



SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Pentaethylenehexamine, PEHA

1. IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND THE COMPANY/UNDERTAKING

Product label name Pentaethylenehexamine	
Supplier DELAMINE B.V. Barchman Wuytierslaan 10 3818 LH Amersfoort PO Box 473 3800 AL Amersfoort The Netherlands Tel.: +31-334676897	
E-mail address of person responsible for safety data sheet SDS.Delamine@delamine.com	
Emergency telephone AkzoNobel Chemicals-Deventer-NLT +31 570 679211 F +31 570 679801	
Intended use Chemical intermediate	
Date of last issue / Revision number 2010/06/03 / 2.10	

2. HAZARDS IDENTIFICATION

Causes burns. May be very toxic by inhalation of aerosols. May cause sensitization by inhalation and skin contact. Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is to be considered as a substance in conformance to EC directives.			
Information on hazardous ingredients			
Chemical description Pentaethylenehexamine			
Composition / information on ingredients			
Number	% w/w	CAS-number	Chemical name
1	approx. 100	004067-16-7	Pentaethylenehexamine

	Index-No.	EC-number	Symbol(s) (EU classification)	Risk-phrase(s)
1	612-064-00-2	223-775-9	C N	R34 R43 R50/53

4. FIRST AID MEASURES

Symptoms and effects Corrosive to eyes, skin and upper respiratory tract. May be very toxic by inhalation of aerosols. (Do not delay treatment of exposed individuals, death may result.)
First aid
General In all cases of doubt, or when symptoms persist, seek medical attention.



SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Pentaethylenehexamine, PEHA

Inhalation

Provide fresh air, rest, half upright position. Seek medical advice after significant exposure.

Skin

Remove immediately all contaminated clothing. Wash off immediately with plenty of soap and water. Take all contaminated clothing off immediately. Seek medical advice if irritation develops. Launder contaminated clothes with plenty of water before reuse. Destroy contaminated shoes if made of leather.

Eye

Rinse immediately and as long as possible with plenty of water (at least 15 minutes), Eyelids should be held away from the eyeball to ensure thorough rinsing. DO NOT remove contact lenses. Always seek medical attention.

Ingestion

Only when conscious, rinse mouth, give plenty of water to drink. DO NOT induce vomiting. Seek medical advice.

Advice to physician

No specific antidote known. Symptomatic treatment is advised. If burn is present treat as any thermal burn after decontamination. If necessary evacuation of the stomach contents should be undertaken by means carrying the least likelihood of aspiration (e.g. gastric lavage in combination with endotracheal intubation).

5. FIRE-FIGHTING MEASURES

Extinguishing media

water, spray, foam, sand, Carbon dioxide, dry powder.

Unsuitable extinguishing media

halones.

Hazardous decomposition / combustion products

Nitrous gases may be produced.

Protective equipment

Wear self contained breathing apparatus. Wear a standard aluminised firefighting suit.

Other information

Cool closed containers with water. Do not direct a solid stream of water or foam into the burning material; this may cause spattering and spread the fire.

Water used to extinguish a fire should not be allowed to enter the drainage system or water courses.

Fire and explosion hazard

Toxic fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

For personal protection see Section 8.

Environmental precautions

Treat using the best available techniques before discharge into drains or the aquatic environment.

Methods for cleaning up

Absorb with sand, sweep up and put into a container for disposal. Flush remainder with water.

7. HANDLING AND STORAGE

Handling

Persons with a history of sensitization of the skin or the respiratory tract should not be employed in any process in which this product is used. Transfer and handle product only in closed system. When using do not eat, drink or smoke. Avoid contact with skin and eyes. Use only in well-ventilated areas. When workers are facing concentrations above 1 ppm v/v they must use appropriate certified respirators.

Fire and explosion prevention

Keep away from sources of ignition - No smoking.



SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Pentaethylenehexamine, PEHA

Storage requirements

Store in a dry well ventilated place away from sources of heat and direct sunlight. Store in closed containers preferably under nitrogen.
Avoid contact with atmospheric moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls

Take precautionary measures against static discharges. Use only in closed system. Do not use copper, nickel and cobalt containing alloys in process equipment. Ensure good ventilation and local exhaustion of the working area.

Personal protection

Respiratory

When workers are facing concentrations above 1 ppm v/v they must use appropriate certified respirators. Use self-contained or supplied-air respiratory equipment with filter K. When aerosols are present the combined cartridge K/P should be used.

Hand

Protective neoprene gloves. Use self-contained or supplied-air respiratory equipment with filter K. When aerosols are present the combined cartridge K/P should be used.

Eye

Wear tightly fitting safety goggles.

Skin and body

Protective neoprene boots and protective clothing.

Other information

Launder contaminated clothes with plenty of water before reuse.
Contaminated leather items (shoes, belts, watch bands etc.) should be removed and destroyed.

In this country no exposure limit has been established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

liquid

Colour

yellow

Odour

ammonia like

Boiling point/range

> 350 °C

Melting point/range

-26 °C

Flash point

174 °C (Pensky-Martens, closed cup)

Flammability

not determined

Explosive properties

not determined

Oxidising properties

not applicable

Vapour pressure

< 0.001 kPa (20 °C)

SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Pentaethylenehexamine, PEHA

Density 1001 kg/m ³ (20 °C)
Bulk density not applicable
Solubility in water Completely miscible
Solubility in other solvents not available
pH value approx. 12 (100 g/l water, 20 °C)
Partition coefficient n-octanol/water Log Pow: < 0
Relative vapour density (air=1) not determined
Viscosity 200 mPa.s (20 °C)
Autoignition temperature > 300 °C
Explosion limits not determined

10. STABILITY AND REACTIVITY

Conditions to avoid
Formation of an aerosol.
Stability Stable under recommended storage and handling conditions (see section 7).
Incompatibles acids, chlorinated hydrocarbons, oxidising agents, copper and copper alloys, nickel, cobalt.
Hazardous decomposition products Nitrous gases may be produced.

11. TOXICOLOGICAL INFORMATION

Pentaethylenehexamine
Acute toxicity
Oral LD50 rat: 1600 mg/kg.
Inhalation LC50 May be very toxic by inhalation of aerosols.
Irritation
Skin Corrosive.
Eye Corrosive.
Respiratory Highly irritating.
Genotoxicity Positive (Ames test, in presence of S9 mix only)

12. ECOLOGICAL INFORMATION

SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Pentaethylenehexamine, PEHA

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Ecotoxicity	
fish	Acute toxicity, 96h-LC50 : 180 mg/l (Poecilia reticulata).
daphnia	Acute toxicity, 48h-EC50: 18 mg/l (Daphnia magna).
algae	Acute toxicity: 72h-IC50: 0.7 mg/l (Selenastrum capricornutum).
bacteria	Acute toxicity, EC 50: 18 mg/l (Pseudomonas putida). Acute toxicity, EC 50: 164 mg/l (Nitrifying bacteria).
Fate	
Degradation Biotic	
Not readily biodegradable (Closed bottle test).	
Other information	
Activated sludge respiration inhibition test EC50: >1600 mg/l.	

13. DISPOSAL CONSIDERATIONS

Product	Incineration is recommended.
Contaminated packaging	Containers which cannot be cleaned should be disposed of in the same manner as the substance.
Other information	For further advice contact manufacturer.

14. TRANSPORT INFORMATION

<i>Land transport</i>	
Class	8
Classification Code	C7
RID class	8
Packing group	III
Hazard Identification No.	80
Substance Identification No.	2735
UN number	2735
Proper Shipping Name	POLYAMINES, LIQUID, CORROSIVE, N.O.S. "Pentaethylenehexamine" (Pentaethylenehexamine).

<i>Sea transport (IMO / IMDG-code)</i>	
Class	8



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Packing group III
UN number 2735
EMS F-A, S-B
Marine pollutant no
Proper Shipping Name Polyamines, liquid, corrosive, n.o.s. "Pentaethylenehexamine" (Pentaethylenehexamine).

<i>Air transport (ICAO-TI / IATA-DGR)</i>
UN number 2735
Class 8
Packing group III
Proper Shipping Name Polyamines, liquid, corrosive, n.o.s. "Pentaethylenehexamine" (Pentaethylenehexamine).

15. REGULATORY INFORMATION

Product label name Pentaethylenehexamine
Labelling according to EC directives
EC-number 2237759
Classification based on Annex-VI



R(isk) phrase(s) (EU classification)	
Code	Description
R34	Causes burns
R43	May cause sensitization by skin contact
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S(afety) phrase(s) (EU classification)	
Code	Description
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
S60	This material and its container must be disposed of as hazardous waste

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S61	Avoid release to the environment. Refer to special instructions/Safety data sheets
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Symbol(s) (EU classification)	
	
CORROSIVE	DANGEROUS FOR THE ENVIRONMENT

Other information TSCA Inventory (USA): yes DSL (Canada): yes Substance and/or product listed in Directive 96/82/EC.
German Water Hazard Class (WGK) 2

16. OTHER INFORMATION

R-pharse information		
Chemical name	R(isk) phrase(s) (EU classification)	
Pentaethylenehexamine	R34 R43 R50/53	Causes burns May cause sensitization by skin contact Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

History
Date of printing/pdf file generated 2010/07/23
Revision 2.10
Composed by M. Gyimesi J. Bos
Changes were made in section Composers
<small>This information only concerns the above mentioned product and does not need to be valid if used with other product(s) or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to make sure that the information is appropriate and complete for his special use of this product.</small>