable.

1.22

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2 Workers - Exposure estimation

Long term exposure, Systemic,

Triethylenetetramine, TETA

Inhalable

Contributing scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available

Not applicable.

Route of exposure Contributing scenarios Dose/Concentration Justification

Long term exposure, Systemic, Dermal O.09 The ECETOC TRA tool has been used to estimate workplace exposures unless

mal estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

0.61

below this value

The ECETOC TRA tool has been used to estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value le. Not applicable. Not applicable.

Long term exposure, Systemic, Not applicable. Not applicable. Not applicable.

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19 **Substance supplied to that use in form of:** In a mixture

Sector of end use: SU03
Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local, DermalNot applicable.Not applicable.Not applicable.Long term exposure, Local, InhalableNot applicable.Not applicable.Not applicable.Short term exposure, Systemic,Not applicable.Not applicable.Not applicable.

Dermal Not applicable. Not applicable. Not applicable. Not applicable.

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable.

Combined

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to Inhalable exposures unless

Not applicable.

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Not applicable.

Section 4:: Guidance to check compliance with the exposure scenario

Short term exposure, Systemic,

EnvironmentNot available.HealthNot available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Not applicable.

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC011a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14,

PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to 1.10x10-3

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Not available.

Release fraction to soil from wide dispersive use (regional

Not available.

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% 2560 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

220 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure: Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available

Not available.

Continuous release.

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional only):

Not available. Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255 Maximum daily site tonnage (kg/day): Not available.

Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

10 Local freshwater dilution factor: Local marine water dilution factor: 100 None. Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

RMM):

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

6.88x10-4

6.88x10-3

1.38

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Not applicable.

2418

220

10

None.

1.1x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Not applicable. Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 7014 Average Local Daily Tonnage (kg/day): Maximum daily site tonnage (kg/day):

Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release: Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Not available.

Continuous release.

5.00x10-3

0.01

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

Indoor, industrial setting and professional setting exposure:

Indoor, professional setting Not applicable.

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03. SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Industrial spraying

Liquid. Covers concentrations up to 0.5% **Product characteristics:**

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics:

Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers Indoor, industrial setting

Indoor, industrial setting and professional setting exposure:

Indoor. professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable. Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Liquid. Covers concentrations up to 0.5% **Product characteristics:**

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Indoor. industrial setting and professional setting Indoor. professional setting

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Indoor. industrial setting

Indoor. professional setting

Indoor, industrial setting and professional setting

Other given operational conditions affecting workers

exposure:

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure: Personal protection:

Not applicable. Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 5: Roller application or brushing

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor. industrial setting

Indoor, industrial setting and professional setting exposure:

Indoor. professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

Indoor, industrial setting and professional setting exposure:

Indoor. professional setting Not applicable.

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion,

pelletisation

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Human factors not influenced by risk management:

Not applicable.

Not applicable.

Indoor. industrial setting Other given operational conditions affecting workers

Indoor. industrial setting and professional setting exposure:

Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, industrial setting

Indoor, industrial setting and professional setting exposure:

Indoor. professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Not applicable.

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Total release for regional

PEC sediment (local+regional)

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Release from point source

(local exposure estimation) kg/ exposure estimation kg/day day Waste water 0 0 **EUSES** calculation **Surface water** Not evaluated. 0 **EUSES** calculation air (direct + STP) 4.26 3.5 **EUSES** calculation

Value **Justification** 0 **EUSES** calculation

Not evaluated.

Local concentration

Concentration in sewage (PECstp)

Soil (direct releases only)

Concentration in sewage sludge

mg/kg dwt

EUSES calculation

0

Justification Local concentration PEC aquatic (local+regional) Fresh water mg/l 1.43x10-3 **EUSES** calculation O Marine water mg/l 0 1.42x10-4 **EUSES** calculation Intermittent release. mg/l Not applicable. Not applicable. Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Justification

Justification

Table R16.23[REACH]

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 188/240

Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19
Substance supplied to that use in form of: In a mixture

Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Concentration in sewage (PECstp) **EUSES** calculation Concentration in sewage sludge **EUSES** calculation mg/kg dwt **Local concentration** PEC aquatic (local+regional) **Justification** 0 **EUSES** calculation Fresh water mg/l 1.43x10-3 Marine water mg/l 0 1.42x10-4 **EUSES** calculation Intermittent release. mg/l Not applicable. Not applicable. Not applicable. **Local concentration** PEC sediment (local+regional) **Justification** Fresh water sediment mg/kg dwt Not evaluated. 0.722 **EUSES** calculation Marine water sediment mg/kg dwt Not evaluated. 0.072 **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg Not evaluated. 0.114 **EUSES** calculation Grassland averaged mg/kg dwt Not evaluated. **EUSES** calculation 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation PEC air (local+regional) **Local concentration Justification** During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10⁻⁸ **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Justification Local concentration** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Paleaca from point cource

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	Not evaluated.	6.88x10-3	Local: Table R16.23[REACH], Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Justification

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Release from point source

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.046	0.160	EUSES calculation

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Justification

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09,

PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

EUSES calculation Grassland averaged mg/kg dwt 0.091 0.204 Groundwater mg/l Not evaluated. 1.60x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification During emission mg/m³ **EUSES** calculation 3.55x10-3 Not evaluated. Annual average mg/m³ **EUSES** calculation 2.14x10-3 2.14x10-3 Annual deposition mg/m²/d 3.86x10-3 Not evaluated. **EUSES** calculation Local concentration PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles

(multistage and/or significant contact)

Route of exposure **Contributing scenarios Dose/Concentration Justification**

Long term exposure, Systemic,

Dermal

Not applicable.

0.14

The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.76

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the

highest exposure level is given since the exposure estimates for other PROC are below this value

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Not applicable.

Not applicable.

Not applicable. Not applicable.

Not applicable.

Not applicable.

Not applicable. Not applicable.

Not applicable.

Not applicable. Not applicable.

Short term exposure, Systemic, **Dermal** Short term exposure, Systemic,

Inhalable

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Short term exposure, Systemic,

Combined

Not applicable.

Not applicable.

Not applicable.

Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Dermal Short term exposure, Local,

Inhalable

Not applicable.

1.52

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 1: Industrial spraying

Route of exposure **Contributing scenarios**

Long term exposure, Systemic,

Dermal

Not applicable.

Dose/Concentration

Justification

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Not applicable.

0.30

0.11

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

exposure estimates for other PROC are below this value

Not applicable.

Long term exposure, Systemic,

Combined

Dermal

Long term exposure, Local, Dermal Long term exposure, Local, Inhalable

Not applicable. Not applicable.

Not applicable.

Not applicable. Not applicable.

Not applicable. Not applicable.

Short term exposure, Systemic,

Not applicable.

Not applicable. Not applicable.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03. SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Combined** Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 2: Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non-dedicated facilities

Route of exposure Contributing scenarios Dose/Concentration Justification The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.14 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.76 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Long term exposure, Local, Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Not applicable. Short term exposure, Systemic, Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable.

Short term exposure, Local, Not applicable. 1.52 The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Inhalable

Contributing scenario controlling worker exposure for 3: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Route of exposure **Contributing scenarios Dose/Concentration** Justification Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.14 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.76 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

Substance supplied to that use in form of: In a mixture Sector of end use: SU03. SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. The ECETOC TRA tool has been used to 1.52 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **Contributing scenarios** Route of exposure **Dose/Concentration Justification** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.14 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value 0.76 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Not applicable. Not applicable. Not applicable. Long term exposure, Systemic, **Combined** Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable. Not applicable.

Not applicable.

Short term exposure, Systemic, Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. 1.52

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2 Workers - Exposure estimation

Inhalable

Inhalable

Contributing scenario controlling worker exposure for 5: Roller application or brushing

Route of exposure Contributing scenarios Dose/Concentration Justification Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.14 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value 0.76 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable. Not applicable. Not applicable.

Triethylenetetramine, TETA

Inhalable

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03. SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined **Short term exposure, Local, Dermal** Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. The ECETOC TRA tool has been used to 1.52 Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring Route of exposure **Contributing scenarios Dose/Concentration** Justification Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.14 estimate workplace exposures unless **Dermal** otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0..76 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Not applicable. Long term exposure, Systemic, Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Not applicable.

Long term exposure, Local, Inhalable

Short term exposure, Systemic, **Dermal** Short term exposure, Systemic,

Inhalable Short term exposure, Systemic, Combined

Short term exposure, Local, Dermal Short term exposure, Local, Inhalable

Not applicable.

Not applicable. Not applicable.

Not applicable.

Not applicable. Not applicable. Not applicable. Not applicable.

Not applicable. Not applicable.

Not applicable. 1.52

Not applicable.

Not applicable.

Not applicable.

Justification

Not applicable. The ECETOC TRA tool has been used to

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation

Route of exposure Long term exposure, Systemic, Dermal

Contributing scenarios Not applicable.

0.14

Dose/Concentration

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Long term exposure, Systemic, Inhalable

Not applicable.

0.76

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value Not applicable.

Long term exposure, Systemic,

Long term exposure, Local, Dermal

Not applicable. Long term exposure, Local, Inhalable

Not applicable.

Not applicable.

Not applicable.

Not applicable. Not applicable. Not applicable. Not applicable.

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 0.5% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

> Substance supplied to that use in form of: In a mixture Sector of end use: SU03. SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

195/240

Triethylenetetramine, TETA

Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Dermal** Short term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable

Short term exposure, Systemic, Not applicable. Not applicable. Combined

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, The ECETOC TRA tool has been used to Not applicable. 1.52

> estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available

Route of exposure **Contributing scenarios Dose/Concentration** The ECETOC TRA tool has been used to 0.14

Long term exposure, Systemic, Not applicable.

estimate workplace exposures unless **Dermal** otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.76

estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value Not applicable. Long term exposure, Systemic, Not applicable. Not applicable.

Combined

Inhalable

Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable.

Long term exposure, Local, Not applicable Not applicable. Since the substance is not classified for Inhalable

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Dermal** acute effects and therefore, no acute DNEL

has been derived.

Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. Inhalable

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Combined

has been derived.

Short term exposure, Local, Dermal Not applicable Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

1.52

The ECETOC TRA tool has been used to

Not applicable. Short term exposure, Local, Inhalable estimate workplace exposures unless

otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Industrial

Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Substance supplied to that use in form of: In a mixture

Sector of end use: SU03. SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.	1: Contro	of environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

1.10x10-3

Not available.

Not available.

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%): Conditions and measures related to municipal sewage treatment

plant:

Not available.

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 25% - Professional Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available

Not available.

Not available.

6.88x10-3

Not available.

Not applicable.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to

6.88x10-4

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release 1.38

prior to RMM):

Release fraction to air from wide dispersive use (regional

Not available. only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Soil emission controls are not applicable as there is no direct release to soil.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Treat air emission to provide a typical removal efficiency of No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

plant:

Not available

Continuous release.

1.1x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

> preparations containing EA up to 25% - Professional Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%): If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

5.00x10-3

0.01

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Product characteristics: Liquid. Covers percentage substance in the product up to 25%.

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 15 min. to < 1 hour

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Other given operational conditions affecting workers

exposure:

Not applicable.

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a

minimum efficacy of 95%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 25%

Amounts used: Not applicable.

Frequency and duration of use: Avoid carrying out operation for more than 15 minutes.

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers Indoor, professional setting

exposure:

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

> preparations containing EA up to 25% - Professional Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

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Triethylenetetramine, TETA

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 95%

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Surface water air (direct + STP) 0 3.1 EUSES calculation air (direct + STP) 0 0 3.1 EUSES calculation Soil (direct releases only) 0 0 Table R16.23[REACH] Value Justification Concentration in sewage (PECstp) 0 EUSES calculation mg/l Concentration in sewage sludge mg/kg dwt Local concentration PEC aquatic (local+regional) Justification Fresh water mg/l 0 1.43x10-3 EUSES calculation Marine water mg/l Not applicable. Not evaluated. 0.722 EUSES calculation Marine water sediment mg/kg dwt Not evaluated. 0.072 EUSES calculation Marine water sediment mg/kg dwt Not evaluated. 0.114 EUSES calculation Agricultural soil averaged mg/kg dwt Not evaluated. 0.114 EUSES calculation Grassland averaged mg/kg dwt Not evaluated. 0.114 EUSES calculation Grassland averaged mg/kg dwt Not evaluated. 0.114 EUSES calculation During emission mg/m³ Not evaluated. 1.13x10-3 EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. EUSES calculation Annual average mg/m³ Not evaluated. Not evaluated. EUSES calculation Annual deposition mg/m³/d Not evaluated. Not evaluated. EUSES calculation PEC aquatic (local+regional) Justification		Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
air (direct + STP) Soil (direct releases only) O Soil (direct releases only) O Value Justification EUSES calculation EUSES calculation EUSES calculation BUSES calculation EUSES calculation Fresh water mg/l Marine water sediment mg/kg dwt Marine water sediment mg/kg dwt Mot evaluated. Agricultural soil averaged mg/kg dwt Grassland averaged mg/kg dwt Mot evaluated. Cocal concentration During emission mg/m³ Annual deposition mg/m²/d Not evaluated. Not ev	Waste water	0	0	EUSES calculation
Soil (direct releases only) Value Justification EUSES calculation EUSES calculation BUSES calculation EUSES calculation EUSES calculation BUSES calculation Fresh water mg/l Concentration in sewage sludge mg/kg dwt Local concentration Fresh water mg/l Not applicable. Local concentration PEC aquatic (local+regional) Justification EUSES calculation Buses calculation Fresh water mg/l Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not evaluated. Not evaluated. O.722 EUSES calculation Fresh water sediment mg/kg dwt Not evaluated. Not evaluated. Agricultural soil averaged mg/kg dwt Grassland averaged mg/kg dwt Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. Not evaluated. Not evaluated. During emission mg/m³ Not evaluated. PEC aquatic (local+regional) Justification EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. PEC aquatic (local+regional) Justification EUSES calculation EUSES calculation PEC aquatic (local+regional) Justification EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. Dustification PEC aquatic (local+regional) Justification	Surface water	Not evaluated.	•	
Value Concentration in sewage (PECstp) O EUSES calculation EUSES calculation EUSES calculation DEUSES calculation EUSES calculation EUSES calculation PEC aquatic (local+regional) Justification Fresh water mg/l O 1.43x10-3 EUSES calculation Marine water mg/l Not applicable. Local concentration PEC sediment (local+regional) Justification Fresh water sediment mg/kg dwt Not evaluated. Not evaluated. O.722 EUSES calculation Marine water sediment mg/kg dwt Not evaluated. D.072 EUSES calculation PEC soil (local+regional) Justification PEC soil (local+regional) Justification Agricultural soil averaged mg/kg dwt Not evaluated. O.114 EUSES calculation Agricultural soil averaged mg/kg dwt Not evaluated. O.114 EUSES calculation During emission mg/m³ Not evaluated. EUSES calculation EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation PEC air (local+regional) Justification	•	0	3.1	
Concentration in sewage (PECstp) mg/l Concentration in sewage sludge mg/kg dwt Local concentration Fresh water mg/l Not applicable. Local concentration Fresh water sediment mg/kg dwt Not evaluated. Local concentration Agricultural soil averaged mg/kg dwt Not evaluated. Croundwater mg/l Not evaluated. Not evaluated. Not evaluated. Croundwater mg/l Not evaluated. PEC air (local+regional) Justification During emission mg/m³ Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Dustification PEC air (local+regional) Justification Not evaluated. EUSES calculation PEC air (local+regional) Justification PEC air (local+regional) Justification Not evaluated. Not evaluated. Not evaluated. PEC aquatic (local+regional) Justification	Soil (direct releases only)	0	0	Table R16.23[REACH]
Concentration in sewage sludge mg/kg dwt Local concentration PEC aquatic (local+regional) Justification Fresh water mg/l 0 1.43x10-3 EUSES calculation Marine water mg/l Not applicable. Local concentration Not applicable. Not evaluated. 0.722 EUSES calculation PEC soil (local+regional) Justification Apricultural soil averaged mg/kg Not evaluated. Not evaluated. 1.13x10-3 EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. EUSES calculation PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. EUSES calculation PEC air (local+regional) Justification Dustification PEC aquatic (local+regional) Justification		Value	Justification	
Local concentration PEC aquatic (local+regional) Justification	Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Fresh water mg/l Marine water mg/l Not applicable. Local concentration Fresh water sediment mg/kg dwt Mot evaluated. Mot evaluated. Mot evaluated. Grassland averaged mg/kg dwt Grassland averaged mg/l During emission mg/m³ Annual average mg/m³ Annual deposition mg/m²/d Mot applicable. Not applicable. EUSES calculation Not evaluated. EUSES calculation Not evaluated. EUSES calculation Not evaluated. EUSES calculation PEC aquatic (local+regional) Justification	Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
Marine water mg/l Intermittent release. mg/l Not applicable. N		Local concentration	PEC aquatic (local+regional)	Justification
Intermittent release. mg/l Not applicable. Local concentration PEC sediment (local+regional) Justification Fresh water sediment mg/kg dwt Not evaluated. Not evaluated. Local concentration PEC soil (local+regional) Justification Agricultural soil averaged mg/kg Not evaluated. Crassland averaged mg/kg dwt Not evaluated. Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. Local concentration During emission mg/m³ Not evaluated. During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. EUSES calculation PEC air (local+regional) Not evaluated. EUSES calculation PUSES calculation Not evaluated. EUSES calculation PUSES calculation Not evaluated. EUSES calculation PUSES calculation Not evaluated. EUSES calculation During emission mg/m²/d Not evaluated. Not evaluated. PEC aquatic (local+regional) Justification	Fresh water mg/l	0	1.43x10-3	EUSES calculation
Local concentration Fresh water sediment mg/kg dwt Not evaluated. Marine water sediment mg/kg dwt Not evaluated. Local concentration Not evaluated. Local concentration PEC sediment (local+regional) 0.722 EUSES calculation EUSES calculation PEC soil (local+regional) Justification Agricultural soil averaged mg/kg dwt Not evaluated. Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. Local concentration During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation PEC air (local+regional) Justification Not evaluated. EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation PEC aquatic (local+regional) Justification	Marine water mg/l	0	1.42x10-4	EUSES calculation
Fresh water sediment mg/kg dwt Marine water sediment mg/kg dwt Not evaluated. Local concentration Agricultural soil averaged mg/kg dwt Grassland averaged mg/kg dwt Groundwater mg/l Local concentration Not evaluated. Not evaluated. 0.114 EUSES calculation EUSES calculation 0.114 EUSES calculation Busification Coundwater mg/l Not evaluated. 1.13x10-3 EUSES calculation EUSES calculation FEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Annual average mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation FEC air (local+regional) Not evaluated. EUSES calculation EUSES calculation EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation EUSES calculation PEC aquatic (local+regional) Justification	Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
Marine water sediment mg/kg dwt Not evaluated. Local concentration Agricultural soil averaged mg/kg dwt Not evaluated. Not evaluated. O.114 EUSES calculation BUSES calculation O.114 EUSES calculation O.114 EUSES calculation O.114 EUSES calculation Groundwater mg/l Not evaluated. I.13x10-3 EUSES calculation During emission mg/m³ Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation Not evaluated. EUSES calculation EUSES calculation PEC air (local+regional) Not evaluated. EUSES calculation EUSES calculation Annual deposition mg/m²/d Not evaluated. PEC aquatic (local+regional) Justification		Local concentration	PEC sediment (local+regional)	Justification
Local concentration Agricultural soil averaged mg/kg dwt Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. EUSES calculation Annual average mg/m³ Not evaluated. Not evaluated. EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation PEC aquatic (local+regional) Justification	Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Agricultural soil averaged mg/kg dwt Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. Local concentration During emission mg/m³ Annual average mg/m³ Annual deposition mg/m²/d Not evaluated. Dusing emission mg/m³ Not evaluated. Dusification PEC aquatic (local+regional) Justification	Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
dwt Grassland averaged mg/kg dwt Not evaluated. O.114 EUSES calculation Groundwater mg/l Not evaluated. Local concentration During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation Justification EUSES calculation EUSES calculation EUSES calculation EUSES calculation Not evaluated. Not evaluated. Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation PEC aquatic (local+regional) Justification		Local concentration	PEC soil (local+regional)	Justification
Groundwater mg/l Not evaluated. Local concentration PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. EUSES calculation EUSES calculation 2.93x10-8 EUSES calculation EUSES calculation Not evaluated. Not evaluated. Not evaluated. EUSES calculation PEC aquatic (local+regional) Justification	Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Local concentration PEC air (local+regional) Justification During emission mg/m³ Not evaluated. Not evaluated. EUSES calculation Annual average mg/m³ Not evaluated. 2.93x10-8 EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation Local concentration PEC aquatic (local+regional) Justification	Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
During emission mg/m³Not evaluated.Not evaluated.EUSES calculationAnnual average mg/m³Not evaluated.2.93x10-8EUSES calculationAnnual deposition mg/m²/dNot evaluated.Not evaluated.EUSES calculationLocal concentrationPEC aquatic (local+regional)Justification	Groundwater mg/I	Not evaluated.	1.13x10-3	EUSES calculation
Annual average mg/m³ Not evaluated. 2.93x10-8 EUSES calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation Local concentration PEC aquatic (local+regional) Justification		Local concentration	PEC air (local+regional)	Justification
Annual deposition mg/m²/d Not evaluated. Not evaluated. EUSES calculation Local concentration PEC aquatic (local+regional) Justification	During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Local concentration PEC aquatic (local+regional) Justification	Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
	Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
Micro-organism mg/l Not applicable. Not applicable. Not applicable.		Local concentration	PEC aquatic (local+regional)	Justification
	Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 203/240

Section 3:.1 Environment - Exposu	re estimation
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Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local : Table R16.23[REACH] , Total release for regional exposure estimation : EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.6	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	Not evaluated.	14	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10 ⁻³	3.17x10 ⁻³	EUSES calculation
Marine water mg/l	2.78x10 ⁻⁴	4.2x10 ⁻⁴	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10 ⁻¹⁰	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10 ⁻¹⁰	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10 ⁻³	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	2.22x10 ⁻¹¹	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10 ⁻¹¹	2.93x10 ⁻⁸	EUSES calculation
Annual deposition mg/m²/d	4.01x10 ⁻¹¹	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant contact)

Dose/Concentration

Contributing scenarios

Long term exposure, Systemic, Dermal	Not applicable.	0.0685714	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.365575	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Route of exposure

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Justification

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Dermal acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. acute effects and therefore, no acute DNEL **Combined** has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 0.73115 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 1: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Contributing scenarios Route of exposure **Dose/Concentration Justification** The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.0685714 **Dermal** estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.45697 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Since the substance is not classified for Long term exposure, Local, Not applicable Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Since the substance is not classified for Not applicable Not applicable. **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived Since the substance is not classified for Not applicable Not applicable. Short term exposure, Systemic, Combined acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Dermal Not applicable. Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. 0.91393 The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

below this value

Process Category: PROC05, PROC08a

exposure estimates for other PROC are

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available.

Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 25% - Professional

Process Category: PROC05, PROC08a

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11 Substance supplied to that use in form of: In a mixture Sector of end use: SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.	1: Contro	of environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Not available.

1.10x10-3

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%): Conditions and measures related to municipal sewage treatment

plant:

Not available.

Continuous release.

220

10

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 **Emission Days (days/year):**

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 15% - Professional Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of (%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of ³ (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

0

1.1x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100
Fraction of Regional tonnage used locally: 25%
Annual site tonnage (tonnes/year): 25.1
Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day):

Frequency and duration of use:

Not available.

Continuous release.

Emission Days (days/year): 20

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to 6.88x10-4

Release fraction to soil from process (initial release prior to 6.88x10-3 RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional Not available.

only):

Release fraction to soil from wide dispersive use (regional Not available.

Release fraction to wastewater from wide dispersive use: Not available.

Technical conditions and measures at process level (source) to Not applicable. prevent release:

Technical on-site conditions and measures to reduce or limit Soil emission controls are not applicable as there is no direct release to soil. Soil emission controls are not applicable as there is no direct release to soil.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11
Substance supplied to that use in form of: In a mixture
Sector of end use: SU22

Subsequent service life relevant for that use: No. Release Category: ERC01, ERC02, ERC04, ERC05,

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Treat air emission to provide a typical removal efficiency of No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Not available Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

plant:

Not available.

10

1.1x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 15% - Professional Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

5.00x10-3

0.01

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 15 min. to < 1 hour

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

exposure: Technical conditions and measures at process level

Not applicable.

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Indoor, professional setting

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Roller application or brushing

Product characteristics: Liquid. Covers concentrations up to 15%

Amounts used: Not applicable.

Human factors not influenced by risk management:

Other given operational conditions affecting workers exposure:

Exposure duration per day: 15 min. to < 1 hour

Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Frequency and duration of use:

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure: Personal protection:

Not applicable.

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a

minimum efficacy of 95%

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 2: Non industrial spraying

Product characteristics: Liquid. Covers concentrations up to 10%

Amounts used: Not applicable.

Frequency and duration of use: Exposure duration per day: 15 min. to < 1 hour

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other given operational conditions affecting workers Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Organisational measures to prevent/limit releases,

dispersion and exposure:

Personal protection:

Not applicable.

Use the following local exhaust ventilation types: Treat air emission to provide a typical

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

Justification

management supervision controls.

Total release for regional

exposure estimation kg/day

removal efficiency of (%): 90%

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Release from point source

(local exposure estimation) kg/

day **Waste water** 0 0 **EUSES** calculation **EUSES** calculation **Surface water** Not evaluated. 0 4 26 EUSES calculation air (direct + STP) 35 Soil (direct releases only) Not evaluated. Table:R16.23 [REACH] Λ Value **Justification** Concentration in sewage (PECstp) 0 **EUSES** calculation Concentration in sewage sludge **EUSES** calculation mg/kg dwt PEC aquatic (local+regional) **Justification** Local concentration Fresh water mg/l **EUSES** calculation 1.43x10-3 Marine water mg/l 1.42x10-4 **EUSES** calculation Not applicable. Intermittent release, mg/l Not applicable. Not applicable. Local concentration PEC sediment (local+regional) **Justification** Fresh water sediment mg/kg dwt Not evaluated. 0.722 **EUSES** calculation Marine water sediment mg/kg dwt Not evaluated 0.072 **EUSES** calculation **Local concentration** PEC soil (local+regional) Justification Agricultural soil averaged mg/kg 0.021 0.135 **EUSES** calculation Grassland averaged mg/kg dwt 0.041 0.155 **FUSES** calculation Groundwater mg/l Not evaluated. EUSES calculation 1.35x10-3 **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ 1.18x10-3 Not evaluated. **EUSES** calculation Annual average mg/m³ 9.74x10-4 9.74x10-4 **EUSES** calculation Annual deposition mg/m²/d 1.76x10-4 Not evaluated. **EUSES** calculation **Local concentration Justification** PEC aquatic (local+regional)

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 15% - Professional Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Total release for regional

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

Justification

preparations containing EA up to 15% - Professional Process Category: PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

EUSES calculation Agricultural soil averaged mg/kg Not evaluated. 0.114 Grassland averaged mg/kg dwt **EUSES** calculation Not evaluated. 0.114 Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ Not evaluated. Not evaluated. **EUSES** calculation Annual average mg/m³ Not evaluated. 2.93x10-8 **EUSES** calculation Annual deposition mg/m²/d Not evaluated. Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	Not evaluated.	6.88x10-3	Local: Table R16.23[REACH] Total release for regional exposure estimation: EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	(local exposure estimation) kg/	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp)	0	EUSES calculation	

Triethylenetetramine, TETA

mg/l

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11
Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	Not evaluated.	0	Local : TableR16.23
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.18	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10 ⁻⁴	3.17x10 ⁻³	EUSES calculation
Marine water mg/l	2.78x10 ⁻⁴	4.2x10 ⁻⁴	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10 ⁻¹⁰	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10 ⁻¹⁰	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10 ⁻³	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m ³	2.22x10 ⁻¹¹	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10 ⁻¹¹	2.93x10 ⁻⁸	EUSES calculation
Annual deposition mg/m²/d	4.01x10 ⁻¹¹	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

Process Category: PROC08a, PROC10, PROC11 Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3:.2 Workers - Exposure esti Contributing scenario controlling we containers at non-dedicated facilities	orker exposure for 0: Transfe	r of substance or preparation (c	harging/discharging) from/to vessels/large
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0411	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Combined	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Dermal	Not applicable.	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Local, Inhalable	Not applicable.	0.914	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Section 3:.2 Workers - Exposure est	imation		
Contributing scenario controlling we	orker exposure for 1: Roller a	pplication or brushing	
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.0822	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.457	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not evaluated.	Not applicable.	Not applicable.
Long term exposure, Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.
Short term exposure, Systemic, Inhalable	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 15% - Professional

preparations containing EA up to 15% - Professional **Process Category:** PROC08a, PROC10, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Short term exposure, Systemic, Combined

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local, Dermal Not applicable.

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

0.914

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 2: Non industrial spraying

Route of exposure Long term exposure, Systemic,

Contributing scenarios Not applicable.

Dose/Concentration

Justification

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Long term exposure, Systemic,

Inhalable

Dermal

Not applicable.

0.121

0.214

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value Not applicable.

Long term exposure, Systemic,

Combined

Long term exposure, Local, Dermal Long term exposure, Local,

Inhalable

Not applicable. Not applicable

Not evaluated.

Not applicable. Not applicable.

Not applicable.

Since the substance is not classified for Not applicable.

acute effects and therefore, no acute DNEL

has been derived.

Short term exposure, Systemic, **Dermal**

Short term exposure, Systemic,

Not applicable

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

Since the substance is not classified for

has been derived.

Short term exposure, Systemic, Not applicable Not applicable.

Inhalable

Combined

Not applicable

Not applicable.

acute effects and therefore, no acute DNEL has been derived.

Since the substance is not classified for

Short term exposure, Local, Dermal Not applicable.

Not applicable.

acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for

acute effects and therefore, no acute DNEL has been derived.

Short term exposure, Local,

Inhalable

Not applicable.

0.243

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

below this value

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available. Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

Environment Not applicable. Health Not applicable. **Additional Good Practices** Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 15% - Professional Process Category: PROC08a, PROC10, PROC11 Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Section 2.1:	Control of	environmental	exposure
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Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

only):

Release fraction to air from wide dispersive use (regional Not available.

Release fraction to soil from wide dispersive use (regional

only):

Not available.

prevent release:

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to Not applicable.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 3 (%):

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Not available.

1.10x10-3

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 219/240 Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only): Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

plant:

Continuous release.

220

10

1.10x10-3

Not available.

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available

Not available. Not applicable.

Not available.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available.

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to

6.88x10-4

Release fraction to soil from process (initial release prior to 6.88x10-3 RMM):

Release fraction to wastewater from process (initial release 1.38

prior to RMM):

Release fraction to air from wide dispersive use (regional Not available.

only):

Release fraction to soil from wide dispersive use (regional Not available.

Release fraction to wastewater from wide dispersive use: Not available. Technical conditions and measures at process level (source) to Not applicable.

prevent release:

Technical on-site conditions and measures to reduce or limit Soil emission controls are not applicable as there is no direct release to soil. discharges, air emissions and releases to soil:

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Treat air emission to provide a typical removal efficiency of No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge) =>37.4

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

Not available. the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Not available Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

> preparations containing EA up to 2% - Professional Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

plant:

0.01

5.00x10-3

Not available.

Not available.

Not available. Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Other given operational conditions affecting workers

exposure:

Not applicable.

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Use the following local exhaust ventilation types: Treat air emission to provide a typical

removal efficiency of (%): 90%

Indoor, professional setting

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection: Wear chemical-resistant gloves (tested to EN374) in combination with specific activity

training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive

management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Non industrial spraying

Product characteristics: Liquid. Covers concentrations up to 2%

Amounts used: Not applicable.

Frequency and duration of use: Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 2% - Professional Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b 223/240 Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls. Wear appropriate respiratory protection. with a minimum efficacy of 90%

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	Not evaluated.	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	Not evaluated.	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

1	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Release from point source

	(local exposure estimation) kg/ day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	Not evaluated.	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Total release for regional

Justification

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22 Subsequent service life relevant for that use: No.

Section 3:.1	Environment -	Exposure	estimation
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Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local : Table R16.23[REACH] , Total release for regional exposure estimation : EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	Not evaluated.	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Release from point source Total release for regional

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	(local exposure estimation) kg/	exposure estimation kg/day	
Waste water	day 0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	Not evaluated.	14	Local : TableR16.23
Con (uncorreleases only)	Value	Justification	Loodi . Tablett 10.20
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10-3	3.17x10-3	EUSES calculation
Marine water mg/l	2.78x10-4	4.2x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10-10	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10-10	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	2.22x10-11	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10-11	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	4.01x10-11	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.09	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.61	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Justification

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable. Not applicable Long term exposure, Local, Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived Since the substance is not classified for Not applicable. Short term exposure, Systemic, Not applicable acute effects and therefore, no acute DNEL **Combined** has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 1: Non industrial spraying **Contributing scenarios Dose/Concentration** Justification **Route of exposure** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.21 estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.15 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable. Since the substance is not classified for Long term exposure, Local, Not applicable Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. **Combined** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 0.30 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

below this value

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available.

Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 2% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b



Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition Multi-constituent substance **Product name** Triethylenetetramine, TETA

Section 1:: Title

Short title of the exposure scenario/List of use descriptors Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation

as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 2:: Operational conditions and risk management measures

Contion	24.	Control	environmental	OVERGUIEG
Section	Z. I.	COMBOIO	environinental	exposure

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use:

Technical conditions and measures at process level (source) to prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil: Treat air emission to provide a typical removal efficiency of

(%): Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of 3 (%):

Not available.

4650

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

1.10x10-3

Not available.

Not available.

Not available.

Not applicable.

Not available.

No wastewater treatment required.

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

(%):

Treat on-site wastewater (prior to receiving water discharge)

to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available 10230 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636 Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environment factors not influenced by risk management:

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to RMM):

Release fraction to soil from process (initial release prior to RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Not available. Not applicable.

Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

Not available.

Not available

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region:

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Maximum daily site tonnage (kg/day): Not available. Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional only):

Release fraction to soil from wide dispersive use (regional

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Not available.

6.88x10-4

6.88x10-3

1.38

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Treat air emission to provide a typical removal efficiency of No air emission controls required; required removal efficiency is 0%.

Treat on-site wastewater (prior to receiving water discharge) =>37.4 to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Not available.

Conditions and measures related to municipal sewage treatment

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product characteristics:

Amounts used:

Fraction of EU tonnage used in region: Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Maximum daily site tonnage (kg/day): Not available Frequency and duration of use:

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 Other given operational conditions affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to RMM):

Emission Days (days/year):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

prevent release:

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide

the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

Not available.

Continuous release.

1.1x10-3

Not available.

Not available

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

No wastewater treatment required.

Not available.

Section 2.1: Control of environmental exposure

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product characteristics: Not applicable.

Amounts used:

Fraction of EU tonnage used in region: Not available. Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of

preparations containing EA up to 0.5% - Professional Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Average Local Daily Tonnage (kg/day): 7014

Maximum daily site tonnage (kg/day): Not available. Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environment factors not influenced by risk management:

Local freshwater dilution factor: 10 Local marine water dilution factor: 100 None.

Other given operational conditions affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

Release fraction to air from wide dispersive use (regional

only):

Release fraction to soil from wide dispersive use (regional

only):

Release fraction to wastewater from wide dispersive use: Technical conditions and measures at process level (source) to

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency of

Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of 3 (%):

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ³ (%):

Conditions and measures related to municipal sewage treatment

plant:

5.00x10-3

0.01

Not available.

Not available.

Not available.

Not applicable.

Soil emission controls are not applicable as there is no direct release to soil.

No air emission controls required; required removal efficiency is 0%.

=>37.4

Not available.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Other given operational conditions affecting workers

exposure:

Not applicable.

Technical conditions and measures at process level (source) to prevent release:

Technical conditions and measures to control dispersion

from source towards the worker:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

Not applicable.

Personal protection:

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 2.2: Control of worker exposure

Contributing scenario controlling worker exposure for 1: Non industrial spraying

Product characteristics: Liquid. Covers concentrations up to 0.5%

Amounts used: Not applicable.

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management: Other given operational conditions affecting workers

exposure:

Default breathing volume Light work 10 m³/d Default Body weight: Workers: 70 kg

Indoor, professional setting

Technical conditions and measures at process level

(source) to prevent release:

Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Technical conditions and measures to control dispersion from source towards the worker:

Organisational measures to prevent/limit releases, dispersion and exposure:

Personal protection:

Use the following local exhaust ventilation types: Treat air emission to provide a typical removal efficiency of (%): 90%

Not applicable.

Wear chemical-resistant gloves (tested to EN374) in combination with specific activity training. Wear chemical-resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Section 3:: Exposure estimation

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 0: Ashless dispersant

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	0.021	0.135	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	1.18x10-3	Not evaluated.	EUSES calculation
Annual average mg/m³	9.74x10-4	9.74x10-4	EUSES calculation
Annual deposition mg/m²/d	1.76x10-4	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 1: Use as an epoxy curing agent

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Release Category: FRC01_FRC02_FRC04_FRC05

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m ³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 2: Epoxy curing agent in paint

	Release from point source (local exposure estimation) kg/ day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Grassland averaged mg/kg dwt	Not evaluated.	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	Not evaluated.	Not evaluated.	EUSES calculation
Annual average mg/m³	Not evaluated.	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	Not evaluated.	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section	3:.1 Env	ironment - I	Exposure est	imation
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Contributing scenario controlling environmental exposure for 3: Laboratory chemicals

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.502	1.38	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Local : Table R16.23[REACH] , Total release for regional exposure estimation : EUSES calculation
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.157	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	237	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0.016	0.017	EUSES calculation
Marine water mg/l	1.56x10-3	1.70x10-3	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	8.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.860	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	8.20x10-8	0.114	EUSES calculation
Grassland averaged mg/kg dwt	1.62x10-7	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	6.98x10-8	Not evaluated.	EUSES calculation
Annual average mg/m³	3.82x10-9	3.31x10-8	EUSES calculation
Annual deposition mg/m²/d	6.92x10-9	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 4: Processing aid

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0	0	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	0	1.43x10-3	EUSES calculation
Marine water mg/l	0	1.42x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	0.722	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.072	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c,

ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Agricultural soil averaged mg/kg dwt	4.26x10-5	0.114	EUSES calculation
Grassland averaged mg/kg dwt	8.44x10-5	0.114	EUSES calculation
Groundwater mg/I	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	3.31x10-6	Not evaluated.	EUSES calculation
Annual average mg/m³	2.00x10-6	2.02x10-6	EUSES calculation
Annual deposition mg/m²/d	3.6x10-6	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.1 Environment - Exposure estimation

Contributing scenario controlling environmental exposure for 5: Use of coatings and adhesives

	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
Waste water	0.056	28	EUSES calculation
Surface water	Not evaluated.	0	EUSES calculation
air (direct + STP)	0	0	EUSES calculation
Soil (direct releases only)	0	14	Table R16.23[REACH]
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0.018	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	26.5	EUSES calculation	
	Local concentration	PEC aquatic (local+regional)	Justification
Fresh water mg/l	1.74x10-3	3.17x10-3	EUSES calculation
Marine water mg/l	2.78x10-4	4.2x10-4	EUSES calculation
Intermittent release. mg/l	Not applicable.	Not applicable.	Not applicable.
	Local concentration	PEC sediment (local+regional)	Justification
Fresh water sediment mg/kg dwt	Not evaluated.	1.60	EUSES calculation
Marine water sediment mg/kg dwt	Not evaluated.	0.212	EUSES calculation
	Local concentration	PEC soil (local+regional)	Justification
Agricultural soil averaged mg/kg dwt	4.75x10-10	0.114	EUSES calculation
Grassland averaged mg/kg dwt	9.4x10-10	0.114	EUSES calculation
Groundwater mg/l	Not evaluated.	1.13x10-3	EUSES calculation
	Local concentration	PEC air (local+regional)	Justification
During emission mg/m³	2.22x10-11	Not evaluated.	EUSES calculation
Annual average mg/m³	2.22x10-11	2.93x10-8	EUSES calculation
Annual deposition mg/m²/d	4.01x10-11	Not evaluated.	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Micro-organism mg/l	Not applicable.	Not applicable.	Not applicable.

Section 3:.2 Workers - Exposure estimation

Contributing scenario controlling worker exposure for 0: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	0.14	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Inhalable	Not applicable.	0.76	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Release Category: FRC01_FRC02_FRC04_FRC05

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for **Combined** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Dermal Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 1.52 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Section 3:.2 Workers - Exposure estimation Contributing scenario controlling worker exposure for 1: Non industrial spraying **Contributing scenarios Dose/Concentration** Justification **Route of exposure** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. 0.30 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. **Combined** Long term exposure, Local, Dermal Not applicable. Not evaluated. Not applicable. Since the substance is not classified for Long term exposure, Local, Not applicable Not applicable. Inhalable acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable. Not applicable **Dermal** acute effects and therefore, no acute DNEL has been derived. Short term exposure, Systemic, Not applicable Not applicable. Since the substance is not classified for Inhalable acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Systemic, Not applicable Not applicable. Combined acute effects and therefore, no acute DNEL has been derived. Since the substance is not classified for Short term exposure, Local, Dermal Not applicable Not applicable. acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 1.22 The ECETOC TRA tool has been used to Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the highest exposure level is given since the exposure estimates for other PROC are below this value

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 4:: Guidance to check compliance with the exposure scenario

Environment Not available.
Health Not available.

Section 5. Remarks: Additional good practice advice beyond the REACH CSA

EnvironmentNot applicable.HealthNot applicable.Additional Good PracticesNot applicable.

Triethylenetetramine, TETA

Identified use name: Use of ethylenamines in open processes with high exposure potential and evaporation as most likely exposure form - Use of preparations containing EA up to 0.5% - Professional

Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b