

This safety data sheet was created pursuant to the requirements of:  
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

**Issuing Date** No data available

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**Revision Number** 2

EGHS / English

## Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Name** EpoThin 2 Hardener  
**Product Code(s)** 20-3442-016, 20-3442-064  
**(M)SDS Number** 1501014\_E  
**Chemical name**

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

**Recommended Use** Laboratory Use Only.  
**Uses advised against** No information available.

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

**Manufacturer** ITW Test & Measurement GmbH  
**Manufacturer Address** Boschstraße 10  
73734 Esslingen am Neckar / GERMANY  
www.buehler-met.de www.buehler.fr www.buehler.co.uk  
**Phone number** +49 (0) 711 4904690-0  
**E-mail Address** lab.eu@buehler.com

### 1.4. Emergency telephone number

Global Access Code: 334545  
Americas: +1 760 476 3962 Europe: +1 760 476 3961  
Middle East/Africa: +1 760 476 3959 Asia Pacific: +1 760 476 3960  
UK: +44 8 08 189 0979

## Section 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**Regulation (EC) No 1272/2008**

Skin corrosion/irritation	Category 1 Sub-category A - (H314)
Skin sensitization	Category 1 - (H317)
Reproductive Toxicity	Category 1B - (H360)
Acute aquatic toxicity	Category 2 - (H401)
Chronic aquatic toxicity	Category 2 - (H411)

**2.2. Label elements****Signal word****Danger****Hazard Statements**

- H314 - Causes severe skin burns and eye damage
- H317 - May cause an allergic skin reaction
- H360 - May damage fertility or the unborn child
- H411 - Toxic to aquatic life with long lasting effects

**Precautionary Statements - EU (§28, 1272/2008)**

- P201 - Obtain special instructions before use
- P202 - Do not handle until all safety precautions have been read and understood
- P260 - Do not breathe dust/fume/gas/mist/vapors/spray
- P264 - Wash hands and face thoroughly after handling
- P272 - Contaminated work clothing should not be allowed out of the workplace
- P273 - Avoid release to the environment
- P280 - Wear protective gloves and eye/face protection
- P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water
- P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- P308 + P313 - IF exposed or concerned: Get medical advice/attention
- P310 - Immediately call a POISON CENTER or doctor
- P321 - Specific treatment (see supplemental first aid instructions on this label)
- P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
- P363 - Wash contaminated clothing before reuse
- P391 - Collect spillage
- P405 - Store locked up
- P501 - Dispose of contents/ container to an approved waste disposal plant

**2.3. Other hazards**

No information available

**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

Not applicable.

**3.2 Mixtures**

Chemical name	EC No	CAS No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH Reg. No.
Propylene glycol diamine, 2-amino-, diether with Propylene	-	9046-10-0	20 - 50%	Skin Corr. 1C (H314) Eye Dam. 1 (H138) Aquatic Chronic 3 (H412)	No data available
p-tert-Butyl phenol	-	98-54-4	10 - 20%	Skin Irrit. 2 (H315) Repr. 2 (H361f) Eye Dam. 1 (H318)	No data available
m-Xylene-.alpha., .alpha.`-diamine	-	1477-55-0	10 - 20%	No data available	No data available
Triphenyl phosphite	-	101-02-0	0 - 20%	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	No data available
Triethylene tetramine	-	112-24-3	0 - 1%	Acute Tox. 4 (H312) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Aquatic Chronic 3 (H412)	No data available
Triethanolamine	203-049-8	102-71-6	0 - 20%	No data available	No data available
Piperazine	203-808-3	110-85-0	0 - 1%	Skin Corr. 1B (H314)2 (H361fd)Sens. 1 (H334)Sens. 1 (H317)	No data available
1-(2-Aminoethyl) piperazine	-	140-31-8	0 - 1%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Aquatic Chronic 3 (H412)	No data available

**Full text of H- and EUH-phrases: see section 16**

This product does not contain candidate substances of very high concern at a concentration  $\geq 0.1\%$  (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Chemical name	CAS No.	SVHC candidates
Propylene glycol diamine, 2-amino-, diether with Propylene	9046-10-0	-
p-tert-Butyl phenol	98-54-4	-
m-Xylene-.alpha., .alpha.`-diamine	1477-55-0	-
1,2-Ethanediamine, N,N`-bis(2-aminoethyl)-, polymer with methyloxirane	26950-63-0	-
1,6-Hexanediamine, 2,2,4-trimethyl-	3236-53-1	-
1,2-Cyclohexanedicarboxylic acid, dinonyl ester, branched and linear	474919-59-0	-

Triphenyl phosphite	101-02-0	-
Triethanolamine	102-71-6	-
Triethylene tetramine	112-24-3	-
1-(2-Aminoethyl) piperazine	140-31-8	-
Phenol	108-95-2	-
Piperazine	110-85-0	-

## Section 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

<b>General advice</b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
<b>Inhalation</b>	Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention. May cause allergic respiratory reaction. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.
<b>Skin contact</b>	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention. May cause an allergic skin reaction.
<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical advice/attention.
<b>Ingestion</b>	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get immediate medical advice/attention. May produce an allergic reaction.
<b>Self-protection of the first aider</b>	Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. See section 8 for more information.

### 4.2. Most important symptoms and effects, both acute and delayed

<b>Symptoms</b>	Burning sensation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives.
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### 4.3. Indication of any immediate medical attention and special treatment needed

<b>Note to physicians</b>	Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.
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## Section 5: FIRE FIGHTING MEASURES

### 5.1. Extinguishing media

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media** No information available.

### 5.2. Special hazards arising from the substance or mixture

#### Specific hazards arising from the chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact. May cause sensitization by skin contact.

#### Hazardous Combustion Products

Carbon oxides.

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## Section 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**For emergency responders** Use personal protection recommended in Section 8.

### 6.2. Environmental precautions

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

### 6.3. Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

### 6.4. Reference to other sections

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## Section 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

#### Advice on safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Provide extract ventilation to points where emissions occur. Remove contaminated clothing and shoes.

**General Hygiene Considerations** Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Wash hands before breaks and immediately after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

### 7.3. Specific end use(s)

#### Risk Management Methods (RMM)

The information required is contained in this Material Safety Data Sheet.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure Limits

Chemical name	EU	United Kingdom	France	Spain	Germany
p-tert-Butyl phenol 98-54-4	-	-	-	-	TWA: 0.08 ppm TWA: 0.5 mg/m <sup>3</sup> S*
m-Xylene-.alpha., .alpha.`-diamine 1477-55-0	-	-	STEL: 0.1 mg/m <sup>3</sup>	-	-
Triethanolamine 102-71-6	-	-	-	TWA: 5 mg/m <sup>3</sup>	-
Piperazine 110-85-0	TWA 0.1 mg/m <sup>3</sup> STEL 0.3 mg/m <sup>3</sup>	STEL: 0.3 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.1 mg/m <sup>3</sup> STEL: 0.3 mg/m <sup>3</sup>	STEL: 0.3 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.1 mg/m <sup>3</sup>
Chemical name	Italy	Portugal	Netherlands	Finland	Denmark
p-tert-Butyl phenol 98-54-4	-	-	-	-	TWA: 0.08 ppm TWA: 0.5 mg/m <sup>3</sup> H*
m-Xylene-.alpha., .alpha.`-diamine 1477-55-0	-	Ceiling: 0.1 mg/m <sup>3</sup>	-	Ceiling: 0.1 mg/m <sup>3</sup> iho*	Ceiling: 0.02 ppm Ceiling: 0.1 mg/m <sup>3</sup> H*

Triethanolamine 102-71-6	-	TWA: 5 mg/m <sup>3</sup>	-	TWA: 5 mg/m <sup>3</sup>	TWA: 0.5 ppm TWA: 3.1 mg/m <sup>3</sup>
Piperazine 110-85-0	TWA: 0.1 mg/m <sup>3</sup> STEL: 0.3 mg/m <sup>3</sup>	-	STEL: 0.3 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.028 ppm TWA: 0.1 mg/m <sup>3</sup> STEL: 0.084 ppm STEL: 0.3 mg/m <sup>3</sup>	TWA: 0.003 ppm TWA: 0.1 mg/m <sup>3</sup>
<b>Chemical name</b>	<b>Austria</b>	<b>Switzerland</b>	<b>Poland</b>	<b>Norway</b>	<b>Ireland</b>
p-tert-Butyl phenol 98-54-4	H* STEL 0.4 ppm STEL 2.5 mg/m <sup>3</sup> TWA: 0.08 ppm TWA: 0.5 mg/m <sup>3</sup>	STEL: 0.16 ppm STEL: 1 mg/m <sup>3</sup> TWA: 0.08 ppm TWA: 0.5 mg/m <sup>3</sup>	-	-	-
m-Xylene-.alpha., .alpha.`-diamine 1477-55-0	STEL 0.1 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup> Ceiling 0.1 mg/m <sup>3</sup>	H* TWA: 0.1 mg/m <sup>3</sup>	P*	Ceiling: 0.1 mg/m <sup>3</sup>	-
Triethylene tetramine 112-24-3	-	-	STEL: 3 mg/m <sup>3</sup> TWA: 1 mg/m <sup>3</sup>	TWA: 1 ppm TWA: 6 mg/m <sup>3</sup> STEL: 3 ppm STEL: 12 mg/m <sup>3</sup>	-
Triethanolamine 102-71-6	STEL 1.6 ppm STEL 10 mg/m <sup>3</sup> TWA: 0.8 ppm TWA: 5 mg/m <sup>3</sup>	STEL: 20 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	-	TWA: 5 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup> STEL: 15 mg/m <sup>3</sup>
Piperazine 110-85-0	STEL 0.3 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	-	STEL: 0.3 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.1 ppm TWA: 0.3 mg/m <sup>3</sup> STEL: 0.3 ppm STEL: 0.9 mg/m <sup>3</sup>	TWA: 0.1 mg/m <sup>3</sup> STEL: 0.3 mg/m <sup>3</sup>

### Biological occupational exposure limits

Chemical name	European Union	United Kingdom	France	Spain	Germany
p-tert-Butyl phenol 98-54-4	-	-	-	-	2 mg/L
<b>Chemical name</b>	<b>Austria</b>	<b>Switzerland</b>	<b>Poland</b>	<b>Norway</b>	<b>Ireland</b>
p-tert-Butyl phenol 98-54-4	-	2	-	-	-

**Derived No Effect Level (DNEL)** No information available

**Predicted No Effect Concentration (PNEC)** No information available

### 8.2. Exposure controls

#### Personal protective equipment

<b>Eye/face protection</b>	Face protection shield.
<b>Hand Protection</b>	Wear suitable gloves. Impervious gloves.
<b>Skin and body protection</b>	Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

**Environmental exposure controls** No information available.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	Acrid
<b>Color</b>	No information available
<b>Odor Threshold</b>	No data available

<u>Property</u>	<u>Values</u>	<u>Remarks Method</u>
pH	No data available	
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	>90 °C	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	1	
Water Solubility	Moderately soluble	
Solubility(ies)	No data available	None known
Partition coefficient: n-octanol/water	Data Lacking	
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Viscosity	150 cP	None known

### 9.2. Other information

<b>Softening Point</b>	No information available
<b>Molecular Weight</b>	No information available
<b>VOC Content (%)</b>	No information available
<b>Liquid Density</b>	No information available
<b>Bulk Density</b>	No information available
<b>Particle Size</b>	No information available
<b>Particle Size Distribution</b>	No information available

## Section 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

No data available.

### 10.2. Chemical stability

Stable under normal conditions.

#### Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

### 10.3. Possibility of hazardous reactions



**Possibility of Hazardous Reactions** None under normal processing.

**Hazardous Polymerization** Hazardous polymerization does not occur.

#### **10.4. Conditions to avoid**

Exposure to air or moisture over prolonged periods.

#### **10.5. Incompatible materials**

Oxidizing agent, Acids, Bases.

#### **10.6. Hazardous decomposition products**

Carbon oxides.

## Section 11: TOXICOLOGICAL INFORMATION

### **11.1. Information on toxicological effects**

#### **Information on likely routes of exposure**

##### **Product Information**

<b>Inhalation</b>	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause sensitization in susceptible persons.
<b>Eye contact</b>	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
<b>Skin contact</b>	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. May cause sensitization by skin contact.
<b>Ingestion</b>	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. May cause additional affects as listed under "Inhalation".

#### **Information on toxicological effects**

**Symptoms** Redness. Burning. May cause blindness. Coughing and/ or wheezing. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of

the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Itching. Rashes. Hives.

### **Numerical measures of toxicity**

#### **Acute Toxicity**

#### **Unknown acute toxicity**

- 99 % of the mixture consists of ingredient(s) of unknown toxicity
- 32 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
- 37 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
- 99 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
- 84 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
- 99 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

#### **Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Propylene glycol diamine, 2-amino-, diether with Propylene	= 242 mg/kg ( Rat )	= 360 mg/kg ( Rabbit )	-
p-tert-Butyl phenol	= 4000 mg/kg ( Rat )	= 2318 mg/kg ( Rabbit )	-
m-Xylene-.alpha., .alpha.`-diamine	= 660 mg/kg ( Rat )	= 2 g/kg ( Rabbit )	= 700 ppm ( Rat ) 1 h
Triphenyl phosphite	= 444 mg/kg ( Rat ) = 1590 mg/kg ( Rat )	> 2000 mg/kg ( Rabbit )	> 6.7 mg/L ( Rat ) 1 h
Triethylene tetramine	= 2500 mg/kg ( Rat )	= 550 mg/kg ( Rabbit )	-
Triethanolamine	= 4190 mg/kg ( Rat )	> 16 mL/kg ( Rat ) > 20 mL/kg ( Rabbit )	-
Piperazine	= 600 mg/kg ( Rat )	= 1590 mg/kg ( Rabbit )	-
1-(2-Aminoethyl) piperazine	= 2140 µL/kg ( Rat )	= 880 µL/kg ( Rabbit )	-

#### **Delayed and immediate effects as well as chronic effects from short and long-term exposure**

- Skin corrosion/irritation** Classification based on data available for ingredients. Causes burns.
- Serious eye damage/eye irritation** Classification based on data available for ingredients. Risk of serious damage to eyes. Causes burns.
- Respiratory or skin sensitization** May cause sensitization by inhalation. May cause sensitization by skin contact.
- Germ cell mutagenicity** Contains a known or suspected mutagen. Classification based on data available for ingredients. Suspected of causing genetic defects.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

- Carcinogenicity** No information available.

- Reproductive Toxicity** Contains a known or suspected reproductive toxin. Classification based on data available for ingredients. Suspected of damaging fertility or the unborn child.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	EU - Annex VI Reproductive
p-tert-Butyl phenol	Repr. 2

Piperazine	Repr. 2
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**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Aspiration hazard** No information available.

## Section 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Ecotoxicity** Very toxic to aquatic life with long lasting effects. .

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
p-tert-Butyl phenol	72h EC50: = 11.2 mg/L (Desmodesmus subspicatus)	96h LC50: = 6.9 mg/L (Cyprinus carpio) 96h LC50: 4.71 - 5.62 mg/L (Pimephales promelas)	EC50 = 0.21 mg/L 5 min	48h EC50: = 3.9 mg/L 48h EC50: 3.4 - 4.5 mg/L
Triethylene tetramine	72h EC50: = 2.5 mg/L (Desmodesmus subspicatus) 96h EC50: = 3.7 mg/L (Pseudokirchneriella subcapitata) 72h EC50: = 20 mg/L (Pseudokirchneriella subcapitata)	96h LC50: = 570 mg/L (Poecilia reticulata) 96h LC50: = 495 mg/L (Pimephales promelas)	-	48h EC50: = 31.1 mg/L
Triethanolamine	96h EC50: = 169 mg/L (Desmodesmus subspicatus) 72h EC50: = 216 mg/L (Desmodesmus subspicatus)	96h LC50: 10600 - 13000 mg/L (Pimephales promelas) 96h LC50: > 1000 mg/L (Pimephales promelas) 96h LC50: 450 - 1000 mg/L (Lepomis macrochirus)	-	24h EC50: = 1386 mg/L
Piperazine	-	96h LC50: > 10000 mg/L (Lepomis macrochirus)	EC50 = 430 mg/L 30 min	96h EC50: = 6915 mg/L
1-(2-Aminoethyl) piperazine	72h EC50: = 495 mg/L (Pseudokirchneriella subcapitata)	96h LC50: >= 100 mg/L (Oncorhynchus mykiss) 96h LC50: > 1000 mg/L (Poecilia reticulata) 96h LC50: 1950 - 2460 mg/L (Pimephales promelas)	EC50 > 10000 mg/L 17 h	48h EC50: = 32 mg/L

**12.2. Persistence and degradability****Persistence and Degradability** No information available.**12.3. Bioaccumulative potential****Bioaccumulation**

Chemical name	Log Pow
p-tert-Butyl phenol	2.44
Triphenyl phosphite	4.98
Triethylene tetramine	-1.4
Triethanolamine	-2.53
1-(2-Aminoethyl) piperazine	-1.48

**12.4. Mobility in soil****Mobility in soil** No information available.**12.5. Results of PBT and vPvB assessment****PBT and vPvB assessment** No information available.

Chemical name	PBT and vPvB assessment
Propylene glycol diamine, 2-amino-, diether with Propylene	The substance is not PBT / vPvB
p-tert-Butyl phenol	The substance is not PBT / vPvB PBT assessment does not apply
m-Xylene-.alpha., .alpha.`-diamine	The substance is not PBT / vPvB
Triphenyl phosphite	The substance is not PBT / vPvB
Triethanolamine	The substance is not PBT / vPvB
Piperazine	The substance is not PBT / vPvB
1-(2-Aminoethyl) piperazine	The substance is not PBT / vPvB

**12.6. Other adverse effects****Other adverse effects** No information available.**Endocrine Disruptor Information**

Chemical name	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances
p-tert-Butyl phenol	Group II Chemical	-
Triethylene tetramine	Group III Chemical	-

**Section 13: DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods****Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.**Contaminated packaging** No information available.

## Section 14: TRANSPORT INFORMATION

**IMDG/IMO**

<b>14.1 UN-No.</b>	2735
<b>14.2 Proper Shipping Name Description</b>	POLYAMINES, LIQUID, CORROSIVE, N.O.S. UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (PROPYLENE GLYCOL DIAMINE, 2-AMINO-, DIETHER WITH PROPYLENE, TRIETHYLENE TETRAMINE), 8, III, MARINE POLLUTANT
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing group</b>	II
<b>14.5 Marine Pollutant</b>	Not applicable
<b>Environmental hazard</b>	Yes
<b>14.6 Special Provisions</b>	None
<b>EmS-No.</b>	F-A, S-B
<b>14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code</b>	No information available

**RID**

<b>14.1 UN-No.</b>	UN2735
<b>14.2 Proper Shipping Name Description</b>	POLYAMINES, LIQUID, CORROSIVE, N.O.S. UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (PROPYLENE GLYCOL DIAMINE, 2-AMINO-, DIETHER WITH PROPYLENE, TRIETHYLENE TETRAMINE), 8, III, ENVIRONMENTALLY HAZARDOUS
<b>14.3 Hazard Class</b>	8
<b>ADR/RID-Labels</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Environmental hazard</b>	Yes
<b>14.6 Special Provisions</b>	None
<b>Classification code</b>	C7

**ADR**

<b>14.1 UN-No.</b>	UN2735
<b>14.2 Proper Shipping Name Description</b>	POLYAMINES, LIQUID, CORROSIVE, N.O.S. UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (PROPYLENE GLYCOL DIAMINE, 2-AMINO-, DIETHER WITH PROPYLENE, TRIETHYLENE TETRAMINE), 8, III, (E), ENVIRONMENTALLY HAZARDOUS
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Environmental hazard</b>	Yes
<b>14.6 Special Provisions</b>	None 274
<b>Classification code</b>	C7
<b>Tunnel restriction code</b>	(E)

**IATA**

<b>14.1 UN-No.</b>	UN2735
<b>14.2 Proper Shipping Name Description</b>	AMINES, LIQUID, CORROSIVE, N.O.S. UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (PROPYLENE GLYCOL DIAMINE, 2-AMINO-, DIETHER WITH PROPYLENE, TRIETHYLENE TETRAMINE), 8, III
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing group</b>	II
<b>14.5 Environmental hazard</b>	Yes

14.6 Special Provisions None

ERG Code 8L

## Section 15: REGULATORY INFORMATION

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

#### National regulations

##### France

##### Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
Triethylene tetramine 112-24-3	RG 49, RG 49bis	-
Triethanolamine 102-71-6	RG 49, RG 49, RG 49bis	-
Piperazine 110-85-0	RG 49, RG 49bis, RG 65, RG 66	-

#### European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

#### Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

#### Persistent Organic Pollutants

Not applicable.

#### Dangerous substance category per Seveso Directive (2012/18/EU)

E1 - Hazardous to the Aquatic Environment in Category Acute 1 or Chronic

#### Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not applicable.

#### International Inventories

<b>TSCA</b>	Contact supplier for inventory compliance status.
<b>DSL/NDSL</b>	Contact supplier for inventory compliance status.
<b>EINECS/ELINCS</b>	Contact supplier for inventory compliance status.
<b>ENCS</b>	Contact supplier for inventory compliance status.
<b>IECSC</b>	Contact supplier for inventory compliance status.
<b>KECL</b>	Contact supplier for inventory compliance status.
<b>PICCS</b>	Contact supplier for inventory compliance status.
<b>AICS</b>	Contact supplier for inventory compliance status.

#### Legend

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical

## Substances

**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances

**15.2. Chemical safety assessment**

No information available.

**Section 16: OTHER INFORMATION****Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of H-Statements referred to under sections 2 and 3**

H301 - Toxic if swallowed  
H302 - Harmful if swallowed  
H311 - Toxic in contact with skin  
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  
H319 - Causes serious eye irritation  
H331 - Toxic if inhaled  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H341 - Suspected of causing genetic defects  
H361f - Suspected of damaging fertility  
H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child  
H373 - May cause damage to organs through prolonged or repeated exposure  
H400 - Very toxic to aquatic life  
H410 - Very toxic to aquatic life with long lasting effects  
H412 - Harmful to aquatic life with long lasting effects

**Legend**

SVHC: Substances of Very High Concern for Authorization:

**Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	-	Skin designation

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

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**This safety data sheet complies with the requirements of: Regulation (EC) No. 1907/2006.**

**Disclaimer**

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling,**

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**End of Safety Data Sheet**