



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

## HEPA

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

<b>Product label name</b> Pentaethylenhexamine (75%) / Polyethyleneamines (25%)	
<b>Supplier</b> DELAMINE B.V. Barchman Wuytierslaan 10 3818 LH Amersfoort PO Box 473 3800 AL Amersfoort The Netherlands Tel.: +31-334676897	
<b>E-mail address of person responsible for safety data sheet</b> SDS.Delamine@delamine.com	
<b>Emergency telephone</b> T +31570679211 F +31570679801 AkzoNobel Chemicals-Deventer-NL	
<b>Intended use</b> Chemical intermediate	
<b>Date of last issue / Revision number</b> 2008/10/30 / 1.04	

### 2. HAZARDS IDENTIFICATION

Causes burns. May be very toxic by inhalation of aerosols. Harmful in contact with skin and if swallowed. 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 preparation in conformance to EC directives.			
Information on hazardous ingredients			
<b>Chemical description</b> Pentaethylenhexamine / Polyethyleneamines			
<b>Composition / information on ingredients</b>			
Number	% w/w	CAS-number	Chemical name
1	approx. 75	004067-16-7	Pentaethylenhexamine
2	approx. 25	068131-73-7	Polyethylenepolyamines

	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
2	612-121-00-1	268-626-9	C N	R21/22 R34 R43 R50/53

### 4. FIRST AID MEASURES

<b>Symptoms and effects</b> 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. )
<b>First aid</b>



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

## HEPA

**General**

In all cases of doubt, or when symptoms persist, seek medical attention.

**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.



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

## HEPA

### Fire and explosion prevention

Keep away from sources of ignition - No smoking.

### 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

not determined

### Flash point

174 °C ( Pensky-Martens, closed cup )

### Flammability

not determined

### Explosive properties

not determined

### Oxidising properties

not applicable

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

## HEPA

<b>Vapour pressure</b> not determined
<b>Density</b> approx. 1000 kg/m <sup>3</sup> (20 °C )
<b>Bulk density</b> not applicable
<b>Solubility in water</b> Completely miscible
<b>Solubility in other solvents</b> not available
<b>pH value</b> approx. 12 (100 g/l water, 20 °C )
<b>Relative vapour density (air=1)</b> not determined
<b>Viscosity</b> not determined
<b>Autoignition temperature</b> > 300 °C
<b>Explosion limits</b> not determined

## 10. STABILITY AND REACTIVITY

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

## 11. TOXICOLOGICAL INFORMATION

No experimental toxicological data on the preparation as such available. The following data are applicable to the ingredient(s) listed below:-	
<b>Pentaethylenehexamine</b>	
<b>Acute toxicity</b>	
<b>Oral LD50</b> rat: 1600 mg/kg.	
<b>Inhalation LC50</b> May be very toxic by inhalation of aerosols.	
<b>Irritation</b>	
<b>Skin</b> Corrosive.	
<b>Eye</b> Corrosive.	
<b>Respiratory</b> Highly irritating.	

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

## HEPA

<b>Genotoxicity</b>
Positive (Ames test, in presence of S9 mix only)
<b>Polyethylenepolyamines</b>
<b>Acute toxicity</b>
<b>Oral LD50</b> rat: > 2000 mg/kg ( female ) 1350-2000 mg/kg ( male )
<b>Inhalation LC50</b> May be very toxic by inhalation of aerosols
<b>Irritation</b>
<b>Skin</b> Corrosive
<b>Eye</b> Corrosive
<b>Respiratory</b> Highly irritating
<b>Sensitization</b> Causing skin sensitization Causing sensitization of the respiratory tract

## 12. ECOLOGICAL INFORMATION

No experimental ecological data are available on the preparation as such. The following data are applicable to the ingredient(s) listed below:-
<b>Pentaethylenhexamine.</b>
<b>Ecotoxicity</b>
<b>fish</b> Acute toxicity, 96h-LC50 : 180 mg/l (Poecilia reticulata).
<b>daphnia</b> Acute toxicity, 48h-EC50: 18 mg/l (Daphnia magna).
<b>algae</b> Acute toxicity: 72h-IC50: 0.7 mg/l (Selenastrum capricornutum).
<b>bacteria</b> Acute toxicity, EC 50: 18 mg/l (Pseudomonas putida). Acute toxicity, EC 50: 164 mg/l (Nitrifying bacteria).
<b>Fate</b>
<b>Degradation Biotic</b> Not readily biodegradable (Closed bottle test).
<b>Other information</b> Activated sludge respiration inhibition test EC50: >1600 mg/l.
<b>Polyethylenepolyamines</b>
<b>Ecotoxicity</b>
<b>fish</b> Acute toxicity, 96h-LC50: 100 mg/l ( Poecilia reticulata )
<b>daphnia</b> Acute toxicity, 48h-EC50: 2 mg/l ( Daphnia magna )
<b>algae</b> Acute toxicity, 72h-IC50: 0.2 mg/l ( Selenastrum capricornutum )

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

## HEPA

<b>bacteria</b> Acute toxicity, EC50: 5 mg/l ( Pseudomonas putida ) Acute toxicity, EC50: 319 mg/l ( Nitrifying bacteria )
<b>Fate</b>
<b>Degradation Biotic</b> Not Readily biodegradable ( Closed bottle test )
<b>Other information</b> Activated sludge respiration inhibition test EC50 : 3200 mg/l

### 13. DISPOSAL CONSIDERATIONS

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

### 14. TRANSPORT INFORMATION

<i>Land transport</i>
<b>Class</b> 8
<b>Classification Code</b> C7
<b>RID class</b> 8
<b>Packing group</b> III
<b>Hazard Identification No.</b> 80
<b>Substance Identification No.</b> 2735
<b>TREM-Card or ERG number</b> CEFIC TEC(R)- 80GC7-II+III
<b>UN number</b> 2735
<b>Proper Shipping Name</b> POLYAMINES, LIQUID, CORROSIVE, N.O.S. "Pentaethylenehexamine" (Pentaethylenehexamine).

<i>Sea transport (IMO / IMDG-code)</i>
<b>Class</b> 8
<b>Packing group</b> III
<b>UN number</b> 2735
<b>EMS</b> F-A, S-B



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

## HEPA

<b>Marine pollutant</b> no
<b>Proper Shipping Name</b> Polyamines, liquid, corrosive, n.o.s. "Pentaethylenehexamine" (Pentaethylenehexamine).

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

### 15. REGULATORY INFORMATION


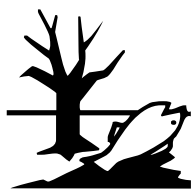
<b>Product label name</b> Pentaethylenehexamine (75%) / Polyethyleneamines (25%)
<b>Labelling according to EC directives</b>
<b>EC-number</b> See section 3
<b>Classification based on</b> Annex-VI

<b>R(isk) phrase(s) (EU classification)</b>	
<b>Code</b>	<b>Description</b>
R21/22.	Harmful in contact with skin and if swallowed.
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.

<b>S(afety) phrase(s) (EU classification)</b>	
<b>Code</b>	<b>Description</b>
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
S61	Avoid release to the environment. Refer to special instructions/Safety data sheets

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

## HEPA

Symbol(s) (EU classification)	
	
CORROSIVE	DANGEROUS FOR THE ENVIRONMENT

<b>Other information</b> TSCA Inventory (USA): yes DSL (Canada): yes Substance and/or product listed in Directive 96/82/EC.
<b>German Water Hazard Class (WGK)</b> 3

### 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
Polyethylenepolyamines	R21/22 R34 R43 R50/53	Harmful in contact with skin and if swallowed Causes burns May cause sensitization by skin contact Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

<b>History</b>
<b>Date of printing/pdf file generated</b> 2009/07/10
<b>Revision</b> 1.04
<b>Composed by</b> M. Gyimesi J. Bos
<b>Changes were made in section</b> 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>