SAFETY DATA SHEET



Triethylenetetramine, TETA

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

1.1 Product identifier

Product name : Triethylenetetramine, TETA

 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

Product type : Liquid.

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

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

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

agents

Area of application : Industrial applications.

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 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

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

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 : AkzoNobel Chemicals-Deventer-NLT +31 570 679211 (24hours/7days)

F +31 570 679801

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. 1A, 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

Hazard statements : Harmful if swallowed.

Harmful 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

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SECTION 2: Hazards identification

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 : Not applicable.

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

: Not applicable.

SECTION 3: Composition/information on ingredients

Substance/mixture

: Multi-constituent substance

			<u>Classification</u>		
Product/ingredient name	Identifiers	%	67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	Туре
Amines, polyethylenepoly-, triethylenetetramine fraction	REACH #: 01- 2119487919-13 EC: 292-588-2 CAS: 90640-67-8 Index: 612-065-00-8	100	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1A, 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 Eye Dam. 1, H318 STOT SE 1, H370	[A]
			See section 16 for the full text of the R- phrases declared above	See Section 16 for the full text of the H statements declared above.	

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.

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SECTION 3: Composition/information on ingredients

<u>Type</u>

- [*] 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.

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

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

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SECTION 4: First aid measures

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.

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".

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SECTION 6: Accidental release measures

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 (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

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.

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
Industrial sector specific solutions

No specific data.No specific data.

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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.

procedures

Recommended monitoring: 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 European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effects
Amines, polyethylenepoly-, triethylenetetramine fraction	DNEL	Short term Inhalation	5380 mg/m³	Workers	Systemic
	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/m³	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/m³	Consumers	Systemic
	DNEL	Long term Oral	0.41 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.43 mg/cm ²	Consumers	Local

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	135 μg/l	Assessment Factors
	PNEC	Marine	2.7 µg/l	Assessment Factors
	PNEC	Fresh water sediment	2.08 mg/kg dwt	-
	PNEC	Marine water sediment	0.123 mg/kg dwt	-
	PNEC	Soil	1.67 mg/kg dwt	-
	PNEC	Sewage Treatment Plant	8 mg/l	Assessment Factors

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.

Individual protection measures

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SECTION 8: Exposure controls/personal protection

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.

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. >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.

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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.

Odour threshold : Not available.

pH : 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 : Not available.

explosive limits

Vapour pressure : <0.002 kPa [20°C]
Vapour density : Not available.

Relative density : 0.971

Solubility(ies) :

>1000 g/l

Partition coefficient: n-

octanol/water

-2.65

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SECTION 9: Physical and chemical properties

Auto-ignition temperature : 325°C

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

Oxidising properties : None.

9.2 Other information

No additional 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 : Reactive or incompatible with the following materials: oxidizing materials, acids and

moisture. Metal.

Chlorinated hydrocarbon.

10.6 Hazardous decomposition products

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

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.

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SECTION 11: Toxicological information

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

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	Not determined	gastrointestinal tract and respiratory tract

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

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

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SECTION 11: Toxicological information

Potential immediate

effects

: No specific data.

Potential delayed effects: No specific data.

Long term exposure

Potential immediate

: No specific data.

effects

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.

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

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 Acute EC50 31.1 mg/l	Algae Daphnia	72 hours 48 hours
	Acute LC50 330 mg/l Chronic NOEC 1.9 mg/l	Fish Daphnia	96 hours 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	LogP _{ow}	BCF	Potential
Amines, polyethylenepoly-, triethylenetetramine fraction	-2.65	-	low

12.4 Mobility in soil

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SECTION 12: Ecological information

Soil/water partition coefficient (Koc)

: 4000

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. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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.

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/ADNR	IMDG	IATA
UN2259	UN2259	UN2259	UN2259
TRIETHYLENETETRAMINE	TRIETHYLENETETRAMINE	TRIETHYLENETETRAMINE	Triethylenetetramine
8	8	8	8
II	II	II	II
No.	Yes.	No.	No.
Not available.	Not available.	Not available.	Not available.
	UN2259 TRIETHYLENETETRAMINE 8 II No.	UN2259 TRIETHYLENETETRAMINE 8 8 II II No. Yes.	UN2259 TRIETHYLENETETRAMINE TRIETHYLENETETRAMINE R R R R R R R R R R R R R

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SECTION 14: Transport information

Additional	Hazard identification	-	Emergency	Passenger and
information	<u>number</u>		schedules (EmS)	Cargo Aircraft
	80		F-A, S-B	Quantity limitation: 1 L
				Packaging
	Limited quantity			instructions: 851
	1 L			Cargo Aircraft Only
				Quantity limitation:
	<u>Tunnel code</u>			30 L
	(E)			Packaging
				instructions: 855
				<u>Limited Quantities -</u>
				Passenger Aircraft
				Quantity limitation:
				0.5 L
				Packaging
				instructions: Y840

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

prevention and control

list (IPPC) - Air

: Not listed

Integrated pollution prevention and control list (IPPC) - Water

International regulations

Chemical Weapons 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

Triethylenetetramine, TETA

SECTION 15: Regulatory information

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]

Classification	Justification
Acute Tox. 4, H302	Expert judgment
Acute Tox. 4, H312	Expert judgment
Skin Corr. 1A, H314	Expert judgment
Eye Dam. 1, H318	Expert judgment
Skin Sens. 1, H317	Expert judgment
Aquatic Chronic 3, H412	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 Tox. 4, H302 Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 3
ACUTE TOXICITY: ORAL - Category 4
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. 1A, H314 SKIN CORROSION/IRRITATION - Category 1A SKIN CORROSION/IRRITATION - Category 1B

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

: 25 February 2011

Date of previous issue

: 10/11/2010

Version

: 8

Notice to reader

Triethylenetetramine, TETA

SECTION 16: Other information

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 scenario 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.

List of use descriptors 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.

Processes and activities covered

by the exposure scenario

Not applicable.

Assessment Method See Section 3

Section 2: Operational conditions and risk management measures

Section 2.1: Control of consumer exposure

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 Categories 1: Adhesives, sealants Mixing and loading

Operations Conditions (consumer): Covers use up to 3 days a 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 Categories 1: Adhesives, sealants Application(s)

Operations Conditions (consumer):

- Covers use up to 3 days a 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 Categories 9b: Fillers, putties, plasters, modelling clay

Operations Conditions (consumer):

- Covers use up to 2 days a 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 Categories 9b: Fillers, putties, plasters, modelling clay Application(s)

Operations Conditions (consumer):

- Covers use up to 2 days a 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%

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. Section 2.2: Control of environmental exposure

Operational conditions: Not determined

Product Characteristics: Indoor/Outdoor use.

Regional use tonnage (tonnes/year): 10230 Fraction of Regional tonnage used locally: 25% Average Local Daily Tonnage (kg/day) 11636

Frequency and duration of use: Continuous release.

Section 3: Exposure estimation and reference to its source

Section 3.1: Exposure estimation - Consumers

Contributing Frequency (1/Year): Weight fraction of **Body weight:** Calculation method:

Scenario: substance in the

article::

Exposure estimation and

reference to its source -

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

25%; 5%; 25%; 5%

60 kg

ConsExpo 4.1

Consumers: 0:

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

Inhalation:

evaporation Mode of release:

Exposure estimation and reference to its source -

Consumers: 1:

Exposure (minutes): Amount/concentration Application duration: Room volume (m³): Room volume x applied (g): ventilation rate: (I/h):

5; 90; 5; 90 5; 30; 5; 30 20; 20; 200; 200 1; 20; 1; 20

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

Scenario Molecular (Update model):

weight (g/mole):

32.9 20: 500: 100: 50 3 09F+03 550 20 1

Dermal:

Application methods: instant

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

area) cm2: 2; 43; 2; 22

0.05; 0.1; 0.02; 1 11.2; 3.0; 11.5; 3.1

Inhalation mg/m³

(Concentration on day of

exposure):

0.039; 0.188; 0.040; 0.191 6.25; 0.12; 2.5; 0.46

Dermal load (mg/cm2): Dermal External dose (mg/kg

bw):

Dermal (Internal dose) mg/kg

bw/day:

Dermal (External dose) mg/kg

bw/day:

Inhalation event/Exposure

mg/m³ (Short term exposure):

0.208; 0.08; 0.08; 1.67

Dermal systemic exposure

0.002; 0.001; 5E-4; 0.001

0.039; 0.188; 0.040; 0.191

Inhalation (mg/kg/day) Long

(external dose) with gloves (90% efficiency) mg/kg bw/day

(Long term exposure):

0.0002; 0.0001; 5E-5; 0.0001

term exposure:

0.002; 0.001; 5E-4; 0.001 11.2; 3.0; 11.5; 3.1

Section 3.2 Exposure estimation-Consumers Contributing exposure scenario controlling worker exposure for 0:

Contributing scenarios Dose/Concentration Justification Route of exposure

Long term exposure, Systemic,

Not applicable.

Not applicable. Not applicable.

Long term exposure, Systemic,

Not applicable. Not applicable. Not applicable.

Inhalable

Long term exposure, Systemic, Not applicable.

Combined

Long term exposure, Local, Dermal Not applicable.

Not applicable.

Long term exposure, Local,

Dermal

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

Not applicable.

Inhalable

Not applicable.

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

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.

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

Section 3.3 Environment Exposure			
Contributing exposure scenario con	ntrolling environmental exposur	e for 1:	
	Release from point source (local exposure estimation) kg/day	Total release for regional exposure estimation kg/day	Justification
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
	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	9.40x10-10	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 4: Guidance to Downstream User to evaluate if 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.	

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.

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 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

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

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Contributing exposure 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:

Not applicable.

Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

Contributing exposure 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

Other operational conditions affecting worker 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.

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 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

Industrial

Section 2.1 Control of worker exposure

Contributing exposure 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%

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 operational conditions affecting worker exposure: Indoor, industrial 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.

Section 2.1 Control of worker exposure

Contributing exposure 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: m³/d Default Body weight: Workers: 70 kg

Other operational conditions affecting worker 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:

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental exposure:

Indoor, industrial setting

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

RMM):

Release fraction to soil from process (initial release prior to

RMM):

1.0x10-4

Release fraction to wastewater from process (initial release

prior to RMM):

4.03x10-5

Technical conditions and measures at process level (source) to

prevent release:

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

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

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

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

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

Prevent discharge of undissolved substance to or recover from onsite Organisational measures to prevent/limit release from site:

Indoor, industrial setting

1.0x10-4

4.03x10-5

Not applicable.

wastewater.

Indoor, industrial setting

1 1x10-3

Conditions and measures related to municipal sewage treatment

plant:

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental

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

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

prior to RMM):

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 (%):

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 2684

Frequency and duration of use: Continuous release

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Other operational conditions of use 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 0

prior to RMM):

Triethylenetetramine, TETA

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

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

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

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) No wastewater treatment required.

to provide the required 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

5 0x10-5

wastewater.

Not applicable.

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Local marine water dilution factor:

Other operational conditions of use 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): Not applicable. 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 (%):

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 3: Exposure estimation

Section 3.1Workers Exposure estimation

Contributing exposure 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**

Long term exposure, Systemic,

Dermal

Not applicable.

0.005

Justification

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

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 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

Long term exposure, Systemic, 0.61 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 evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not evaluated. Not applicable. Not applicable. Long term exposure, Local, Not applicable Since the substance is not classified for Not applicable. acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL **Dermal** has been derived. Not applicable. Since the substance is not classified for Short term exposure, Systemic, Not applicable 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 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. 1.22 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 **Section 3.1Workers Exposure estimation** Contributing exposure 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 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.005 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. 0.31 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 Not applicable. Long term exposure, Local, Dermal Not evaluated. Not applicable. Since the substance is not classified for Long term exposure, Local, Not applicable Not applicable. acute effects and therefore, no acute DNEL Inhalable 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 acute effects and therefore, no acute DNEL Inhalable 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. 0.61 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with the

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

below this value

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

Contributing exposure scenario con vessels/large containers at dedicate		Transfer of substance or preparat	ion (charging/discharging) from/to
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.
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.	Not applicable.	Not applicable.

Section 3.1Workers Exposure estimation

Section 3.1Workers Exposure estimation

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

	0 0,			
Route of exposure		Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Dermal	Systemic,	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Inhalable	Systemic,	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Combined	Systemic,	Not applicable.	Not applicable.	Not applicable.
Long term exposure,	Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Inhalable	Local,	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Dermal	Systemic,	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Inhalable	Systemic,	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Combined	Systemic,	Not applicable.	Not applicable.	Not applicable.
Short term exposure,	Local, Dermal	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Inhalable	Local,	Not applicable.	Not applicable.	Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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

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

Local concentration PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 0.0832 0.197 **EUSES** calculation 0.279 Grassland averaged mg/kg dwt 0.165 **EUSES** calculation Groundwater mg/l Not evaluated. 1.98x10-3 **EUSES** calculation PEC air (local+regional) Justification Local concentration **EUSES** calculation During emission mg/m³ 4.7x10-3 Not evaluated. 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 3.2 Environment Exposure estimation

Contributing exposure 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 3.2 Environment Exposure estimation

Contributing exposure 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

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

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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 3.2 Environment Exposure estimation

Contributing exposure 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	Not applicable.
	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 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

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 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

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 worker exposure

Contributing exposure 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

Other operational conditions affecting worker 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:

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 specific activity

management supervision controls.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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.

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

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

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

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Industrial

Section 2.1 Control of worker exposure

Contributing exposure 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:

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 operational conditions affecting worker 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:

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 2.1 Control of worker exposure

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

Other operational conditions affecting worker 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%

Indoor, industrial setting

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. Wear appropriate respiratory protection, with a

minimum efficacy of 90%

Section 2.1 Control of worker exposure

Contributing exposure 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% 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 operational conditions affecting worker exposure: Indoor. industrial 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:

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

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. Wear appropriate respiratory protection. with a

minimum efficacy of 90%

Section 2.1 Control of worker exposure

Contributing exposure 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 Indoor. industrial setting

Other operational conditions affecting worker 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%

Organisational measures to prevent/limit releases,

dispersion and exposure:

Triethylenetetramine, TETA

Not applicable.

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

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 2.1 Control of worker exposure

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

vessels/large containers at dedicated facilities

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

Not applicable. Amounts used:

Frequency and duration of use: Avoid carrying out operation 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 operational conditions affecting worker exposure: Indoor, industrial 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:

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 2.1 Control of worker exposure

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

filling line, including weighing)

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.

Other operational conditions affecting worker 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:

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%

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 2.1 Control of worker exposure

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

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 operational conditions affecting worker exposure: Indoor, industrial 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:

Triethylenetetramine, TETA

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. Wear appropriate respiratory protection, with a

minimum efficacy of 90%

Section 2.2: Control of environmental exposure

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

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product Characteristics: Not applicable

Concentration of substance in mixture or article:

Amounts used:

Fraction of EU tonnage used in region: 10% Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% 4650 Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 15500

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use 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):

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 (%):

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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 15500 Average Local Daily Tonnage (kg/day):

Frequency and duration of use: Continuous release

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use 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):

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:

1 0x10-4

4.03x10-5

1 1x10-3

Not applicable.

Indoor. industrial setting

Indoor. industrial setting

1 1x10-3

1 0x10-4

4.03x10-5

Not applicable.

wastewater.

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.

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

Prevent discharge of undissolved substance to or recover from onsite

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

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 (%):

Organisational measures to prevent/limit release from site: Prevent discharge of undissolved substance to or recover from onsite

wastewater.

Conditions and measures related to municipal sewage treatment

plant:

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

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

Operational conditions: Indoor use.

Not applicable.

Amounts used:

Regional use tonnage (tonnes/year): 2418 25% Fraction of Regional tonnage used locally: 604 Annual site tonnage (tonnes/year):

Frequency and duration of use: Continuous release.

225 Emission Days (days/year):

Environmental factors not influenced by risk management:

Other operational conditions of use 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):

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) Not applicable as there is no release to wastewater.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Product Characteristics:

Concentration of substance in mixture or article:

Average Local Daily Tonnage (kg/day): 2684

Indoor, industrial setting

1 1x10-3

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%.

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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): 11378

Continuous release. Frequency and duration of use:

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use affecting environmental

exposure:

Indoor. industrial setting

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

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

1 1x10-3

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

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

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

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:

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) =>37.4

to provide the required removal efficiency of ³ (%):
Organisational measures to prevent/limit release from site:

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

5.0x10-5

Conditions and measures related to municipal sewage treatment

plant:

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

Section 3: Exposure estimation

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 exposure estimates for other PROC are below this value

Section 3.1Workers Exposure estim	ation		
Contributing exposure scenario con	trolling worker exposure for	1: Use in closed, continuous p	rocess with occasional controlled exposure
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.
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.
Short term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Section 3.1Workers Exposure estim		O. Han in alarmed batab museus	(complete or formation)
Contributing exposure scenario con			
Route of exposure	Contributing scenarios	Dose/Concentration	Justification Not applied by
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.
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. Not applicable.	Not applicable. Not applicable.
Coation 2 dialoukous Europeuro optima	otion		
Section 3.1Workers Exposure estim Contributing exposure scenario con exposure arises		3: Use in batch and other proce	ess (synthesis) where opportunity for
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.
Triethylenetetramine, TETA			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, PROC05

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

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. 0.62 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 Section 3.1Workers Exposure estimation Contributing exposure scenario controlling worker exposure for 4: 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. 0.27 **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 0.30 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. Combined 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 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 Inhalable has been derived. Not applicable. Since the substance is not classified for 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. 0.60 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 Section 3.1Workers Exposure estimation Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **Contributing scenarios Dose/Concentration Justification** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.27 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. 0.37 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 Not applicable. Long term exposure, Systemic, Not applicable. Not applicable. Combined Not applicable. Long term exposure, Local, Dermal 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.

Not applicable.

Since the substance is not classified for

Triethylenetetramine, TETA

Short term exposure, Systemic,

Not applicable

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

Short term exposure, Systemic, 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, Not applicable Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable 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, 0.74 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 3.1Workers Exposure estimation** Contributing exposure scenario controlling worker exposure for 6: 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 14 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. 0.548 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. Long term exposure, Local, Not applicable. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable 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 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 Combined 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.

0.55 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

exposure estimates for other PROC are below this value

Section 3.1Workers Exposure estimation

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

Inhalable

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. 0.30

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

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, 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 3.1	Workers	Exposure	estimation
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Contributing exposure scenario controlling worker exposure for 8: Use as laboratory reagent

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.
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,	Not applicable. Not applicable.	Not applicable. Not applicable.	Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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

Triethylenetetramine, TETA

Inhalable

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

Local concentration PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 0.0832 0.197 **EUSES** calculation dwt 0.165 0.279 Grassland averaged mg/kg dwt **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 **EUSES** calculation 3.9x10-3 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 3.2 Environment Exposure estimation

Contributing exposure 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 3.2 Environment Exposure estimation

Contributing exposure 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

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

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

27/212

Marine water mg/l 1.43x10-4 **EUSES** calculation Intermittent release. mg/l Not applicable Not applicable Not applicable. PEC sediment (local+regional) **Justification Local concentration** 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** 0.0108 **EUSES** calculation Agricultural soil averaged mg/kg 0.125 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 5.1x10-4 Annual average mg/m³ 5.1x10-4 **EUSES** calculation Annual deposition mg/m2/d 9.1x10-4 **EUSES** calculation Not evaluated. **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	Not applicable.
	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 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 closed system with little opportunity for exposure - Use of preparations containing EA up to 100% - Industrial Process Category: PROC01, 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

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Multi-constituent substance Triethylenetetramine, TETA

Section 1: Title

Product definition

Product name

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

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

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

Section 2.1 Control of worker exposure

Contributing exposure 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).

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.

Other operational conditions affecting worker 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.

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental Indoor, industrial setting

exposure:

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

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

Professional

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 4.03x10-5 prior to RMM):

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.

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

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 (%):

Conditions and measures related to municipal sewage treatment

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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 Average Local Daily Tonnage (kg/day):

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental

exposure:

Indoor. industrial setting

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

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

Release fraction to wastewater from process (initial release

prior to RMM):

4.03x10-5

1.1x10-3

1.1x10-3

1 0x10-4

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

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

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

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

Conditions and measures related to municipal sewage treatment

plant:

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

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

Frequency and duration of use: Continuous release. 225

Emission Days (days/year):

Environmental factors not influenced by risk management:

Other operational conditions of use affecting environmental Indoor, industrial setting

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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

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%.

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

Operational conditions: Indoor use.

Amounts used:

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11378

Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Indoor, industrial setting Other operational conditions of use 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):

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 (%): Conditions and measures related to municipal sewage treatment

plant:

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

Product Characteristics: Not applicable. Concentration of substance in mixture or article:

10230

1.1x10-3

5.0x10-5

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%.

2000

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

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.
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 Environment Exposure estimation

Contributing exposure 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

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

Groundwater mg/l Not evaluated. 1.98x10-3 **EUSES** calculation PEC air (local+regional) **Justification Local concentration** EUSES calculation During emission mg/m³ 4.7x10-3 Not evaluated. Annual average mg/m³ 3.9x10-3 **EUSES** calculation 3.9x10-3 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 3.2 Environment Exposure estimation

Contributing exposure 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 3.2 Environment Exposure estimation

Contributing exposure 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

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

Justification PEC soil (local+regional) Local concentration Agricultural soil averaged mg/kg 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 3.2 Environment Exposure estimation

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

Release from point source Total release for regional **Justification** (local exposure estimation) exposure estimation kg/day kg/dav 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. Not applicable. **Value** Justification Concentration in sewage (PECstp) **EUSES** calculation 0.178 Concentration in sewage sludge 0269 **EUSES** calculation mg/kg dwt **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. **EUSES** calculation Marine water sediment mg/kg dwt Not evaluated **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 0.0458 0.16 **EUSES** calculation **EUSES** calculation Grassland averaged mg/kg dwt 0.0907 0.20 Groundwater mg/l Not evaluated. 1.6x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification During emission mg/m³ Not evaluated. **EUSES** calculation 3.5x10-3 Annual average mg/m³ 2.1x10-3 5 1x10-4 **EUSES** calculation Annual deposition mg/m2/d Not evaluated. **EUSES** calculation 3.9x10-3 Local concentration PEC aquatic (local+regional) Justification Micro-organism mg/l Not applicable. Not applicable. Not applicable.

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 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

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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 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

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 worker exposure

Contributing exposure 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.

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

Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

Contributing exposure 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 0.5%

Amounts used: Not applicable.

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

Other operational conditions affecting worker 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:

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

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 2.1 Control of worker exposure

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

Indoor, industrial setting

Other operational conditions affecting worker 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 2.1 Control of worker exposure

Contributing exposure 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 0.5%

Amounts used: Not applicable.

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

Other operational conditions affecting worker 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:

Not applicable.

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.

Section 2.2: Control of environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental

exposure:

Indoor, industrial setting

Release fraction to air from process (initial release prior to

RMM):

1.1x10-3

Release fraction to soil from process (initial release prior to

RMM):

1.0x10-4

Release fraction to wastewater from process (initial release

prior to RMM):

4.03x10-5

Technical conditions and measures at process level (source) to

prevent release:

Not applicable.

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

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 0.5% - Industrial

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

Conditions and measures related to municipal sewage treatment plant:

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Indoor, industrial setting Other operational conditions of use affecting environmental

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):

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Organisational measures to prevent/limit release from site:

Prevent discharge of undissolved substance to or recover from onsite

wastewater.

1 1x10-3

1.0x10-4

4.03x10-5

Conditions and measures related to municipal sewage treatment

plant:

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

225 Emission Days (days/year):

Environmental factors not influenced by risk management:

Indoor, industrial setting Other operational conditions of use 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):

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

(%):

Not applicable.

1 1x10-3

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

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

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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 11378

Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

5.0x10-5

1.1x10-3

Technical conditions and measures at process level (source) to

prevent release:

Not applicable.

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) =>37.4

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

Organisational measures to prevent/limit release from site:

Prevent discharge of undissolved substance to or recover from onsite

wastewater

Conditions and measures related to municipal sewage treatment

plant:

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

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

Contributing exposure 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, Not applicable. Not applicable. Not applicable. **Dermal**

Long term exposure, Systemic, Not applicable. Not applicable. Not applicable.

Inhalable

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.

Short term exposure, Systemic,

Dermal Inhalable

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 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC01, ERC02, ERC06a

Short term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Short term exposure, Local, Not applicable. Not applicable. Not applicable. Inhalable **Section 3.1Workers Exposure estimation** Contributing exposure 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 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 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 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 acute effects and therefore, no acute DNEL Inhalable 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. The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. 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 3.1Workers Exposure estimation Contributing exposure 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. Not applicable. Not applicable. **Dermal** Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable 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. 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. Not applicable. Not applicable. Inhalable

Not applicable.

Not applicable.

Short term exposure, Systemic,

Combined

Not applicable.

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

Section 3.1Workers Exposure estimate	ation		
Contributing exposure scenario con filling line, including weighing)	trolling worker exposure for 3:	Transfer of substance or preparat	ion into small containers (dedicated
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.
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.	Not applicable.	Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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 3.2 Environment Exposure estimation

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

Total release for regional

Release from point source

Triothydon ototromino. TETA		Identifications name I Identification	
During emission mg/m³	8.2x10-4	Not evaluated.	EUSES calculation
	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)	
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	
mg/l	_		
Concentration in sewage (PECstp)	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
	(local exposure estimation) kg/day	exposure estimation 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 0.5% - Industrial

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

Justification

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

1/213

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 3.2 Environment Exposure estimation

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

> Release from point source Total release for regional Justification exposure estimation kg/day

(local exposure estimation) kg/day

0.568 0.35 **EUSES** calculation Waste water Surface water Not evaluated. **EUSES** calculation air (direct + STP) 12.5 7.71 **EUSES** calculation Not applicable.

Soil (direct releases only) Not evaluated. **Value Justification**

Concentration in sewage (PECstp) 0.178 **EUSES** calculation

mg/l

Concentration in sewage sludge

mg/kg dwt

EUSES calculation 269

0.0458

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

0.16

Agricultural soil averaged mg/kg

Grassland averaged mg/kg dwt 0.0907 0.20 **EUSES** calculation Groundwater mg/l Not evaluated. 1 6x10-3 **EUSES** calculation

PEC air (local+regional) **Justification Local concentration** During emission mg/m³ **EUSES** calculation 3.5x10-3 Not evaluated. **EUSES** calculation Annual average mg/m³ 2 1x10-3 5.1x10-4 Annual deposition mg/m2/d 3.9x10-3 **EUSES** calculation Not evaluated.

Local concentration PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

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. Not applicable. **Additional good practices**

EUSES calculation

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 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

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

Section 2: Operational conditions and risk management measures

Section 2.1 Control of worker exposure

Contributing exposure 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).

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

Not applicable.

Other operational conditions affecting worker 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:

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%

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Manufacture of substances

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental Indoor, industrial setting

exposure:

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

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 4.03x10-5 prior to RMM):

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

1.1x10-3

1 0x10-4

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

Conditions and measures related to municipal sewage treatment

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

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 Average Local Daily Tonnage (kg/day):

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: Not applicable.

Other operational conditions of use affecting environmental

exposure:

Indoor. industrial setting

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):

4.03x10-5

1.1x10-3

1.0x10-4

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

Technical on-site conditions and measures to reduce or limit

Not applicable.

discharges, air emissions and releases to soil:

Treat air emission to provide a typical removal efficiency 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%.

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

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

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

Conditions and measures related to municipal sewage treatment plant:

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

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

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

Frequency and duration of use: Continuous release. 225

Emission Days (days/year):

Environmental factors not influenced by risk management:

Other operational conditions of use affecting environmental Indoor, industrial setting

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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

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%.

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

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 11378

Frequency and duration of use: Continuous release.

Emission Days (days/year): 225

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use affecting environmental

exposure:

1.1x10-3

Indoor, industrial setting

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):

5.0x10-5

Technical conditions and measures at process level (source) to

prevent release:

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

(%):

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

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

Conditions and measures related to municipal sewage treatment

plant:

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

2000

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

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.
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 Environment Exposure estimation

Contributing exposure 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

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

Groundwater mg/l Not evaluated. 1.98x10-3 **EUSES** calculation PEC air (local+regional) **Justification Local concentration** EUSES calculation During emission mg/m³ 4.7x10-3 Not evaluated. Annual average mg/m³ **EUSES** calculation 3.9x10-3 3.9x10-3 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 3.2 Environment Exposure estimation

Contributing exposure 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 3.2 Environment Exposure estimation

Contributing exposure 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

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

Justification PEC soil (local+regional) Local concentration Agricultural soil averaged mg/kg 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** Not applicable. Micro-organism mg/l Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

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

Release from point source Total release for regional **Justification** (local exposure estimation) exposure estimation kg/day kg/dav 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. n Not applicable. **Value** Justification Concentration in sewage (PECstp) **EUSES** calculation 0.178 Concentration in sewage sludge 269 **EUSES** calculation mg/kg dwt **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. **EUSES** calculation Marine water sediment mg/kg dwt Not evaluated **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 0.0458 0.16 **EUSES** calculation **EUSES** calculation Grassland averaged mg/kg dwt 0.0907 0.20 Groundwater mg/l Not evaluated. 1.6x10-3 **EUSES** calculation Local concentration PEC air (local+regional) Justification During emission mg/m³ Not evaluated. 3.5x10-3 **EUSES** calculation Annual average mg/m³ 2.1x10-3 5 1x10-4 **EUSES** calculation Annual deposition mg/m2/d Not evaluated. **EUSES** calculation 3.9x10-3 Local concentration PEC aquatic (local+regional) Justification Micro-organism mg/l Not applicable. Not applicable. Not applicable.

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 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

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 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% -

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

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 worker exposure

Contributing exposure 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:

Indoor, industrial setting Other operational conditions affecting worker 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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

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:

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: 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

Industrial

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting 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:

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.

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.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

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 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure:

Indoor, industrial setting

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,

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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 5: 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

Indoor, industrial setting Other operational conditions affecting worker 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:

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 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

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 2.1 Control of worker exposure

Contributing exposure 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

Other operational conditions affecting worker exposure:

Indoor, industrial setting 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,

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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

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

prior to RMM):

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:

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) No wastewater treatment required.

to provide the required removal efficiency of 3 (%): Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

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 exposure scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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 (%): Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

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

1.1x10-5

0.02

Not applicable.

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

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

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

Long term exposure, Systemic, Not applicable. 0.61

Inhalable

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, Not evaluated. Not applicable.

Combined

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

Long term exposure, Local,

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, Not applicable **Dermal**

Inhalable

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

has been derived.

Triethylenetetramine, TETA

Short term exposure, Systemic,

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

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 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 **Section 3.1Workers Exposure estimation** Contributing exposure 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. 0.055 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 0.61 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 evaluated. 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. 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 acute effects and therefore, no acute DNEL Inhalable 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. 1 22 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 **Section 3.1Workers Exposure estimation** Contributing exposure 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. 0 110 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 0.305 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 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. Triethylenetetramine, TETA Identified use name: Use of preparations containing ethylenamines in

Not applicable.

Short term exposure, Systemic,

Not applicable

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

. Industrial

Since the substance is not classified for

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

Short term exposure, Systemic, 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, Not applicable. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Inhalable 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. 0.61 The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. 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 **Section 3.1Workers Exposure estimation** Contributing exposure 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, Not applicable. 0.055 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 The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.61 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. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable 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 acute effects and therefore, no acute DNEL Inhalable has been derived. Not applicable. Since the substance is not classified for Short term exposure, Systemic, Not applicable acute effects and therefore, no acute DNEL Combined 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 **Section 3.1Workers Exposure estimation** Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Route of exposure **Contributing scenarios Dose/Concentration Justification** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.055 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 Not applicable.

Long term exposure, Systemic,

Inhalable

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

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, 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

			below this value
Section 3.1Workers Exposure estim Contributing exposure scenario con		5: Treatment of articles by dipp	ing and pouring
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

0.61

Short term exposure, Local,

Inhalable

Not applicable.

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

acute effects and therefore, no acute DNEL

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

has been derived.

below this value

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC10b

5/213

Section 3.1Workers Exposure estimation					
Contributing exposure scenario con be expected	Contributing exposure scenario controlling worker exposure for 6: 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.	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.		
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.	Not applicable.	Not applicable.		

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	
Concentration in sewage (PECstp) mg/l	Not evaluated.	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	Not evaluated.	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	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.

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% -İndustrial

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

Substance supplied to that use in form of: In a mixture Sector of end use: SU03, SU22

Section 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

Release from point source Total release for regional **Justification** (local exposure estimation) exposure estimation kg/day kg/day Waste water 2.47 33 1 **EUSES** calculation Surface water **EUSES** calculation 1.24x10-3 1.66x10-2 **EUSES** calculation air (direct + STP) Soil (direct releases only) Not applicable. **Value Justification** Concentration in sewage (PECstp) 0.775 **EUSES** calculation **EUSES** calculation Concentration in sewage sludge 1 17x10-3 mg/kg dwt **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 4.44x10-6 0 114 **EUSES** calculation 8.79x10-6 0.114 **EUSES** calculation Grassland averaged mg/kg dwt Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation PEC air (local+regional) **Local concentration** Justification

During emission mg/m³ **EUSES** calculation 3.44x10-7 Not evaluated. Annual average mg/m³ 2 36x10-7 **EUSES** calculation 2 07x10-7 Annual deposition mg/m2/d 3.75x10-7 Not evaluated. **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Not applicable. Micro-organism mg/l Not applicable. Not applicable.

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

 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

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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 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% -

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

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 of worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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:

Indoor, industrial setting Other operational conditions affecting worker 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.

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.

Section 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure: Indoor, industrial setting Indoor, professional setting

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,

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 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

Industrial

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: 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.

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.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

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 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure:

Indoor, industrial setting

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 2.1 Control of worker exposure

Contributing exposure 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

Indoor, industrial setting Other operational conditions affecting worker 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.

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

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 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure: Indoor, industrial setting

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

4650 Regional use tonnage (tonnes/year): 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12 74

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None 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

Release fraction to wastewater from process (initial release

prior to RMM):

Not applicable.

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

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

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

Concentration of substance in mixture or article:

Amounts used:

2418 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 604 2745

Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Average Local Daily Tonnage (kg/day):

Frequency and duration of use:

None.

1.1x10-5

0.02

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%.

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

Contributing exposure 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, Not applicable. Not applicable. Not applicable. **Dermal** Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. 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.

Triethylenetetramine, TETA

Dermal

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, Systemic,	Not applicable.	Not applicable.	Not applicable.
Inhalable Short term exposure, Systemic,	Not applicable.	Not applicable.	Not applicable.
Combined			
Short term exposure, Local, Dermal Short term exposure, Local, Inhalable	Not applicable.	Not applicable. Not applicable.	Not applicable. Not applicable.
Section 3.1Workers Exposure estim		alandada an an and an	
Contributing exposure scenario con Route of exposure		<u> </u>	lundification
Long term exposure, Systemic,	Contributing scenarios	Dose/Concentration	Justification Not applicable.
Dermal	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.
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. Not applicable.	Not applicable. Not applicable.
Contributing exposure scenario con vessels/large containers at non-ded Route of exposure		ransfer of substance or preparation Dose/Concentration	on (charging/discharging) from/to 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

			has been derived.
Short term exposure, Systemic, Dermal	Not applicable	Not applicable.	has been derived. Since the substance is not classified for acute effects and therefore, no acute DNE
Long term exposure, Local, Dermal Long term exposure, Local, Inhalable	Not applicable	Not applicable. Not applicable.	Not applicable. Since the substance is not classified for acute effects and therefore, no acute DNE
Combined	Not evaluated	Not applicable	Not applicable
Long term exposure, Systemic,	Not evaluated.	Not applicable.	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, Inhalable	Not applicable.	0.76	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
Contributing exposure scenario cont Route of exposure Long term exposure, Systemic, Dermal	crolling worker exposure for Contributing scenarios Not applicable.	5: Roller application or brushin Dose/Concentration 0.027	Justification The ECETOC TRA tool has been used to estimate workplace exposures unless
Section 3.1Workers Exposure estima			
Short term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Combined Short term exposure, Local, Dermal	Not applicable. Not applicable.	Not applicable. Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.
	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
•		4: Transfer of substance or pre Dose/Concentration	paration into small containers (dedicated Justification
Section 3.1Workers Exposure estima	ation		
Short term exposure, Local, Dermal Short term exposure, Local, Inhalable	Not applicable.	Not applicable. Not applicable.	Not applicable. Not applicable.
Short term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Short term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Inhalable Short term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Local,	Not applicable. Not applicable.	Not applicable. Not applicable.	Not applicable. Not applicable.
Long term exposure, Systemic, Combined	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Inhalable	Not applicable.	Not applicable.	Not applicable.
Long term exposure, Systemic, Dermal	Not applicable.	Not applicable.	Not applicable.
Route of exposure	Contributing scenarios	Dose/Concentration	Justification
vessels/large containers at dedicated			

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

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 3.1Workers	Exposure estimation
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Contributing exposure 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, 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.
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.	Not applicable.	Not applicable.

Section 3.1Workers Exposure estimation

Contributing exposure 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.	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.
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,	Not applicable.	Not applicable.	Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation

Triethylenetetramine, TETA

Inhalable

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

Soil (direct releases only) 0 0 Not applicable. **Justification Value** Concentration in sewage (PECstp) **EUSES** calculation Not evaluated. Concentration in sewage sludge Not evaluated. **EUSES** calculation mg/kg dwt **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. **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 1.04x10-5 0.114 **EUSES** calculation Grassland averaged mg/kg dwt 2.06x10-5 1.13x10-3 **EUSES** calculation Groundwater mg/l 0.114 **EUSES** calculation Not evaluated. **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ Not evaluated. **EUSES** calculation 4.87x10-7 Annual average mg/m³ 5.16x10-7 4.87x10-7 **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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	1.24x10-3	1.66x10-2	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

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

Justification

Process Category: PROC05, PROC06, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC16

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 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.

Sector of end use: SU03, SU22

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 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% -

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

Identified use name: Use of preparations containing ethylenamines in open processes with low exposure List of use descriptors

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 of worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Indoor. professional setting Other operational conditions affecting worker 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%

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.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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:

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.

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% -Professional

Process Category: PROC08a, PROC10 Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Contributing exposure scenario controlling environmental exposure for 0: Fuel additive. Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

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%.

Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

Operational conditions: Indoor/Outdoor use.

Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

2418 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

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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 0.02

prior to RMM):

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

Not applicable.

1.1x10-3

220

1.1x10-5

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 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

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:

Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

vessels/large containers at non-ded		o. Transier of substance of pre	paration (charging/discharging) from/to
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 DNEI 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 DNEI 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 DNEI 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 DNEI 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 3.1Workers Exposure estimates Contributing exposure scenario con		1: Poller application or brushin	9
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,	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNEI

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

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

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	
Concentration in sewage (PECstp) mg/l	Not evaluated.	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	Not evaluated.	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	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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

Justification Release from point source Total release for regional exposure estimation kg/day (local exposure estimation) kg/day Waste water **EUSES** calculation 2.47 33.1 Surface water **EUSES** calculation air (direct + STP) 1.24x10-3 1.66x10-2 **EUSES** calculation Soil (direct releases only) Not applicable. **Justification Value EUSES** calculation Concentration in sewage (PECstp) 0.775

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

Concentration in sewage sludge 1.17x10-3 **EUSES** calculation mg/kg dwt **Local concentration** PEC aquatic (local+regional) Justification Fresh water mg/l 0.078 0.077 **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 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

Section 4: Guidance to check compliance with the exposure scenario

Annual deposition mg/m2/d

Micro-organism mg/l

Environment Not available. Not available. Health

Not evaluated

Not applicable.

PEC aquatic (local+regional)

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

3 75x10-7

Local concentration

Not applicable.

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

EUSES calculation

Justification

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 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% -

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

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 worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Other operational conditions affecting worker 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.

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.

Section 2.2: Control of environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Fuel additive.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 12.74

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None.

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

Other operational conditions of use 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): 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: 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) No wastewater treatment required. to provide the required removal efficiency of 3 (%): Conditions and measures related to municipal sewage treatment plant: Contributing exposure scenario controlling environmental exposure for 1: Wood preservative. Operational conditions: Indoor/Outdoor use. **Product Characteristics:** Not applicable. Concentration of substance in mixture or article: Amounts used: 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): 2745 Frequency and duration of use: Continuous release. Emission Days (days/year): 220 Environmental factors not influenced by risk management: Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental exposure: Release fraction to air from process (initial release prior to 1.1x10-5 RMM): Release fraction to soil from process (initial release prior to 0.02 Release fraction to wastewater from process (initial release prior to RMM): 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: 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 (%): Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

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 3.1Workers Exposure estim	ation		
Contributing exposure scenario con vessels/large containers at non-ded		0: Transfer of substance or pre	paration (charging/discharging) from/to
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

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	1.75x10-3	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	
Concentration in sewage (PECstp) mg/l	Not evaluated.	EUSES calculation	
Concentration in sewage sludge mg/kg dwt	Not evaluated.	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	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

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

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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 1: Wood preservative.

Release from point source Total release for regional Justification (local exposure estimation) exposure estimation kg/day

EUSES calculation

PEC aquatic (local+regional)

kg/day

Waste water 2.47 33 1 **EUSES** calculation Surface water **EUSES** calculation air (direct + STP) 1.24x10-3 1.66x10-2 **EUSES** calculation Soil (direct releases only) Not applicable.

Value Justification 0.775 **EUSES** calculation

Concentration in sewage (PECstp)

Concentration in sewage sludge 1.17x10-3

mg/kg dwt Local concentration

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 **FUSES** calculation

Marine water sediment mg/kg dwt Not evaluated. 3.95 **EUSES** calculation **Local concentration** Justification PEC soil (local+regional) 4.44x10-6 0.114 **EUSES** calculation

Agricultural soil averaged mg/kg

dwt

Grassland averaged mg/kg dwt Groundwater mg/l

During emission mg/m³

Annual average mg/m³

Micro-organism mg/l

Annual deposition mg/m2/d

8 79x10-6 Not evaluated.

Local concentration

3 44x10-7 2.07x10-7 3.75x10-7

> Local concentration Not applicable.

0 114 1.13x10-3

> PEC air (local+regional) Not evaluated. 2.36x10-7 Not evaluated.

PEC aquatic (local+regional) Not applicable.

EUSES calculation **Justification** Not applicable.

EUSES calculation

EUSES calculation

EUSES calculation

Justification

EUSES calculation

Justification

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 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 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

Identified use name: Use of ethylenamines in open processes with high exposure potential and List of use descriptors 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 worker exposure

Contributing exposure 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%.

Not applicable. Amounts used:

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.

Indoor. industrial setting Other operational conditions affecting worker 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,

Personal protection:

removal efficiency of (%): 90%

Not applicable.

dispersion and exposure:

management supervision controls.

Section 2.1 Control of worker exposure

Contributing exposure 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 percentage substance in the product up to 25%.

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 operational conditions affecting worker 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

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

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 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 worker exposure

Contributing exposure 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 percentage substance in the product up to 25%.

Amounts used: Not applicable.

Frequency and duration of use: Avoid carrying out operation for more than 1 hour.

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

Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

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

filling line, including weighing)

Product Characteristics: Liquid. Covers percentage substance in the product up to 25%.

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.

1.10x10-3

Not applicable.

Other operational conditions affecting worker 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:

dispersion and exposure:

Personal protection:

Organisational measures to prevent/limit releases,

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

removal efficiency of (%): 90%

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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 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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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

Release fraction to wastewater from process (initial release

prior to RMM):

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

to provide the required removal efficiency of 3 (%): Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

1 10x10-3

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%.

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

1.1x10-3

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 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

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

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

Not applicable.

6.88x10-3

1.38

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:

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 100 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 1255 Average Local Daily Tonnage (kg/day):

Frequency and duration of use: Continuous release

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental exposure:

Release fraction to air from process (initial release prior to

RMM):

6.88x10-4

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

Release fraction to wastewater from process (initial release

prior to RMM):

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 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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environmental 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% - Industrial Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture Sector of end use: SU03

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

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 marine water dilution factor: Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 7014

Frequency and duration of use: Continuous release.

365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

10230

Emission Days (days/year):

exposure:

5 00x10-3

0.01

100

None.

1.1x10-3

Not applicable.

Not applicable.

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.

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

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

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

and articles (multistage and/or signi	ficant 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 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.	0.73115	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
Section 3.1Workers Exposure estimate	ation		
Contributing exposure scenario con vessels/large containers at non-ded		1: Transfer of substance or pre	paration (charging/discharging) from/to
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 DNE has been derived.
Chart torm expenses Customia	Not applicable	Not applicable.	Since the substance is not classified for acute effects and therefore, no acute DNE
Short term exposure, Systemic, Dermal			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. Since the substance is not classified for 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. 0.73115 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

Section 3.1Workers Exposure estimation

Contributing exposure 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** Not applicable.

Long term exposure, Systemic, **Dermal**

0.034286

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

0.548325

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

Long term exposure, Systemic,

Not evaluated.

Not applicable.

Not applicable.

Not applicable. Not applicable.

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

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**

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,

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

Section 3.1Workers Exposure estimation

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

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.

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, 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

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	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

Value Justification Concentration in sewage (PECstp) **EUSES** calculation 0 mg/l Concentration in sewage sludge **EUSES** calculation mg/kg dwt **Local concentration** PEC aquatic (local+regional) **Justification EUSES** calculation Fresh water mg/l Not evaluated. 1.43x10-3 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 Not evaluated. 0.114 **EUSES** calculation dwt Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l 1.13x10-3 Not evaluated. **EUSES** calculation PEC air (local+regional) **Justification Local concentration** Not evaluated. During emission mg/m³ 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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

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

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Total release for regional

During emission mg/m³ 3.31x10-6 Not evaluated. **EUSES** calculation Annual average mg/m³ 2.02x10-6 2.00x10-6 **EUSES** calculation Annual deposition mg/m2/d 3.6x10-6 Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Justification Local concentration** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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
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

Section 4: Guidance to check compliance with the exposure scenario

Environment Not available.

Health Not available.

Not applicable.

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

Not applicable.

Environment Not applicable.

Health Not applicable.

Additional good practices Not applicable.

Triethylenetetramine, TETA

Micro-organism 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 25% - Industrial Process Category: PROC05, PROC08a, PROC08b, PROC09 Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Not applicable.

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 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

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of List of use descriptors

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 worker exposure

Contributing exposure 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

Not applicable.

Other operational conditions affecting worker exposure: Indoor, professional setting

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 2.1 Control of worker exposure

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

Other operational conditions affecting worker 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,

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

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

Industrial

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

1.10x10-3

Not applicable

1.10x10-3

Not applicable.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to

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

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 air emission controls required; required removal efficiency is 0%.

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 plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100
Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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 applicable.

1.10x10-3

1.1x10-3

Not applicable.

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.

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

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

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None Other operational conditions of use affecting environmental

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

RMM):

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

365 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None exposure:

Release fraction to air from process (initial release prior to

5 00x10-3 Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

Not applicable.

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to

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

0.5% - Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimated Contributing exposure scenario con articles		0: Low energy manipulation of	substances bound in materials and/or
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 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.	0.03	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

Not applicable.

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

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

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 Short term exposure, Systemic, Combined

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

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Total release for regional

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

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 PEC air (local+regional) **Justification** Local concentration Not evaluated. EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. 2.93x10-8 **EUSES** calculation Annual average mg/m³ 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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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

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 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 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 **EUSES** calculation 6.98x10-8 Not evaluated. Annual average mg/m³ 3.82x10-9 3.31x10-8 **EUSES** calculation Not evaluated. Annual deposition mg/m2/d 6.92x10-9 **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Sector of end use: SU03 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. 0.722 **EUSES** calculation Marine water sediment mg/kg dwt 0.072 Not evaluated. **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification EUSES** calculation Agricultural soil averaged mg/kg 0.046 0.160 Grassland averaged mg/kg dwt 0.091 0.204 **EUSES** calculation Groundwater mg/l Not evaluated. 1.60x10-3 **EUSES** calculation PEC air (local+regional) **Local concentration Justification** During emission mg/m³ **EUSES** calculation 3.55x10-3 Not evaluated. 2.14x10-3 Annual average mg/m³ 2.14x10-3 **EUSES** calculation Annual deposition mg/m2/d 3.86x10-3 Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification**

Section 4: Guidance to check compliance with the exposure scenario

Micro-organism mg/l

Environment Not available.
Health Not available.

Not applicable.

Not applicable.

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

Not applicable.

 Environment
 Not applicable.

 Health
 Not applicable.

 Additional good practices
 Not applicable.

Environmental Release Category: ERC11a

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 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

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of List of use descriptors

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 worker exposure

Contributing exposure 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.

Other operational conditions affecting worker exposure: Indoor, professional setting

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, professional setting

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

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% -

İndustrial

Industrial

Process Category: PROC21, PROC24 Sector of end use: SU03 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC11a

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

to provide the required 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 applicable

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

1.10x10-3

Not applicable.

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - 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%.

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

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

İndustrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

Triethylenetetramine, TETA

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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

Technical conditions and measures at process level (source) to

prior to RMM):

prevent release:

Technical on-site conditions and measures to reduce or limit

discharges, air emissions and releases to soil:

Not applicable.

6.88x10-4

6.88x10-3

1.1x10-3

Not applicable.

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.

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

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -

İndustrial

Process Category: PROC21, PROC24 Sector of end use: SU03

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use:

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Continuous release.

1 1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

365 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None exposure:

Release fraction to air from process (initial release prior to

5 00x10-3 Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release 0.01

prior to RMM):

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -

İndustrial

Process Category: PROC21, PROC24 Sector of end use: SU03

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

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.	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 exposure estimates for other PROC are below this value

Not applicable.

Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances 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 applicable.	Not applicable.	Not applicable.

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

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 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 **Dermal** 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 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 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 Short term exposure, Local, Not applicable. 0.12 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 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	

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.

bsequent service life relevant for that use: No. Environmental Release Category: ERC11a

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Concentration in sewage (PECstp) **EUSES** calculation Concentration in sewage sludge **EUSES** calculation mg/kg dwt **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 PEC soil (local+regional) **Local concentration Justification** Agricultural soil averaged mg/kg Not evaluated. **EUSES** calculation Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l 1.13x10-3 Not evaluated. **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 **EUSES** calculation Not evaluated. Not evaluated. **Local concentration** PEC aquatic (local+regional) Justification Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Annual deposition mg/m2/d 3.6x10-6 Not evaluated. **EUSES** calculation **Local concentration Justification**

PEC aquatic (local+regional) Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Release from point source

Section 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0	0	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	
Concentration in sewage (PECstp) mg/l	0	EUSES calculation	
Concentration in sewage sludge	0	EUSES calculation	

mg/kg dwt

Local concentration

Not evaluated.

0.046

Fresh water mg/l Not evaluated. Marine water mg/l Not evaluated Intermittent release. mg/l Not applicable. **Local concentration** Fresh water sediment mg/kg dwt Not evaluated.

Marine water sediment mg/kg dwt

Agricultural soil averaged mg/kg

Grassland averaged mg/kg dwt

Groundwater mg/l

During emission mg/m³ Annual average mg/m³ Annual deposition mg/m2/d

Micro-organism mg/l

PEC aquatic (local+regional)

Total release for regional

1.43x10-3 1.42x10-4 Not applicable. PEC sediment (local+regional) 0.722

2.14x10-3

Not evaluated.

PEC aquatic (local+regional)

0.072 **Local concentration** PEC soil (local+regional) 0.160

0.091 Not evaluated. **Local concentration**

2.14x10-3 3 86x10-3

0.204 1.60x10-3 PEC air (local+regional) 3.55x10-3 Not evaluated.

Local concentration Not applicable.

Not applicable.

Justification

Justification

EUSES calculation Not applicable. **Justification EUSES** calculation

EUSES calculation

EUSES calculation **Justification EUSES** calculation

EUSES calculation **EUSES** calculation

Justification EUSES calculation **EUSES** calculation **EUSES** calculation

Justification Not applicable.

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

İndustrial Process Category: PROC21, PROC24

Sector of end use: SU03 Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

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 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

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of List of use descriptors

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 worker exposure

Contributing exposure 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

Not applicable.

Not applicable.

Other operational conditions affecting worker exposure: Indoor, professional setting

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:

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 2.1 Control of worker exposure

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

Other operational conditions affecting worker exposure: Indoor, professional setting

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,

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: 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

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

1.10x10-3

Not applicable

1.10x10-3

Not applicable.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

Technical conditions and measures at process level (source) to

prevent release.

Triethylenetetramine, TETA

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) No wastewater treatment required. to provide the required removal efficiency of ³ (%):

to provide the required removal efficie

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to

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

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 air emission controls required; required removal efficiency is 0%.

0.5% - Professional Process Category: PROC21, PROC24

Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

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Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

220 1.1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use:

Emission Days (days/year): 20

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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:

Continuous release.

6.88x10-4

6.88x10-3

1.38

Not applicable.

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

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

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Technical conditions and measures at process level (source) to 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%.

1.1x10-3

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

365 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None exposure:

Release fraction to air from process (initial release prior to

5 00x10-3 Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

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

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimated Contributing exposure scenario con articles		0: Low energy manipulation of	substances bound in materials and/or
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 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.	0.03	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

Not applicable.

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances bound in materials and/or articles

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

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

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. Not applicable. Not applicable. Inhalable

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Total release for regional

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	oustmoution
Waste water	0	0	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation PEC air (local+regional) **Justification** Local concentration EUSES calculation During emission mg/m³ Not evaluated. Not evaluated. Not evaluated. 2.93x10-8 Annual average mg/m³ **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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Total release for regional

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	
Waste water	0.502	1.38	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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
Tuis the day and the main a TETA		lala météta al conse manage. I la malliman	. f !: .!

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

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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 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 **EUSES** calculation 6.98x10-8 Not evaluated. Annual average mg/m³ 3.82x10-9 3.31x10-8 **EUSES** calculation Not evaluated. Annual deposition mg/m2/d 6.92x10-9 **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	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	4.2x10-4	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

0.5% - Professional Process Category: PROC21, PROC24 Sector of end use: SU22

Subsequent service life relevant for that use: No. Environmental Release Category: ERC11a

2/213

Intermittent release. mg/l Not applicable. Not applicable. Not applicable. **Local concentration** PEC sediment (local+regional) **Justification** 1.60 Fresh water sediment mg/kg dwt Not evaluated. **EUSES** calculation Marine water sediment mg/kg dwt 0.212 Not evaluated. **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification EUSES** calculation Agricultural soil averaged mg/kg 4.75x10-10 0.114 dwt Grassland averaged mg/kg dwt 9.4x10-10 0.114 **EUSES** calculation 1.13x10-3 Groundwater mg/l Not evaluated. **EUSES** calculation **Local concentration** PEC air (local+regional) **Justification** During emission mg/m³ **EUSES** calculation 2.22x10-11 Not evaluated. 2.93x10-8 **EUSES** calculation Annual average mg/m³ 2.22x10-11 Annual deposition mg/m2/d 4.01x10-11 Not evaluated. **EUSES** calculation PEC aquatic (local+regional) **Local concentration Justification**

Section 4: Guidance to check compliance with the exposure scenario

Micro-organism mg/l

Environment Not available.

Health Not available.

Not applicable.

Not applicable.

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

Not applicable.

 Environment
 Not applicable.

 Health
 Not applicable.

 Additional good practices
 Not applicable.

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

Multi-constituent substance Triethylenetetramine, TETA

Section 1: Title

Product definition

Product name

Short title of the exposure scenario 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

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of List of use descriptors

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 worker exposure

Contributing exposure 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.

Other operational conditions affecting worker exposure: Indoor, professional setting

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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.

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

Professional

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

1.10x10-3

Not applicable

1.10x10-3

Not applicable.

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Triethylenetetramine, TETA

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - 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%.

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

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

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

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%.

1.1x10-3

6.88x10-4

6.88x10-3

Not applicable.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

Emission Days (days/year): 20

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

Triethylenetetramine, TETA

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:

prevent release:

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -

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

Professional

Process Category: PROC21, PROC24 Sector of end use: SU22

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Concentration of substance in mixture or article:

Amounts used:

25% 604

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

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):

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

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Regional use tonnage (tonnes/year): 2418 Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): Average Local Daily Tonnage (kg/day): 2745

None Other operational conditions of use affecting environmental

1 1x10-3

0.01

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%.

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

365 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None exposure:

Release fraction to air from process (initial release prior to

5 00x10-3 Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

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

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimated Contributing exposure scenario con articles		0: Low energy manipulation of	substances bound in materials and/or
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.	Since the substance is not classified for acute effects and therefore, no acute DNEI 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 DNEI 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 DNEI 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 DNEI 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 exposure estimates for other PROC are below this value

Not applicable.

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 1: High (mechanical) energy work-up of substances 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 applicable.	Not applicable.	Not applicable.

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

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 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 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 Combined has been derived. 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. The ECETOC TRA tool has been used to Short term exposure, Local, Not applicable. 0.12 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 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	Value	Justification	

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

Concentration in sewage (PECstp) **EUSES** calculation Concentration in sewage sludge **EUSES** calculation mg/kg dwt **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 PEC soil (local+regional) **Local concentration Justification** Agricultural soil averaged mg/kg Not evaluated. **EUSES** calculation Grassland averaged mg/kg dwt Not evaluated. 0.114 **EUSES** calculation Groundwater mg/l 1.13x10-3 Not evaluated. **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 **EUSES** calculation Not evaluated. Not evaluated. **Local concentration** PEC aquatic (local+regional) Justification Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

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 3.2 Environment Exposure estimation

Contributing exposure 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	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	4.2x10-4	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

Section 4: Guidance to check compliance with the exposure scenario

Environment Not available.

Health Not available.

Not evaluated.

Not evaluated.

Not applicable.

PEC aquatic (local+regional)

2.93x10-8

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

2.22x10-11

2.22x10-11

4.01x10-11

Not applicable.

Local concentration

Environment Not applicable.
Health Not applicable.
Additional good practices Not applicable.

Triethylenetetramine, TETA

During emission mg/m³

Annual average mg/m³

Micro-organism mg/l

Annual deposition mg/m2/d

Identified use name: Handling of solid products with small amounts of unbound ethylenamines - Use of preparations containing EA up to 2% -

EUSES calculation

EUSES calculation

EUSES calculation

Justification

Not applicable.

Professional Process Category: PROC21, PROC24

Sector of end use: SU22 Subsequent service life relevant for that use: No.

Environmental Release Category: ERC11a

Annex to the extended Safety Data Sheet (eSDS)

Identification of the substance or mixture

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

Section 1: Title

Short title of the exposure scenario 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

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 worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Indoor. industrial setting Other operational conditions affecting worker 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:

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

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

management supervision controls.

Section 2.1 Control of worker exposure

Contributing exposure 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).

Human factors not influenced by risk management: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg Other operational conditions affecting worker exposure: Indoor, industrial 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:

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.

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

Industrial

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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 90%

Section 2.1 Control of worker exposure

Contributing exposure 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

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

Other operational conditions affecting worker 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.

Section 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation (charging/discharging) from/to

vessels/large containers at dedicated facilities

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

Not applicable.

Other operational conditions affecting worker exposure: Indoor. industrial setting

Technical conditions and measures at process level (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 removal efficiency of (%): 90%

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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation into small containers (dedicated

filling line, including weighing)

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 operational conditions affecting worker exposure: Indoor, industrial setting

Technical conditions and measures at process level

Organisational measures to prevent/limit releases,

(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%

Not applicable.

dispersion and exposure: 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

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 2.1 Control of worker exposure

Contributing exposure 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

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

Not applicable.

Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

Contributing exposure 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:

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 operational conditions affecting worker 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.

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.

Section 2.2: Control of environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

prevent release:

Technical conditions and measures at process level (source) to

Not applicable.

1.10x10-3

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 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

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

Technical conditions and measures at process level (source) to

prevent release:

Not applicable.

1.10x10-3

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.

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental

exposure:

Release fraction to air from process (initial release prior to

RMM):

1.1x10-3

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 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

Release fraction to soil from process (initial release prior to

Release fraction to wastewater from process (initial release

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

6.88x10-3

Not applicable.

1.38

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

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

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

Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

(%):

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

Frequency and duration of use: Continuous release

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None Other operational conditions of use affecting environmental

Release fraction to air from process (initial release prior to

RMM):

exposure:

6 88x10-4

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

Release fraction to wastewater from process (initial release

prior to RMM):

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

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,

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

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

PROC09, PROC13, PROC14 Substance supplied to that use in form of: In a mixture

Sector of end use: SU03

Frequency and duration of use: Continuous release. 220 Emission Days (days/year): Environmental factors not influenced by risk management:

1 1x10-3

Not applicable.

Local marine water dilution factor: 100 Other operational conditions of use 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):

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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required.

to provide the required removal efficiency of 3 (%): Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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

Triethylenetetramine, TETA

prior to RMM):

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

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

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

5.00x10-3

Not applicable.

0.01

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

and articles (multistage and/or signi	•	Doca/Concentration	Justification
Route of exposure Long term exposure, Systemic, Dermal	Contributing scenarios Not applicable.	Dose/Concentration 0.0822	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.	0.457	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 DNEI 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 DNEI 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 DNEI 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 3.1Workers Exposure estimates Contributing exposure scenario con		1: Calendering 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 DNEI 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 DNEI 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% - 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

Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable 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. 0.914 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 **Section 3.1Workers Exposure estimation** Contributing exposure scenario controlling worker exposure for 2: Industrial spraying Route of exposure **Contributing scenarios Dose/Concentration Justification** Long term exposure, Systemic, The ECETOC TRA tool has been used to 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 The ECETOC TRA tool has been used to 0.457 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 evaluated. Not applicable. Not applicable. 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. 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 acute effects and therefore, no acute DNEL Inhalable 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. 0.914 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 Section 3.1Workers Exposure estimation Contributing exposure 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 **Dose/Concentration Contributing scenarios** Justification The ECETOC TRA tool has been used to Long term exposure, Systemic, 0.0411 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, 0.548 Not applicable. 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

Not applicable.

Not applicable.

Triethylenetetramine, TETA

Long term exposure, Systemic,

Long term exposure, Local, Dermal Not applicable.

Combined

Not evaluated.

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

Not applicable.

Not applicable.

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

140/213

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. Not applicable. Short term exposure, Systemic, Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Dermal has been derived Not applicable. Since the substance is not classified for Short term exposure, Systemic, Not applicable 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 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 Short term exposure, Local, Not applicable. 1.097 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 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 4: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Justification Route of exposure **Contributing scenarios Dose/Concentration** Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.0822 estimate workplace exposures unless

highest exposure level is given since the exposure estimates for other PROC are below this value The ECETOC TRA tool has been used to Not applicable. 0.457 Long term exposure, Systemic, 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

otherwise indicated. The PROC with the

Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable. Combined

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 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 **Dermal**

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 Inhalable

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.

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

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

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

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 5: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Contributing scenarios Dose/Concentration Route of exposure Justification

Long term exposure, Systemic, 0.0822 The ECETOC TRA tool has been used to 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

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

Long term exposure, Systemic, 0.457 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 evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. Not applicable. Not applicable. Long term exposure, Local, Not applicable Since the substance is not classified for Not applicable. acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL **Dermal** has been derived. Not applicable. Since the substance is not classified for Short term exposure, Systemic, Not applicable acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for 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. 0.914 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 **Section 3.1Workers Exposure estimation** Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring Route of exposure **Contributing scenarios Dose/Concentration** Justification The ECETOC TRA tool has been used to Long term exposure, Systemic, 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 The ECETOC TRA tool has been used to 0.548 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 evaluated. Not applicable. Not applicable. Combined Long term exposure, Local, Dermal Not applicable. 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 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 acute effects and therefore, no acute DNEL Inhalable has been derived. Short term exposure, Systemic, Not applicable. Since the substance is not classified for Not applicable Combined acute effects and therefore, no acute DNEL has been derived. Not applicable. Since the substance is not classified for Short term exposure, Local, Dermal Not applicable. acute effects and therefore, no acute DNEL has been derived. Short term exposure, Local, Not applicable. 1.097 The ECETOC TRA tool has been used to estimate workplace exposures unless Inhalable otherwise indicated. The PROC with 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 15% - Industrial Process Category: PROC05, PROC06, PROC07, PROC08a, PROC08b, PROC09, PROC13, PROC14

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

below this value

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

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

Section 3.1Workers Exposure estimates			
Contributing exposure scenario con extrusion, pelletisation	trolling worker exposure for	7: Production of preparations*	or articles by tabletting, compression,
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 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Release from point source

Groundwater mg/l	Not evaluated.	1.35x10-3	EUSES calculation
Grassland averaged mg/kg dwt	0.041	0.155	EUSES calculation
Agricultural soil averaged mg/kg dwt	0.021	0.135	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	Not evaluated.	1.42x10-4	EUSES calculation
Fresh water mg/l	Not evaluated.	1.43x10-3	EUSES calculation
	Local concentration	PEC aquatic (local+regional)	Justification
Concentration in sewage sludge mg/kg dwt	0	EUSES calculation	
mg/l			
Concentration in sewage (PECstp)	0	EUSES calculation	
	Value	Justification	
Soil (direct releases only)	0	0	Not applicable.
air (direct + STP)	4.26	3.5	EUSES calculation
Surface water	0	0	EUSES calculation
Waste water	0	0	EUSES calculation
	(local exposure estimation) kg/day	exposure estimation kg/day	

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 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

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b,

Justification

Sector of end use: SU03
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

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 PEC aquatic (local+regional) Local concentration **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

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 dwt 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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 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

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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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
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 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 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.

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

Subsequent service life relevant for that use: No. Release Category: ERC01, ERC02, ERC04, ERC05,

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 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 Identified use name: Use of ethylenamines in open processes with high exposure potential and

List of use descriptors

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 worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial 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:

dispersion and exposure:

Organisational measures to prevent/limit releases,

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

(source) to prevent release:

Technical conditions and measures to control dispersion

Technical conditions and measures at process level

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.

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

Industrial

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.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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.

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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:

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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:

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 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure: Indoor, industrial 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% - 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

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

Organisational measures to prevent/limit releases,

Personal protection:

dispersion and exposure:

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

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.

removal efficiency of (%): 90%

Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker 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:

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%

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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression,

Not applicable.

extrusion, pelletisation

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 operational conditions affecting worker 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.

Indoor, industrial setting

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 2.1 Control of worker exposure

Contributing exposure 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: 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 operational conditions affecting worker 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:

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%

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

ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Subsequent service life relevant for that use: No. Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b,

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

to provide the required 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 applicable.

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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:

1 10x10-3

Not applicable.

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.

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

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

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

None.

1.1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

100 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Frequency and duration of use: Continuous release.

20 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None. exposure:

Release fraction to air from process (initial release prior to

6.88x10-4

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 process (initial release prior to

Release fraction to wastewater from process (initial release

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:

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) =>37.4 to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Concentration of substance in mixture or article:

Amounts used:

2418 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 604 Average Local Daily Tonnage (kg/day): 2745

Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental

Release fraction to air from process (initial release prior to

RMM):

exposure:

Release fraction to soil from process (initial release prior to

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment plant:

Product Characteristics: Not applicable.

1.38

Regional use tonnage (tonnes/year):

Frequency and duration of use:

1.1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

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

365 Emission Days (days/year): **Environmental factors not influenced by risk management:** Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental exposure: Release fraction to air from process (initial release prior to RMM): Release fraction to soil from process (initial release prior to 5.00x10-3 RMM): Release fraction to wastewater from process (initial release 0.01 prior to RMM): 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: 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 (%): Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment

Section 3: Exposure estimation

plant:

Route of exposure	ficant contact) 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

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

Section 3.1Workers Exposure estimates Contributing exposure scenario con		1: Industrial spraying	
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 3.1Workers Exposure estimated Contributing exposure scenario convessels/large containers at non-dedicated containers.	trolling worker exposure for	2: Transfer of substance or pre	paration (charging/discharging) from/to
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

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

has been derived.

Short term exposure, Local, Inhalable	Not applicable.	1.22	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 3.1Workers Exposure estimated Contributing exposure scenario convessels/large containers at dedicate	trolling worker exposure for	3: Transfer of substance or pre	paration (charging/discharging) from/to
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 3.1Workers Exposure estimated Contributing exposure scenario confilling line, including weighing)		4: Transfer of substance or pre	paration into small containers (dedicated
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.

Not applicable.

Since the substance is not classified for acute effects and therefore, no acute DNEL

Triethylenetetramine, TETA

Short term exposure, Local, Dermal 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

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 acute effects and therefore, no acute DNEL Inhalable 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 The ECETOC TRA tool has been used to 1.22 Short term exposure, Local, Not applicable. 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

Section 3.1Workers Exposure estimation

Long term exposure, Systemic,

Contributing exposure scenario controlling worker exposure for 5: Roller application or brushing

Not applicable.

Route of exposure **Contributing scenarios Dose/Concentration Justification** The ECETOC TRA tool has been used to Long term exposure, Systemic, Not applicable. 0.09 **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

0.61 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

Long term exposure, Systemic, Not applicable. 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. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL Inhalable

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. 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

The ECETOC TRA tool has been used to

below this value

Section 3.1Workers Exposure estimation

Contributing exposure 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, Not applicable. Not applicable. Not applicable. **Dermal**

Long term exposure, Systemic, Not applicable. Not applicable. Not applicable.

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

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

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

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 7: Production of preparations* or articles by tabletting, compression, extrusion, pelletisation

Route of exposure **Contributing scenarios Dose/Concentration Justification** Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Dermal Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable 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.

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. Not applicable. Not applicable. Inhalable

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 8: Hand-mixing with intimate contact and only PPE available

Dose/Concentration Justification Route of exposure **Contributing scenarios** Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Dermal Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Inhalable Long term exposure, Systemic, Not applicable. Not applicable. Not applicable. Combined Not applicable. Long term exposure, Local, Dermal 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. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Release from point source (local exposure estimation) exposure estimation kg/day kg/day Waste water 0 0 **EUSES** calculation Surface water 0 0 **EUSES** calculation air (direct + STP) 4.26 3.5 **EUSES** calculation Soil (direct releases only) 0 Not applicable. Value **Justification** Concentration in sewage (PECstp) **EUSES** calculation

Total release for regional

Triethylenetetramine, TETA

Inhalable

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 2% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

Not applicable.

Justification

Substance supplied to that use in form of: In a mixture Sector of end use: SU03

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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

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

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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

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

Justification

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

Sector of end use: SU03

Subsequent service life relevant for that use: No.

ontal Release Category: FRC01_FRC02_FRC04_FRC05

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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Grassland averaged mg/kg dwt 1.62x10-7 0.114 **EUSES** calculation Groundwater mg/l Not evaluated. 1.13x10-3 **EUSES** calculation PEC air (local+regional) **Justification Local concentration EUSES** calculation During emission mg/m³ 6.98x10-8 Not evaluated. 3.31x10-8 Annual average mg/m³ 3.82x10-9 **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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Intermittent release. mg/l Not applicable. Not applicable. Not applicable. PEC sediment (local+regional) **Local concentration Justification** Fresh water sediment mg/kg dwt Not evaluated. 0.722 **EUSES** calculation Marine water sediment mg/kg dwt 0.072 Not evaluated. **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 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 Justification** PEC aquatic (local+regional) Micro-organism mg/l Not applicable. Not applicable. Not applicable.

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

 Environment
 Not applicable.

 Health
 Not applicable.

 Additional good practices
 Not applicable.

ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

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 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 Identified use name: Use of ethylenamines in open processes with high exposure potential and

List of use descriptors

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 worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

Indoor, industrial setting and professional 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:

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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 1: 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: Default breathing volume Light work: 10 m³/d Default Body weight: Workers: 70 kg

Not applicable.

Other operational conditions affecting worker 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.

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

Industrial

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor. industrial setting

Indoor. industrial setting and professional setting

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor. industrial setting

Indoor, industrial setting and professional setting

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 2.1 Control of worker exposure

Contributing exposure 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

Other operational conditions affecting worker exposure: Indoor. industrial setting

Indoor. industrial setting and professional setting

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.

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

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Section 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

Indoor, industrial setting and professional setting

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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 6: Treatment of articles by dipping and pouring

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).

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

Indoor, industrial setting Other operational conditions affecting worker exposure:

Indoor, industrial setting and professional setting

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.

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.

Section 2.1 Control of worker exposure

Contributing exposure 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).

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

Other operational conditions affecting worker exposure:

Indoor. industrial setting Indoor. industrial setting and professional setting

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,

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 2.1 Control of worker exposure

Contributing exposure 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 operational conditions affecting worker exposure: Indoor, industrial setting

Indoor. industrial setting and professional setting

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% - 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

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

Organisational measures to prevent/limit releases,

Personal protection:

dispersion and exposure:

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 4650 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 1160 Average Local Daily Tonnage (kg/day): 3867

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

Not applicable.

1.10x10-3

1.10x10-3

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

Technical conditions and measures at process level (source) to

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Not applicable. Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to

RMM):

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

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

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

Not applicable.

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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

None.

1.1x10-3

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) No wastewater treatment required.

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

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Continuous release. Frequency and duration of use:

Emission Days (days/year):

Environmental 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% - Industrial Process Category: PROC05, PROC07, PROC08a, PROC08b, PROC09, PROC10, PROC13, PROC14, PROC19

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

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

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

Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental 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 Release fraction to wastewater from process (initial release 1.38 prior to RMM): 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: 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 (%): Organisational measures to prevent/limit release from site: Conditions and measures related to municipal sewage treatment plant: Contributing exposure scenario controlling environmental exposure for 4: Processing aid Operational conditions: Indoor use. Product Characteristics: Not applicable. Concentration of substance in mixture or article: Amounts used: 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 Frequency and duration of use: Continuous release. Emission Days (days/year): 220 Environmental factors not influenced by risk management: Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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) No wastewater treatment required.

to provide the required 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 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 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

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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 5.00x10-3

Release fraction to wastewater from process (initial release

prior to RMM):

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 (%):

Organisational measures to prevent/limit release from site:

Conditions and measures related to municipal sewage treatment

plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

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

0.01

Not applicable.

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.
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,	Not applicable. Not applicable.	Not applicable. 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

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

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

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 3.1Workers Exposure estimation						
Contributing exposure scenario controlling worker exposure for 1: Industrial spraying						
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.			
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.			
Short term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.			
Section 3.1Workers Exposure estim Contributing exposure scenario con vessels/large containers at non-ded	trolling worker exposure for 2: T	ransfer of substance or preparati	ion (charging/discharging) from/to			
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.			
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.			
Short term exposure, Local, Inhalable	Not applicable.	Not applicable.	Not applicable.			
Section 3.1Workers Exposure estim Contributing exposure scenario con vessels/large containers at dedicate	trolling worker exposure for 3: T	ransfer of substance or preparati	ion (charging/discharging) from/to			
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.			
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. 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,

Section 3.1Workers Exposure estimates	ation		
Contributing exposure scenario con filling line, including weighing)	trolling worker exposure for 4	: Transfer of substance or prep	paration into small containers (dedicated
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.
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.	Not applicable.	Not applicable.
Section 3.1Workers Exposure estima		· Pollor application or bruching	
Contributing exposure scenario con			
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.
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. Not applicable.	Not applicable. Not applicable.
Section 3.1Workers Exposure estimate Contributing exposure scenario con		: Treatment of articles by dippi	ing and pouring
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.
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. Not applicable.	Not applicable. Not applicable.

Inhalable

ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Section 3.1Workers Exposure estimate			
Contributing exposure scenario con extrusion, pelletisation	trolling worker exposure for	7: Production of preparations*	or articles by tabletting, compression,
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.
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.	Not applicable.	Not applicable.
Section 3.1Workers Exposure estim Contributing exposure scenario con		8: Hand-miving with intimete or	ontact and only DDE available
		_	
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.
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.

below this value

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

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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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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

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.

ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

Environmental Release Category: ERC01, ERC02, ERC04, ERC05,

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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 8.20x10-8 0.114 **EUSES** calculation dwt 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 3.31x10-8 3 82x10-9 **EUSES** calculation Annual deposition mg/m2/d Not evaluated. 6.92x10-9 **EUSES** calculation **Local concentration** PEC aquatic (local+regional) **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	12.8	7.71	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 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.

Concentration in sewage sludge **EUSES** calculation mg/kg dwt Local concentration PEC aquatic (local+regional) Justification Fresh water mg/l 1.43x10-3 Not evaluated. **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 PEC soil (local+regional) **Justification Local concentration** Agricultural soil averaged mg/kg 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 **EUSES** calculation 3 86x10-3 Not evaluated **Local concentration** PEC aquatic (local+regional) **Justification**

Not applicable.

Section 4: Guidance to check compliance with the exposure scenario

Micro-organism mg/l

Environment Not available.

Health Not available.

Not applicable.

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

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.

Not applicable.

Environmental Release Category: ERC01, ERC02, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07, ERC08a, ERC08b, ERC08c, ERC08e, ERC08f, ERC11a, ERC12a, ERC12b

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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 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

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 Control of worker exposure

Contributing exposure 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%.

Not applicable. Amounts used:

Frequency and duration of use: Exposure duration per day: 15 min. to < 1 hour

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.

Not applicable.

Indoor. professional setting Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

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

vessels/large containers at non-dedicated facilities

Liquid. Covers concentrations up to 25% **Product Characteristics:**

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

Not applicable.

Other operational conditions affecting worker 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:

Not applicable.

Organisational measures to prevent/limit releases,

dispersion and exposure:

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

Professional

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 4650 Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 1160 3867 Average Local Daily Tonnage (kg/day):

Frequency and duration of use:

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

Continuous release.

1.10x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 11636

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to 1.10x10-3

Release fraction to soil from process (initial release prior to

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

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 25% - Professional Process Category: PROC05, PROC08a Substance supplied to that use in form of: In a mixture Sector of end use: SU22

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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use:

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

Continuous release.

1 1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

20 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None.

Release fraction to air from process (initial release prior to

exposure:

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

6.88x10-4

6 88x10-3

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 25% - Professional Process Category: PROC05, PROC08a Substance supplied to that use in form of: In a mixture Sector of end use: SU22

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

Technical conditions and measures at process level (source) to

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

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

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

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

Treat air emission to provide a typical removal efficiency of

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

Conditions and measures related to municipal sewage treatment

plant:

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: Other operational conditions of use affecting environmental exposure:

None. 1.1x10-3

Not applicable.

100

Not applicable.

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):

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) No wastewater treatment required.

to provide the required 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 air emission controls required; required removal efficiency is 0%.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Regional use tonnage (tonnes/year): 10230 25% Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): 2560 Average Local Daily Tonnage (kg/day): 7014

Frequency and duration of use: Continuous release.

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None

exposure:

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

5.00x10-3 Release fraction to soil from process (initial release prior to

RMM):

Release fraction to air from process (initial release prior to

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

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 (%):

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

0.01

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

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

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

Contributing exposure 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. 0.0685714 **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

The ECETOC TRA tool has been used to Long term exposure, Systemic, 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

Long term exposure, Systemic, Not evaluated. Not applicable. Not applicable.

Combined

Short term exposure, Systemic,

Short term exposure, Local,

Inhalable

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

Not applicable

Not applicable.

Inhalable

acute effects and therefore, no acute DNEL

has been derived. Since the substance is not classified for

acute effects and therefore, no acute DNEL **Dermal**

Not applicable.

has been derived.

Not applicable Not applicable. Since the substance is not classified for Short term exposure, Systemic, 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 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 The ECETOC TRA tool has been used to

has been derived. 0.73115

> 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% - Professional Process Category: PROC05, PROC08a Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Section 3.1Workers Exposure estim	ation		
Contributing exposure scenario convessels/large containers at non-ded		1: Transfer of substance or pre	paration (charging/discharging) from/to
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.	0.45697	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.	0.91393	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 exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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

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

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 PEC aquatic (local+regional) Local concentration **Justification** Micro-organism mg/l Not applicable. Not applicable. Not applicable.

Section 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Local concentration PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg Not evaluated. **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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 25% - Professional Process Category: PROC05, PROC08a Substance supplied to that use in form of: In a mixture Sector of end use: SU22

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.

Contributing exposure 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	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	4.2x10-4	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 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

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 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 Identified use name: Use of ethylenamines in open processes with high exposure potential and

List of use descriptors 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 Control of worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Indoor. professional setting Other operational conditions affecting worker 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 2.1 Control of worker exposure

Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing

Liquid. Covers concentrations up to 15% **Product Characteristics:**

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 operational conditions affecting worker 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.

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 95%

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

Professional

Section 2.1 Control of worker exposure

Contributing exposure 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

Other operational conditions affecting worker 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:

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

removal efficiency of (%): 90%

1 10x10-3

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 environmental exposure

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 300

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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:

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

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

Environmental factors not influenced by risk management: Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None. exposure: 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): 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: 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) No wastewater treatment required. to provide the required removal efficiency of 3 (%): Conditions and measures related to municipal sewage treatment Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint Operational conditions: Indoor/Outdoor use. **Product Characteristics:** Not applicable. Concentration of substance in mixture or article: Amounts used: 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 Frequency and duration of use: Continuous release. Emission Days (days/year): 220 Environmental factors not influenced by risk management: Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental Release fraction to air from process (initial release prior to 1 1x10-3 RMM): Release fraction to soil from process (initial release prior to RMM): Release fraction to wastewater from process (initial release prior to RMM):

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) No wastewater treatment required. to provide the required 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 air emission controls required; required removal efficiency is 0%.

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

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals Operational conditions: Indoor use. Product Characteristics: Not applicable. Concentration of substance in mixture or article: Amounts used: 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 Frequency and duration of use: Continuous release. Emission Days (days/year): 20 Environmental factors not influenced by risk management: Local marine water dilution factor: 100 None. Other operational conditions of use affecting environmental 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 1.38 Release fraction to wastewater from process (initial release prior to RMM): 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: 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 (%): Conditions and measures related to municipal sewage treatment plant: Contributing exposure scenario controlling environmental exposure for 4: Processing aid Operational conditions: Indoor use. **Product Characteristics:** Not applicable. Concentration of substance in mixture or article: Amounts used: 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):

Frequency and duration of use: Continuous release.

220 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None.

exposure:

Triethylenetetramine, TETA

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):

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) No wastewater treatment required.

Not applicable.

1 1x10-3

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

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

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

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

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Frequency and duration of use: Continuous release.

365 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use affecting environmental None.

exposure:

Release fraction to air from process (initial release prior to

Release fraction to soil from process (initial release prior to 5.00x10-3

RMM):

Release fraction to wastewater from process (initial release

prior to RMM):

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 (%):

Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

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

0.01

Not applicable.

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

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

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

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 Not applicable.

Long term exposure, Systemic,

Short term exposure, Systemic,

Combined

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

Inhalable

Dermal

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

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 Process Category: PROC08a, PROC10, PROC11 Substance supplied to that use in form of: In a mixture Sector of end use: SU22

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

0.914

Continu 2	1Morkoro	Evnocuro	actimation
Section 3	. I WOI KEIS	EXDUSUIE	estimation

Short term exposure, Local,

Inhalable

Contributing exposure scenario controlling worker exposure for 1: Roller application or brushing

Not applicable.

Contributing scenarios Route of exposure **Dose/Concentration** Justification Not applicable. 0.0822 The ECETOC TRA tool has been used to estimate workplace exposures unless

Long term exposure, Systemic, **Dermal**

exposure estimates for other PROC are below this value 0.457 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

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.

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

acute effects and therefore, no acute DNEL Inhalable 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. 0.914 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

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 2: Non industrial spraying

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

Long term exposure, Systemic, The ECETOC TRA tool has been used to Not applicable. 0.214 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. 0.121 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 evaluated Not applicable. Not applicable. Long term exposure, Systemic, Combined

Long term exposure, Local, Dermal 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

> 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

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

otherwise indicated. The PROC with the highest exposure level is given since the

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

below this value

Sector of end use: SU22

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.	0.243	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

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	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

Value Justification Concentration in sewage (PECstp) **EUSES** calculation 0 mg/l Concentration in sewage sludge **EUSES** calculation mg/kg dwt **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. **EUSES** calculation 0.722 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 dwt Grassland averaged mg/kg dwt Not evaluated. 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. 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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

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 3.2 Environment Exposure estimation

Contributing exposure 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	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	4.2x10-4	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 4: Guidance to check compliance with the exposure scenario

EnvironmentNot available.HealthNot 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

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 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 Identified use name: Use of ethylenamines in open processes with high exposure potential and

List of use descriptors

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 worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Other operational conditions affecting worker 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:

dispersion and exposure:

Personal protection:

Organisational measures to prevent/limit releases,

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 2.1 Control of worker exposure

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

Other operational conditions affecting worker 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:

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.

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%

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

Professional

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

4650

1.10x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use:

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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 (%):

Continuous release.

1.10x10-3

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 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

Treat on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

1.1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

100 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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

1.38

Not applicable.

6.88x10-4

6.88x10-3

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

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 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 (%):

Conditions and measures related to municipal sewage treatment

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: None Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

100

1 1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Continuous release. Frequency and duration of use:

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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 5.00x10-3

RMM):

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

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

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

Not applicable.

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) =>37.4 to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

Section 3.1Workers Exposure estimation

Contributing exposure 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,

Not applicable.

The ECETOC TRA tool has been used to 0.09 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, 0.61 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 applicable. Not applicable. Not applicable.

Combined

Dermal

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

Long term exposure, Local,

Not applicable Inhalable

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,

Short term exposure, Local,

Short term exposure, Systemic,

Dermal

Not applicable

Not applicable

Not applicable.

Not applicable.

Not applicable.

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

Short term exposure, Systemic, Since the substance is not classified for acute effects and therefore, no acute DNEL Inhalable

has been derived.

Since the substance is not classified for

acute effects and therefore, no acute DNEL Combined

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. 1.22

The ECETOC TRA tool has been used to

Inhalable estimate workplace exposures unless otherwise indicated. The PROC with the

0.21

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

Section 3.1Workers Exposure estimation

Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying

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

Long term exposure, Systemic,

Dermal

Not applicable.

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

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

Long term exposure, Systemic, Inhalable	Not applicable.	0.15	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.	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

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 2% - Professional Process Category: PROC08a, PROC11
Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Total release for regional

Release from point source

	(local exposure estimation) kg/day	exposure estimation kg/day	oustmoution
Waste water	0	0	EUSES calculation
Surface water	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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

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

Justification

202/213

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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	EUSES calculation
Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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% - 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

Justification

Total release for regional

Marine water sediment mg/kg dwt Not evaluated. 0.072 **EUSES** calculation **Local concentration** PEC soil (local+regional) **Justification** Agricultural soil averaged mg/kg 4.26x10-5 0.114 **EUSES** calculation dwt 8.44x10-5 Grassland averaged mg/kg dwt 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 3.2 Environment Exposure estimation

Contributing exposure 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	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	4.2x10-4	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 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

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 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 Identified use name: Use of ethylenamines in open processes with high exposure potential and

List of use descriptors

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

Section 2.1 Control of worker exposure

Contributing exposure 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%

Not applicable. Amounts used:

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.

Not applicable.

Indoor. professional setting Other operational conditions affecting worker 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:

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 2.1 Control of worker exposure

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

Other operational conditions affecting worker 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:

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.

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

Professional

Contributing exposure scenario controlling environmental exposure for 0: Ashless dispersant

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

300 Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100

Other operational conditions of use 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):

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) No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant:

Not applicable.

1.10x10-3

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

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

Contributing exposure scenario controlling environmental exposure for 1: Use as an epoxy curing agent

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use: Continuous release.

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None. Other operational conditions of use 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):

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 (%):

1.10x10-3

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 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 on-site wastewater (prior to receiving water discharge) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Contributing exposure scenario controlling environmental exposure for 2: Epoxy curing agent in paint

Operational conditions: Indoor/Outdoor use.

Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

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

Frequency and duration of use:

Emission Days (days/year): 220

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment

plant:

Not applicable.

Continuous release

1.1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 3: Laboratory chemicals

Operational conditions: Indoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

100 Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: 25% Annual site tonnage (tonnes/year): 25.1 Average Local Daily Tonnage (kg/day): 1255

Frequency and duration of use:

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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):

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

Continuous release.

6.88x10-4

6.88x10-3

1.38

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 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 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 (%):

Conditions and measures related to municipal sewage treatment

Contributing exposure scenario controlling environmental exposure for 4: Processing aid

Operational conditions: Indoor use.

Product Characteristics:

Concentration of substance in mixture or article:

Amounts used:

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):

Frequency and duration of use: Continuous release.

Emission Days (days/year):

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 None Other operational conditions of use 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):

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) No wastewater treatment required. to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment

plant:

Not applicable.

220

1 1x10-3

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%.

Contributing exposure scenario controlling environmental exposure for 5: Use of coatings and adhesives

Operational conditions: Indoor/Outdoor use.

Product Characteristics: Not applicable.

Concentration of substance in mixture or article:

Amounts used:

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): 7014

Continuous release. Frequency and duration of use:

Emission Days (days/year): 365

Environmental factors not influenced by risk management:

Local marine water dilution factor: 100 Other operational conditions of use 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 5.00x10-3

RMM):

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

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

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) =>37.4 to provide the required removal efficiency of 3 (%):

Conditions and measures related to municipal sewage treatment plant:

Section 3: Exposure estimation

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Section 3.1Workers Exposure estim			
Contributing exposure scenario con vessels/large containers at non-ded		0: Transfer of substance or pre	paration (charging/discharging) from/to
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.	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.	Not applicable.	Not applicable.

0.01

Not applicable.

Contributing exposure scenario controlling worker exposure for 1: Non industrial spraying

Route of exposure	Contributing scenarios	Dose/Concentration	Justification
Long term exposure, Systemic, Dermal	Not applicable.	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
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

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.

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. Since the substance is not classified for Not applicable acute effects and therefore, no acute DNEL **Dermal**

has been derived.

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 0.5% - Professional Process Category: PROC08a, PROC11 Substance supplied to that use in form of: In a mixture

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. Short term exposure, Systemic, 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. Not applicable. 1.22 Short term exposure, Local, 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 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	4.26	3.5	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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	0.021	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 0.5% - Professional Process Category: PROC08a, PROC11 Substance supplied to that use in form of: In a mixture

Sector of end use: SU22

	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.

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0	3.1	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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 3.2 Environment Exposure estimation

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	2.51x10-4	6.88x10-4	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% - Professional Process Category: PROC08a, PROC11

Substance supplied to that use in form of: In a mixture Sector of end use: SU22

Soil (direct releases only)	0	6.88x10-3	Not applicable.
	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.

Contributing exposure 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	0	0	EUSES calculation
air (direct + STP)	0.012	1.82	EUSES calculation
Soil (direct releases only)	0	0	Not applicable.
	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.

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

Contributing exposure 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	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	4.2x10-4	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 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.