SAFETY DATA SHEET

HEPA-S200

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

1.1 Product identifier

Product name : HEPA-S200

Product description : Not applicable

Product type : Liquid.

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

Product use : Intermediate. Chemical synthesis.

Area of application : Industrial applications.

1.3 Details of the supplier of the safety data sheet

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

e-mail address of person responsible for this SDS : SDS.Delamine@delamine.com

1.4 Emergency telephone number

Supplier

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

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

Acute Tox. 4, H302
Acute Tox. 4, H312
Skin Corr. 1B, H314
Eye Dam. 1, H318
Skin Sens. 1, H317
Aquatic Acute 1, H400
Aquatic Chronic 1, H410

Ingredients of unknown toxicity : Not applicable.

Ingredients of unknown ecotoxicity : Not applicable.

Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Xn; R21/22
C; R34
R43
N; R50/53

Human health hazards : Harmful in contact with skin and if swallowed. Causes burns. May cause sensitisation by skin contact.

SECTION 2: Hazards identification

Environmental hazards : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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

Precautionary statements

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

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

Storage : Store locked up.

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

Hazardous ingredients : Amines, polyethylenepoly-3,6,9,12-tetra-azatetradecamethylenediamine

Supplemental label elements : Not applicable.

2.3 Other hazards

PBT: No.

vPvB: No.

Other hazards which do not result in classification : None known.Not applicable.

SECTION 3: Composition/information on ingredients

Substance/mixture : Mixture

Product/ingredient name	Identifiers	%	Classification 67/548/EEC	Classification Regulation (EC) No. 1272/2008 [CLP]	Type

SECTION 3: Composition/information on ingredients

Amines, polyethylenepoly-	EC: 268-626-9 CAS: 68131-73-7 Index: 612-121-00-1	50 - <75	Xn; R21/22 C; R34 R43 N; R50/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	[1]
3,6,9,12-tetra-azatetradecamethylenediamine	REACH #: 01-219485826-22-0 EC: 223-775-9 CAS: 4067-16-7 Index: 612-064-00-2	35 - <50	Xn; R21/22 C; R34 R43 N; R50/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	[1]
Amines, polyethylenepoly-, tetraethylenepentamine fraction	REACH #: 01-2119487290-37 EC: 292-587-7 CAS: 90640-66-7 Index: 612-065-00-8	10 - <20	Xn; R21/22 C; R34 R43 N; R51/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 2, H411	[1]
			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 and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

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.

SECTION 4: First aid measures

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

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.water Spray Foam carbon dioxide Dry sand or other suitable absorbent.

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 very toxic 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".

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. Collect spillage.

6.3 Methods and materials for containment and cleaning up

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

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

SECTION 6: Accidental release measures

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 : No specific data.

Industrial sector specific solutions : No specific data.

SECTION 8: Exposure controls/personal protection

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

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

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

SECTION 8: Exposure controls/personal protection

required.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effects
Amines, polyethylenepoly-	DNEL	Short term Inhalation	8550 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.91 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.59 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.44 mg/cm²	Workers	Local
	DNEL	Short term Dermal	13 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	2542 mg/m³	Consumers	Systemic
	DNEL	Short term Oral	32 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1.59 mg/cm²	Consumers	Local
	DNEL	Long term Dermal	0.4 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.46 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0.65 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.68 mg/cm²	Consumers	Local
3,6,9,12-tetra-azatetradecamethylenediamine	DNEL	Short term Inhalation	8550 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.91 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.59 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.044 mg/cm²	Workers	Local
	DNEL	Short term Dermal	13 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	2542 mg/m³	Consumers	Systemic
	DNEL	Short term Oral	32 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1.59 mg/cm²	Consumers	Local
	DNEL	Long term Dermal	0.4 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.46 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0.65 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.68 mg/cm²	Consumers	Local
Amines, polyethylenepoly-, tetraethylenepentamine fraction	DNEL	Short term Inhalation	6940 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.74 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	1.29 mg/m³	Workers	Systemic
	DNEL	Long term Dermal	0.036 mg/cm²	Workers	Local
	DNEL	Short term Dermal	10 mg/kg	Consumers	Systemic

SECTION 8: Exposure controls/personal protection

			bw/day		
	DNEL	Short term Inhalation	2071 mg/m³	Consumers	Systemic
	DNEL	Short term Oral	26 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Dermal	1.29 mg/cm²	Consumers	Local
	DNEL	Long term Dermal	0.32 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	0.38 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	0.53 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.56 mg/cm²	Consumers	Local

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
Amines, polyethylenepoly-	PNEC	Secondary Poisoning	0.29 mg/kg	Assessment Factors
	PNEC	Fresh water	1.6 µg/l	Assessment Factors
	PNEC	Marine	1.6 µg/l	Assessment Factors
	PNEC	Fresh water sediment	0.14 mg/kg dwt	-
	PNEC	Marine water sediment	0.14 mg/kg dwt	-
	PNEC	Soil	10 mg/kg dwt	-
	PNEC	Sewage Treatment Plant	3.19 mg/l	Assessment Factors
3,6,9,12-tetra-azatetradecamethylenediamine	PNEC	Secondary Poisoning	0.29 mg/kg	Assessment Factors
	PNEC	Fresh water	2.5 µg/l	Assessment Factors
	PNEC	Marine	2.5 µg/l	Assessment Factors
	PNEC	Fresh water sediment	0.22 mg/kg dwt	-
	PNEC	Marine water sediment	0.14 mg/kg dwt	-
	PNEC	Soil	0.18 mg/kg dwt	-
	PNEC	Sewage Treatment Plant	1.64 mg/l	Assessment Factors
Amines, polyethylenepoly-, tetraethylenepentamine fraction	PNEC	Fresh water	6.8 µg/l	Assessment Factors
	PNEC	Marine	6.8 µg/l	Assessment Factors
	PNEC	Fresh water sediment	0.341 mg/kg dwt	-
	PNEC	Marine water sediment	0.187 mg/kg dwt	-
	PNEC	Soil	0.683 mg/kg dwt	-
	PNEC	Sewage Treatment Plant	4.6 mg/l	Assessment Factors
	PNEC	Secondary Poisoning	0.23 mg/kg	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

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.

SECTION 8: Exposure controls/personal protection

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

Skin protection

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

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

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

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

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

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour : Yellow. [Dark]

Odour : Ammonia.

Odour threshold : Not available.

pH : 12

Melting point/freezing point : Not available.

Initial boiling point and boiling range : >350°C

Flash point : Closed cup: 184°C

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Upper/lower flammability or explosive limits : Not available.

Vapour pressure : <0.001 kPa [room temperature]

Vapour density : Not available.

Relative density : 1.015

SECTION 9: Physical and chemical properties

Solubility(ies) : Miscible in water.

Partition coefficient: n-octanol/water : <0

Auto-ignition temperature : >300°C

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): 600 mPa·s

Explosive properties : Not available.

Oxidising properties : Not applicable

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, metals and acids.
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
3,6,9,12-tetra-azatetradecamethylenediamine	LD50 Oral	Rat	1600 mg/kg	-
Amines, polyethylenepoly-, tetraethylenepentamine fraction	LD50 Dermal	Rabbit	1260 mg/kg	-
	LD50 Oral	Rat	3250 mg/kg	-

Conclusion/Summary : Mixture: No applicable toxicity data

Acute toxicity estimates

Route	ATE value
Oral	689.7 mg/kg
Dermal	1114.1 mg/kg

Irritation/Corrosion

Conclusion/Summary

Skin : Mixture :No applicable toxicity data

Eyes : Mixture: No applicable toxicity data

SECTION 11: Toxicological information

Respiratory : Mixture: No applicable toxicity data

Sensitiser

Product/ingredient name	Route of exposure	Species	Result
Amines, polyethylenepoly- 3,6,9,12-tetra-azatetradecamethylenediamine Amines, polyethylenepoly-, tetraethylenepentamine fraction	skin skin skin	Guinea pig Guinea pig Guinea pig	Sensitising Sensitising Sensitising

Conclusion/Summary

Skin : Mixture: No applicable toxicity data

Respiratory : Mixture: No applicable toxicity data

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Amines, polyethylenepoly- 3,6,9,12-tetra-azatetradecamethylenediamine Amines, polyethylenepoly-, tetraethylenepentamine fraction	- - -	Experiment: In vivo Subject: Mammalian-Animal Experiment: In vivo Subject: Mammalian-Animal Cell: Germ Experiment: In vivo Subject: Mammalian-Animal	Negative Negative Negative

Conclusion/Summary : Mixture: No applicable toxicity data

Carcinogenicity

Conclusion/Summary : Mixture: No applicable toxicity data

Reproductive toxicity

Conclusion/Summary : Mixture :No applicable toxicity data

Teratogenicity

Conclusion/Summary : Mixture: No applicable toxicity data

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

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

SECTION 11: Toxicological information

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

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

Short term exposure

Potential immediate effects : No specific data.

Potential delayed effects : No specific data.

Long term exposure

Potential immediate effects : No specific data.

Potential delayed effects : No specific data.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Amines, polyethylenepoly-	Sub-chronic LOAEL Oral	Rat	52 mg/kg	-
3,6,9,12-tetra-azatetradecamethylenediamine	Sub-chronic LOAEL Oral	Rat	52 mg/kg	-
Amines, polyethylenepoly-, tetraethylenepentamine fraction	Sub-chronic LOAEL Oral	Rat	43 mg/kg	26 weeks
	Sub-chronic NOAEL Dermal	Rabbit	50 mg/kg	31 days

Conclusion/Summary : Mixture: No applicable toxicity data

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.

Other information : No specific data.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Amines, polyethylenepoly-	EC50 319.3 mg/l	Micro-organism	2 days
	Acute EC50 0.23 mg/l	Algae	72 hours
	Acute EC50 2.2 mg/l	Daphnia	48 hours
	Acute LC50 100 mg/l	Fish	96 hours
	Acute NOEC 0.16 mg/l	Algae	72 hours
3,6,9,12-tetra-azatetradecamethylenediamine	EC50 164 mg/l	Micro-organism	2 hours
	Acute EC50 0.7 mg/l Fresh water	Algae	72 hours
	Acute EC50 17.5 mg/l Fresh water	Daphnia	48 hours
	Acute LC50 180 mg/l Fresh water	Fish	96 hours
	Acute NOEC 0.25 mg/l Fresh water	Algae	72 hours
	Chronic NOEC 0.8 mg/l Fresh water	Daphnia	14 days
Amines, polyethylenepoly-, tetraethylenepentamine	EC50 97.3 mg/l	Micro-organism	2 hours

SECTION 12: Ecological information

fraction	NOEC 46 mg/l Acute EC50 6.8 mg/l Acute EC50 24.1 mg/l Acute LC50 420 mg/l Acute NOEC 0.5 mg/l	Micro-organism Algae Daphnia Fish Algae	- 72 hours 48 hours 96 hours -

Conclusion/Summary : Mixture: No applicable toxicity data

12.2 Persistence and degradability

Conclusion/Summary : Mixture: No applicable toxicity data

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Amines, polyethylenepoly- 3,6,9,12-tetra-azatetradecamethylenediamine Amines, polyethylenepoly-, tetraethylenepentamine fraction	- - -	- - -	Not readily Not readily Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
HEPA-S200 Amines, polyethylenepoly- 3,6,9,12-tetra-azatetradecamethylenediamine Amines, polyethylenepoly-, tetraethylenepentamine fraction	<0 -3.67 -3.67 -3.16	- - - -	low low low low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : No specific data.

12.5 Results of PBT and vPvB assessment

PBT : No.

vPvB : No.

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

SECTION 13: Disposal considerations

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

13.1 Waste treatment methods

Product

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

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

SECTION 13: Disposal considerations

Packaging

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

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

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN2735	UN2735	UN2735	UN2735
14.2 UN proper shipping name	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (amines, polyethylenepoly-)	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (amines, polyethylenepoly-)	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (amines, polyethylenepoly-). Marine pollutant (amines, polyethylenepoly-, 3,6, 9,12-tetra-azatetradecamethylenediamine)	Polyamines, liquid, corrosive, n.o.s. (amines, polyethylenepoly-)
14.3 Transport hazard class(es)	8 	8 	8 	8 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes.
14.6 Special precautions for user	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Additional information	**Hazard identification number** 80 **Limited quantity** LQ7 **Special provisions** 274 **Tunnel code** (E)	-	**Emergency schedules (EmS)** F-A, S-B	**Passenger and Cargo Aircraft** Quantity limitation: 5 L Packaging instructions: 818 **Cargo Aircraft Only** Quantity limitation: 60 L Packaging instructions: 820 **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L Packaging instructions: Y818

SECTION 14: Transport information

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed

Priority List Chemicals : Not listed

Integrated pollution prevention and control list (IPPC) - Air : Not listed

Integrated pollution prevention and control list (IPPC) - Water : Not listed

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

15.2 Chemical Safety Assessment : Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

15.3 Registration status : Not 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]

SECTION 16: Other information

Classification	Justification
Acute Tox. 4, H302	Calculation method
Acute Tox. 4, H312	Calculation method
Skin Corr. 1B, H314	Expert judgment
Eye Dam. 1, H318	On basis of test data
Skin Sens. 1, H317	Calculation method
Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 1, H410	Calculation method

Full text of abbreviated H statements :

H302	Harmful if swallowed.
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.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS] :

Acute Tox. 4, H302	ACUTE TOXICITY: ORAL - Category 4
Acute Tox. 4, H312	ACUTE TOXICITY: SKIN - Category 4
Aquatic Acute 1, H400	AQUATIC TOXICITY (ACUTE) - Category 1
Aquatic Chronic 1, H410	AQUATIC TOXICITY (CHRONIC) - Category 1
Aquatic Chronic 2, H411	AQUATIC TOXICITY (CHRONIC) - Category 2
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Skin Corr. 1B, H314	SKIN CORROSION/IRRITATION - Category 1B
Skin Sens. 1, H317	SKIN SENSITIZATION - Category 1

Full text of abbreviated R phrases : R21/22- Harmful in contact with skin and if swallowed.
R34- Causes burns.
R43- May cause sensitisation by skin contact.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of classifications [DSD/DPD] : C - Corrosive
Xn - Harmful
N - Dangerous for the environment

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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.