

# SAFETY DATA SHEET

HARDENER HW 5323

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

### 1.1 Product identifier

**Product name** : HARDENER HW 5323  
**Product code** : 00050970  
**Product description** :

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

**Product use** : Hardener for adhesive systems

### 1.3 Details of the supplier of the safety data sheet

**Supplier** : Huntsman Advanced Materials (Europe)BVBA  
Everslaan 45  
3078 Everberg / Belgium  
Tel.: +41 61 299 20 41  
Fax: +41 61 299 20 40

**e-mail address of person responsible for this SDS** : Global\_Product\_EHS\_AdMat@huntsman.com

### 1.4 Emergency telephone number

#### Supplier

**Telephone number** : EUROPE: +32 35 75 1234  
France ORFILA: +33(0)145425959  
ASIA: +65 6336-6011  
China: +86 20 39377888  
Australia: 1800 786 152  
New Zealand: 0800 767 437  
USA: +1/800/424.9300

## 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]

Skin Irrit. 2, H315  
Eye Dam. 1, H318  
Skin Sens. 1, H317

**Ingredients of unknown toxicity** :

**Ingredients of unknown ecotoxicity** :

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

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

**Classification** : T; R23  
Xi; R41, R38  
R43

**Human health hazards** : Toxic by inhalation. Risk of serious damage to eyes. Irritating to skin. May cause sensitisation by skin contact.

**Additional information** : According to Directive 99/45/EC, Article 6, Paragraph 1b, classification derived from direct toxicological testing of the preparation take precedence over classification derived from using the conventional (calculation) method.

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**SECTION 2: Hazards identification**

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** : Causes skin irritation.  
 Causes serious eye damage.  
 May cause an allergic skin reaction.

**Precautionary statements**

**General** : Not applicable.

**Prevention** : Wear protective gloves: >8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL). Wear eye or face protection. Avoid breathing vapour.

**Response** : IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTER or physician.

**Storage** : Not applicable.

**Disposal** : Not applicable.

**Hazardous ingredients** : N(3-dimethylaminopropyl)-1,3-propylenediamine

**Supplemental label elements** : According to Directive 99/45/EC, Article 6, Paragraph 1b, classification derived from direct toxicological testing of the preparation take precedence over classification derived from using the conventional (calculation) method.

**Special packaging requirements**

**Containers to be fitted with child-resistant fastenings** : Not applicable.

**Tactile warning of danger** : Not applicable.

**2.3 Other hazards**

**Other hazards which do not result in classification** : Not available.

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**SECTION 3: Composition/information on ingredients**

**Substance/mixture** : Mixture

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
N(3-dimethylaminopropyl)-1,3-propylenediamine	CAS: 10563-29-8 EC: 234-148-4	3-7	Xn; R21/22 C; R35 R43	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1A, H314 Eye Dam. 1, H318 Skin Sens. 1, H317	[1]
diethylenetriamine	CAS: 111-40-0 EC: 203-865-4	3-7	T+; R26 Xn; R21/22 C; R34 Xi; R37 R43	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 2, H330 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335	[1][2]
triethylenetetramine	CAS: 90640-67-8 EC: 203-950-6	1-3	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4, H302 Acute Tox. 4, H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	[1]
4,4'-isopropylidenediphenol	CAS: 80-05-7 EC: 201-245-8 RRN: 01-2119457856-23	1-3	Repr. Cat. 3; R62 Xi; R41, R37 R43 R52  <b>See section 16 for the full text of the R-phrases declared above</b>	Eye Dam. 1, H318 Skin Sens. 1, H317 Repr. 2, H361f STOT SE 3, H335  <b>See Section 16 for the full text of the H statements declared above.</b>	[1]

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,

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**SECTION 4: First aid measures**

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 skin irritation. May cause an allergic skin reaction.
- Ingestion** : 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** : Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media** : None known.

### 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.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
 carbon dioxide  
 carbon monoxide  
 nitrogen oxides  
 sulfur oxides  
 metal oxide/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).

### 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

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## SECTION 6: Accidental release measures

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. 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. 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 between the following temperatures: 2 to 40°C (35.6 to 104°F). 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. 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.

**Storage hazard class Huntsman Advanced Materials** : Storage class 12, Liquids, not dangerous

### 7.3 Specific end use(s)

**Recommendations** : Not available.

**Industrial sector specific solutions** : Not available.

## 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**



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**SECTION 8: Exposure controls/personal protection**

Product/ingredient name	Exposure limit values
diethylenetriamine	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin.</b> TWA: 4.3 mg/m <sup>3</sup> 8 hour(s). TWA: 1 ppm 8 hour(s).

**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 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**

No DELs available.

**Predicted effect concentrations**

No PECs available.

**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.

**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.

**Material of gloves for long term application (BTT>480min):** : butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL)

**Material of gloves for short term/splash application (10min<BTT<480min):** : nitrile rubber, neoprene

**(BTT = Break Through Time)**

Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US). Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at [www.gisbau.de](http://www.gisbau.de).

**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.

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## SECTION 8: Exposure controls/personal protection

- 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.
- Respiratory protection** : In case of inadequate ventilation wear respiratory protection. 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.
- 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. [Paste.]
- Colour** : Grey.
- Odour** : Slight
- Odour threshold** : Not available.
- pH** : 11 [Conc. (% w/w): 50%]
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : >200°C
- Flash point** : Closed cup: 120°C [DIN 51758 EN 22719 (Pensky-Martens Closed Cup)]
- 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** : <0.015 kPa [20°C]
- Vapour density** : Not available.
- Relative density** : Not available.
- Solubility(ies)**
  - Water solubility** : partially soluble
  - 20 deg C
- Partition coefficient: n-octanol/water (LogK<sub>ow</sub>)** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : >200°C
- Viscosity** : Dynamic: 1178000 mPa·s 25 deg C
- Explosive properties** : Not available.
- Oxidising properties** : Not available.

### 9.2 Other information

- Density** : 1.6 g/cm<sup>3</sup> [25°C (77°F)]



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## 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** : No specific data.
- 10.5 Incompatible materials** : strong acids, strong bases, strong oxidising agents
- 10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.  
 Decomposition products may include the following materials: Nitrogen oxides, Burning produces obnoxious and toxic fumes., Carbon oxides

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Endpoint	Species	Result	Exposure
N(3-dimethylaminopropyl)-1,3-propylenediamine	LD50 Dermal	Rabbit	1310 mg/kg	-
	LD50 Oral	Rat	1670 mg/kg	-
diethylenetriamine	LC50 Inhalation Dusts and mists	Rat - Male, Female	0.07 to 0.3 mg/L	4 hours
	LD50 Dermal	Rabbit	1090 mg/kg	-
triethylenetetramine	LD50 Oral	Rat	1500 to 2000 mg/kg	-
	LD50 Dermal	Rabbit - Male, Female	1465 mg/kg	-
	LD50 Oral	Rat - Male, Female	1716 mg/kg	-
4,4'-isopropylidenediphenol	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-

#### Acute toxicity estimates

Not available.

#### Irritation/Corrosion

Product/ingredient name	Test	Species	Route of exposure	Result
HARDENER HW 5323	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin	Irritant
N(3-dimethylaminopropyl)-1,3-propylenediamine	-	Rabbit	Eyes	Severe irritant
	-	Rabbit	Skin	Corrosive
triethylenetetramine	-	Rabbit	Skin	Corrosive
4,4'-isopropylidenediphenol	-	Rabbit	Eyes	Severe irritant
	-	Rabbit	Skin	Mild irritant

#### Conclusion/Summary

- Skin** : No additional information.  
**Eyes** : No additional information.  
**Respiratory** : No additional information.

#### Sensitiser

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**SECTION 11: Toxicological information**

Product/ingredient name	Test	Route of exposure	Species	Result
N(3-dimethylaminopropyl)-1,3-propylenediamine	-	skin	Guinea pig	Sensitising
diethylenetriamine	-	skin	Guinea pig	Sensitising
triethylenetetramine	OECD 406 Skin Sensitization	skin	Guinea pig	Sensitising

**Conclusion/Summary** : No additional information.

**Mutagenicity**

Product/ingredient name	Test	Result
N(3-dimethylaminopropyl)-1,3-propylenediamine	-	Negative
diethylenetriamine	-	Negative
	-	Negative
	-	Negative
triethylenetetramine	-	Negative
	-	Positive
	-	Negative
4,4'-isopropylidenediphenol	-	Negative
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Negative

**Carcinogenicity**

Product/ingredient name	Test	Species	Exposure	Result	Route of exposure	Target organs
diethylenetriamine	-	Mouse	3 days per week	Negative	Dermal	-
4,4'-isopropylidenediphenol	-	Rat	103 weeks; 7 days per week	Negative	Oral	-

**Reproductive toxicity**

Product/ingredient name	Test	Species	Result/Result type	Target organs
4,4'-isopropylidenediphenol	-	Rat	Oral: 5 mg/kg NOAEL	-

**Teratogenicity**

Product/ingredient name	Test	Species	Result/Result type
4,4'-isopropylidenediphenol	-	Rat - Female	640 mg/kg NOAEL

**Specific target organ toxicity (single exposure)**

Product/ingredient name	Category	Route of exposure	Target organs
diethylenetriamine	Category 3	Not determined	Respiratory tract irritation
4,4'-isopropylidenediphenol	Category 3	Not determined	Respiratory tract irritation

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

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**SECTION 11: Toxicological information**

**Information on the likely routes of exposure** : 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** : May cause burns to mouth, throat and stomach.  
**Skin contact** : Causes skin irritation. May cause an allergic skin reaction.  
**Eye contact** : Causes serious eye damage.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation** : No specific data.  
**Ingestion** : Adverse symptoms may include the following:  
 stomach pains  
**Skin contact** : Adverse symptoms may include the following:  
 pain or irritation  
 redness  
 blistering may occur  
**Eye contact** : Adverse symptoms may include the following:  
 pain  
 watering  
 redness

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

**Short term exposure**

**Potential immediate effects** : Not available.  
**Potential delayed effects** : Not available.

**Long term exposure**

**Potential immediate effects** : Not available.  
**Potential delayed effects** : Not available.

**Potential chronic health effects**

Product/ingredient name	Test	Result type	Result	Target organs
diethylenetriamine	-	NOEL : -	70 to 80 mg/kg/d	kidneys, liver
	-	NOAEL	114 mg/kg/d	-
triethylenetetramine 4,4'-isopropylidenediphenol	-	NOEC Vapour	550 mg/m3	-
	-	NOAEL -	50 mg/kg/d	-
	-	NOAEL -	75 mg/kg	-
	-	NOEC Dusts and mists	10 mg/m3	respiratory tract

**Conclusion/Summary** : Not available.

**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** : Not available.

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**SECTION 12: Ecological information**

**12.1 Toxicity**

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
N(3-dimethylaminopropyl)-1,3-propylenediamine	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours	Daphnia	9.2 mg/L
	OECD 201 Alga, Growth Inhibition Test	Acute ErC50 (growth rate)	72 hours	Algae	21 mg/L
diethylenetriamine	-	Acute EC50	48 hours	Daphnia	17 mg/L
	-	Acute LC50	96 hours	Fish	332 mg/L
	-	Chronic NOEC	21 days Semi-static	Daphnia	5.6 mg/L
triethylenetetramine	-	Acute EC50	30 minutes Static	Bacteria	800 mg/L
	-	Acute EC50	48 hours Static	Daphnia	31.1 mg/L
	OECD 201 Alga, Growth Inhibition Test	Acute ErC50 (growth rate)	72 hours Semi-static	Algae	20 mg/L
	-	Acute LC50	96 hours Static	Fish	330 mg/L
	OECD OECD 202: Part II ( <i>Daphnia</i> sp., Reproduction Test)	Chronic EC50	21 days Semi-static	Daphnia	10 mg/L
4,4'-isopropylidenediphenol	-	Acute EC50	96 hours	Algae	2.5 to 3.1 mg/L
	-	Acute EC50	48 hours	Daphnia	3.9 to 10.2 mg/L
	-	Acute LC50	96 hours	Fish	7.5 mg/L

**12.2 Persistence and degradability**

Product/ingredient name	Test	Period	Result
N(3-dimethylaminopropyl)-1,3-propylenediamine	ISO ISO 7827, 1984 - Evaluation in an aqueous medium of the ultimate aerobic biodegradability of organic compounds	28 days	100 %
diethylenetriamine	-	28 days	<60 %
triethylenetetramine	OECD 302A Inherent Biodegradability: Modified SCAS Test	84 days	20 %
4,4'-isopropylidenediphenol	OECD 301D Ready Biodegradability - Closed Bottle Test	28 days	0 %
	-	28 days	1 to 2 %

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
N(3-dimethylaminopropyl)-1,3-propylenediamine	-	-	Readily
diethylenetriamine	-	-	Not readily
triethylenetetramine	-	-	Not readily
4,4'-isopropylidenediphenol	-	-	Not readily

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
N(3-dimethylaminopropyl)-1,3-propylenediamine	0.5	-	low
diethylenetriamine	-1.3	-	low
triethylenetetramine	-1.4 to 2.9	99	low

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## SECTION 12: Ecological information

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

### 12.5 Results of PBT and vPvB assessment

Not applicable.

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

### 12.7 Other ecological information

## 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** : Yes.

#### European waste catalogue (EWC)

Waste code	Waste designation
07 02 04*	other organic solvents, washing liquids and mother liquors

#### 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

	14.1 UN number	14.2 UN proper shipping name
<b>ADR/RID</b>	Not regulated.	-
<b>IMDG</b>	Not regulated.	-
<b>IATA</b>	Not regulated.	-

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**SECTION 14: Transport information**

	<b>14.3 Transport hazard class(es)</b>	<b>14.4 Packing group</b>	<b>14.5 Environmental hazards</b>	<b>14.6 Special precautions for user</b>	<b>Additional information</b>
<b>ADR/RID</b>	-	-	No.	Not available.	-
<b>IMDG</b>	-	-	No.	Not available.	-
<b>IATA</b>	-	-	No.	Not available.	-

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

**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** : Listed

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

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

<b>Product/ingredient name</b>	<b>Carcinogenic effects</b>	<b>Mutagenic effects</b>	<b>Developmental effects</b>	<b>Fertility effects</b>
4,4'-isopropylidenediphenol	-	-	-	Repr. 2, H361f

National regulations

**References** : The provision of Safety Data Sheets comes under Regulation 6 of CHIP (CHIP is the recognised abbreviation for the Chemicals Hazard Information and Packaging Regulations). This is an addition to the Health and Safety at Work Act 1974.

International regulations

**Chemical Weapons Convention List Schedule I Chemicals** : Not listed

**Chemical Weapons Convention List Schedule II Chemicals** : Not listed



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**SECTION 15: Regulatory information**

**Chemical Weapons Convention List Schedule III Chemicals** : Not listed

**15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.

**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
Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317	Expert judgment Expert judgment Expert judgment

**Full text of abbreviated H statements** : H302 Harmful if swallowed.  
 H312 Harmful in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H315 Causes skin irritation.  
 H317 May cause an allergic skin reaction.  
 H318 Causes serious eye damage.  
 H330 Fatal if inhaled.  
 H335 May cause respiratory irritation.  
 H361f Suspected of damaging fertility.  
 H412 Harmful to aquatic life with long lasting effects.

**Full text of classifications [CLP/GHS]** : Acute Tox. 2, H330 ACUTE TOXICITY: INHALATION - Category 2  
 Acute Tox. 4, H302 ACUTE TOXICITY: ORAL - Category 4  
 Acute Tox. 4, H312 ACUTE TOXICITY: SKIN - Category 4  
 Aquatic Chronic 3, H412 AQUATIC TOXICITY (CHRONIC) - Category 3  
 Eye Dam. 1, H318 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
 Repr. 2, H361f TOXIC TO REPRODUCTION [Fertility] - Category 2  
 Skin Corr. 1A, H314 SKIN CORROSION/IRRITATION - Category 1A  
 Skin Corr. 1B, H314 SKIN CORROSION/IRRITATION - Category 1B  
 Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2  
 Skin Sens. 1, H317 SKIN SENSITIZATION - Category 1  
 STOT SE 3, H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3

**Full text of abbreviated R phrases** : R62- Possible risk of impaired fertility.  
 R26- Very toxic by inhalation.  
 R23- Toxic by inhalation.  
 R21/22- Harmful in contact with skin and if swallowed.  
 R34- Causes burns.  
 R35- Causes severe burns.  
 R41- Risk of serious damage to eyes.  
 R37- Irritating to respiratory system.  
 R38- Irritating to skin.  
 R43- May cause sensitisation by skin contact.  
 R52- Harmful to aquatic organisms.  
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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**SECTION 16: Other information**

**Full text of classifications [DSD/DPD]** : Repr. Cat. 3 - Toxic to reproduction category 3  
 T+ - Very toxic  
 T - Toxic  
 C - Corrosive  
 Xn - Harmful  
 Xi - Irritant

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