

# SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

**HUNTSMAN**

Enriching lives through innovation

## ARALDITE® RAPID HARDENER

Version 2.3      Revision Date: 13.12.2023      SDS Number: 400001021216      Date of last issue: 01.12.2023  
Date of first issue: 06.12.2017

Print Date 07.10.2024

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

#### 1.1 Product identifier

Trade name : ARALDITE® RAPID HARDENER

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

Use of the Substance/Mixture : Hardener

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

Company : HUNTSMAN ADVANCED MATERIALS (UK) LIMITED  
Address : Ickleton Road, Duxford, Cambridgeshire  
CB22 4XQ United Kingdom  
Telephone : +41 61 299 20 41  
E-mail address of person responsible for the SDS : Global\_Product\_EHS\_AdMat@huntsmman.com

#### 1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234  
France ORFILA: +33(0)145425959  
ASIA: +65 6336-6011  
China: +86 20 39377888  
+86 532 83889090  
India: + 91 22 42 87 5333  
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

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Eye irritation, Category 2      H319: Causes serious eye irritation.  
Skin sensitisation, Category 1      H317: May cause an allergic skin reaction.  
Long-term (chronic) aquatic hazard, Category 2      H411: Toxic to aquatic life with long lasting effects.

#### 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

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Hazard pictograms :



Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P261 Avoid breathing mist or vapours.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P391 Collect spillage.

Hazardous components which must be listed on the label:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

#### Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
2,2'-[1,2-ethanediy]bis(oxy)]bis(ethanethiol)	14970-87-7 239-044-2	Acute Tox. 3; H301 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	>= 2.5 - < 10
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4	Acute Tox. 4; H302 Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317  specific concentration limit Skin Corr. 1A; H314	>= 1 - < 3

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		>= 29.85 % Skin Corr. 1B; H314 9.65 - < 29.85 % Skin Corr. 1C; H314 5 - < 9.65 %	
2,4,6-tris(dimethylaminomethyl)phenol	90-72-2 202-013-9 603-069-00-0 UK-01-6667334385-2	Acute Tox. 4; H302 Skin Corr. 1C; H314 Eye Dam. 1; H318	>= 1 - < 3
N,N,4-trimethylpiperazine-1-ethylamine	104-19-8 203-183-7	Acute Tox. 3; H301 Acute Tox. 4; H312 Skin Corr. 1A; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412	>= 1 - < 2.5
n-butyl acetate	123-86-4 204-658-1 607-025-00-1	Flam. Liq. 3; H226 STOT SE 3; H336 (Central nervous system) EUH066	>= 1 - < 10

For explanation of abbreviations see section 16.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Treat symptomatically.  
Get medical attention if symptoms occur.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.  
Avoid inhalation, ingestion and contact with skin and eyes.  
No action shall be taken involving any personal risk or without suitable training.  
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- If inhaled : If inhaled, remove to fresh air.  
Get medical attention if symptoms occur.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Induce vomiting immediately and call a physician.

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Keep respiratory tract clear.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.

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

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

### 4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

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

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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## SECTION 6: Accidental release measures

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

Personal precautions : Use personal protective equipment.

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Refer to protective measures listed in sections 7 and 8.

### 6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

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

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.

### 6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : When using do not eat or drink. When using do not smoke.  
Wash hands before breaks and at the end of workday.

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

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers.

Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature : 2 - 40 °C

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Further information on storage stability : Stable under normal conditions.

### 7.3 Specific end use(s)

Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
n-butyl acetate	123-86-4	TWA	150 ppm 724 mg/m <sup>3</sup>	GB EH40
		STEL	200 ppm 966 mg/m <sup>3</sup>	GB EH40

#### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
2,4,6-tris(dimethylaminomethyl)phenol	Workers	Inhalation	Long-term systemic effects	0.53 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	2.1 mg/m <sup>3</sup>
	Workers	Dermal	Long-term systemic effects	0.150 mg/kg
	Workers	Dermal	Acute systemic effects	0.600 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0.130 mg/m <sup>3</sup>
	Consumers	Inhalation	Acute systemic effects	0.130 mg/m <sup>3</sup>
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	Consumers	Dermal	Long-term systemic effects	0.075 mg/kg
	Consumers	Dermal	Acute systemic effects	0.075 mg/kg
	Consumers	Oral	Long-term systemic effects	0.075 mg/kg
	Workers	Inhalation	Long-term systemic effects	3.7 mg/m <sup>3</sup>
	Workers	Inhalation	Acute systemic effects	7.5 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term local effects	3.7 mg/m <sup>3</sup>
Workers	Inhalation	Acute local effects	7.5 mg/m <sup>3</sup>	
Workers	Dermal	Long-term systemic effects	0.67 mg/kg	

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	Consumers	Inhalation	Long-term systemic effects	0.65 mg/m3
	Consumers	Inhalation	Long-term local effects	0.65 mg/m3
	Consumers	Oral	Long-term systemic effects	0.2 mg/kg
N,N,4-trimethylpiperazine-1-ethylamine	Workers	Inhalation	Long-term systemic effects	0.59 mg/m3
	Workers	Dermal	Long-term systemic effects	0.167 mg/kg

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value	
2,4,6-tris(dimethylaminomethyl)phenol	Fresh water	0.046 mg/l	
	Marine water	0.005 mg/l	
	Remarks:Assessment Factors		
	Sewage treatment plant	0.262 mg/l	
	Remarks:Assessment Factors		
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	Freshwater - intermittent	0.46 mg/l	
	Soil	0.025 mg/kg	
	Fresh water	9.2 µg/l	
	Remarks:Assessment Factors		
	Marine water	0.92 µg/l	
	Remarks:Assessment Factors		
	Freshwater - intermittent	92 µg/l	
	Remarks:Assessment Factors		
	Sewage treatment plant	18.1 mg/l	
	Remarks:Assessment Factors		
	Fresh water sediment	0.0336 mg/kg dry weight (d.w.)	
	Marine sediment	0.0034 mg/kg dry weight (d.w.)	
	Soil	0.0013 mg/kg dry weight (d.w.)	
	N,N,4-trimethylpiperazine-1-ethylamine	Fresh water	0.029 mg/l
		Remarks:Assessment Factors	
Marine water		0.0029 mg/l	
Remarks:Assessment Factors			
Fresh water sediment		0.3132 mg/kg dry weight (d.w.)	
	Remarks:Equilibrium method		
	Marine sediment	0.03132 mg/kg dry weight (d.w.)	
	Remarks:Equilibrium method		
	Sewage treatment plant	100 mg/l	
	Remarks:Assessment Factors		
	Soil	0.0455 mg/kg dry weight (d.w.)	
	Remarks:Equilibrium method		
	Fresh water sediment	0.290 mg/l	

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	Remarks:Assessment Factors	
	Secondary Poisoning	3.33 mg/kg
	Remarks:Assessment Factors	

### 8.2 Exposure controls

#### Personal protective equipment

Eye/face protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

Hand protection  
Material : butyl-rubber  
Break through time : > 8 h

Material : Nitrile rubber  
Break through time : 10 - 480 min

Material : Ethyl Vinyl Alcohol Laminate (EVAL)  
Break through time : > 8 h

Remarks : The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).  
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. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Equipment should conform to EN 14387

Filter type : Combined particulates, inorganic and acidic gas/vapour, ammonia/amines and organic vapour type (ABEK-P)

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state : liquid



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Colour : yellow

Odour : slight

Odour Threshold : No data is available on the product itself.

Melting point/freezing point : No data is available on the product itself.

Boiling point/boiling range : > 200 °C

Flammability (solid, gas) : No data is available on the product itself.

Lower explosion limit / Lower flammability limit : No data is available on the product itself.

Upper explosion limit / Upper flammability limit : No data is available on the product itself.

Flash point : 100 °C

Auto-ignition temperature : No data is available on the product itself.

Decomposition temperature : No data is available on the product itself.

pH : substance/mixture is non-soluble (in water)

Viscosity  
Viscosity, dynamic : 20,000 - 40,000 mPa.s (25 °C)

Solubility(ies)  
Water solubility : insoluble

Solubility in other solvents : No data is available on the product itself.

Partition coefficient: n-octanol/water : No data is available on the product itself.

Vapour pressure : < 0.001 kPa

Density : 1.165 g/cm<sup>3</sup> (25 °C)

Relative density : 1.165 (25 °C)

Relative vapour density : No data is available on the product itself.

Particle characteristics : No data is available on the product itself.

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### 9.2 Other information

No data is available on the product itself.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

### 10.4 Conditions to avoid

Conditions to avoid : None known.

### 10.5 Incompatible materials

Materials to avoid : None known.

### 10.6 Hazardous decomposition products

No hazardous decomposition products are known.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

Not classified due to lack of data.

#### Product:

Acute oral toxicity : Acute toxicity estimate: > 2,000 mg/kg  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg  
Method: Calculation method

#### Components:

##### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Acute oral toxicity : LD50 (Rat, female): > 50 - 300 mg/kg  
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

##### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Acute oral toxicity : LD50 (Rat, male and female): 1,669 mg/kg

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Method: OECD Test Guideline 401

GLP: no

Assessment: The component/mixture is moderately toxic after single ingestion.

### 2,4,6-tris(dimethylaminomethyl)phenol:

Acute oral toxicity : LD50 (Rat, male and female): 2,169 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The component/mixture is minimally toxic after single ingestion.

Acute dermal toxicity : LD50 (Rat, male): > 1 ml/kg  
Assessment: The substance or mixture has no acute dermal toxicity

### N,N,4-trimethylpiperazine-1-ethylamine:

Acute oral toxicity : LD50 (Rat, female): 200 - 2,000 mg/kg  
Method: OECD Test Guideline 423  
GLP: yes  
Assessment: The component/mixture is toxic after single ingestion.

Acute dermal toxicity : LD50 (Rabbit, male): 0.51 mL/kg bw  
Assessment: The component/mixture is moderately toxic after single contact with skin.

### n-butyl acetate:

Acute oral toxicity : LD50 (Rat): > 8,800 mg/kg  
LD50 (Mouse): 7,060 mg/kg  
LD50 (Rabbit): 7,437 mg/kg  
LD50 (Guinea pig): 4,700 mg/kg  
LD50 (Rat, female): 10,760 mg/kg  
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rabbit): > 17,600 mg/kg  
LD50 (Rabbit, male and female): 14,112 mg/kg

### Skin corrosion/irritation

Based on available data, the classification criteria are not met.

#### Product:

Species : Rabbit  
Assessment : No skin irritation  
Method : OECD Test Guideline 404  
Result : slight irritation

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### Components:

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Species : human skin  
Method : OECD Test Guideline 439  
Result : No skin irritation

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Species : Rabbit  
Assessment : Causes severe burns.  
Method : OECD Test Guideline 404  
Result : Extremely corrosive and destructive to tissue.  
GLP : yes

#### **2,4,6-tris(dimethylaminomethyl)phenol:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : Corrosive after 1 to 4 hours of exposure

Species : synthetic macromolecular bio-barrier  
Method : OECD Test Guideline 435  
Result : Corrosive after 1 to 4 hours of exposure

#### **N,N,4-trimethylpiperazine-1-ethylamine:**

Species : Rabbit  
Assessment : Causes severe burns.  
Method : OECD Test Guideline 404  
Result : Extremely corrosive and destructive to tissue.

### **Serious eye damage/eye irritation**

Causes serious eye irritation.

### Product:

Species : Rabbit  
Result : Mild eye irritation

### Components:

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Species : Bovine cornea  
Method : OECD Test Guideline 437  
Result : No eye irritation

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Assessment : Risk of serious damage to eyes.  
Result : Risk of serious damage to eyes.  
GLP : no

#### **2,4,6-tris(dimethylaminomethyl)phenol:**

Species : Rabbit  
Assessment : Corrosive

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Method : Other guidelines  
Result : Corrosive

### **N,N,4-trimethylpiperazine-1-ethylamine:**

Result : Corrosive

### **Respiratory or skin sensitisation**

#### **Skin sensitisation**

May cause an allergic skin reaction.

#### **Respiratory sensitisation**

Not classified due to lack of data.

#### **Product:**

Result : May cause sensitisation by skin contact.

#### **Components:**

##### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Test Type : Maximisation Test  
Exposure routes : Skin  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitisation.

##### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Test Type : Maximisation Test  
Exposure routes : Skin  
Species : Guinea pig  
Assessment : Probability or evidence of low to moderate skin sensitisation rate in humans  
Method : OECD Test Guideline 406  
Result : Probability or evidence of low to moderate skin sensitisation rate in humans  
GLP : yes

##### **2,4,6-tris(dimethylaminomethyl)phenol:**

Exposure routes : Skin  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitisation.

##### **n-butyl acetate:**

Exposure routes : Skin  
Species : Guinea pig  
Result : Does not cause skin sensitisation.

### **Germ cell mutagenicity**

Not classified due to lack of data.

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### Components:

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Genotoxicity in vitro : Test Type: Ames test  
Test system: Salmonella typhimurium and E. coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: gene mutation test  
Test system: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 490  
Result: negative

Test system: Human lymphocytes  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Test system: Human lymphocytes  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative  
GLP: yes

Test Type: reverse mutation assay  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Test Type: In vitro mammalian cell gene mutation test  
Test system: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: reverse mutation assay  
Test system: Salmonella typhimurium and E. coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

#### **2,4,6-tris(dimethylaminomethyl)phenol:**

Genotoxicity in vitro : Concentration: 5000 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

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Concentration: 2500 ug/plate  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

### **N,N,4-trimethylpiperazine-1-ethylamine:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: reverse mutation assay  
Test system: Salmonella tryphimurium and E. coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

Metabolic activation: with and without metabolic activation  
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test  
Species: Mouse (male and female)  
Cell type: Bone marrow  
Application Route: Intraperitoneal injection  
Dose: 175/350/560 mg/kg bw /day  
Result: negative

### **Carcinogenicity**

Not classified due to lack of data.

### **Components:**

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Species : Mouse, male  
Application Route : Dermal  
Exposure time : 20 month(s)  
Dose : 1.25/56.3 mg/animal  
Frequency of Treatment : 3 daily  
NOAEL : >= 56.3 mg/kg body weight  
Result : negative

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Remarks : Information given is based on data obtained from similar substances.

### Reproductive toxicity

Not classified due to lack of data.

### Components:

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Effects on fertility : Species: Rat, male and female  
Dose: 50, 100, 150 mg/kg  
General Toxicity - Parent: NOAEL: 50 mg/kg body weight  
General Toxicity F1: NOAEL: 50 mg/kg body weight  
Method: OECD Test Guideline 421

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Effects on fertility : Test Type: OECD Test Guideline 422  
Species: Rat, male and female  
Application Route: Oral  
Dose: 5, 15 and 50 mg/kg bw/d  
General Toxicity - Parent: NOAEL: 15 mg/kg body weight  
General Toxicity F1: NOAEL: 15 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: Animal testing did not show any effects on fertility.  
GLP: yes

Effects on foetal development : Test Type: reproductive and developmental toxicity study  
Species: Rat, male and female  
Application Route: Oral  
Dose: 5, 15 and 50 mg/kg bw/d  
General Toxicity Maternal: NOAEL: 15 mg/kg body weight  
Developmental Toxicity: NOAEL: 15 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: Not classified  
GLP: yes  
Remarks: Information given is based on data obtained from similar substances.

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

#### **2,4,6-tris(dimethylaminomethyl)phenol:**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Method: OECD Test Guideline 422  
Remarks: No significant adverse effects were reported

#### **N,N,4-trimethylpiperazine-1-ethylamine:**

Effects on fertility : Test Type: OECD Test Guideline 422  
Species: Rat, male and female  
Dose: 0, 10, 25, 50 mg/kg  
Frequency of Treatment: 7 days/week  
General Toxicity - Parent: NOAEL: 50 mg/kg body weight



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General Toxicity F1: NOAEL: 50 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: negative

### **n-butyl acetate:**

Effects on fertility : Species: Rat, male and female  
Fertility: NOAEC Mating/Fertility: 2,000 ppm  
Method: OECD Test Guideline 416

Effects on foetal development : Species: Rat, male and female  
Strain: Sprague-Dawley  
Application Route: Inhalation  
Developmental Toxicity: NOAEC Parent: 1,500 ppm  
Method: OECD Test Guideline 414  
Result: No effects on fertility and early embryonic development were detected.

### **STOT - single exposure**

Not classified due to lack of data.

### **Components:**

#### **n-butyl acetate:**

Exposure routes : Inhalation  
Target Organs : Narcotic effects  
Assessment : May cause drowsiness or dizziness.

### **STOT - repeated exposure**

Not classified due to lack of data.

### **Repeated dose toxicity**

### **Components:**

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Species : Rat, male and female  
NOAEL : 60 mg/kg  
Application Route : Oral  
Dose : 20, 60, 180 mg/kg  
Method : OECD Test Guideline 407

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Species : Rat, male and female  
: 500 mg/m<sup>3</sup>  
Application Route : Inhalation  
Test atmosphere : vapour  
Exposure time : 21 d 6 h  
Number of exposures : 5 days/week  
Dose : 550 mg/m<sup>3</sup>  
Method : Subchronic toxicity  
Remarks : Based on data from similar materials

Species : Mouse, male  
NOAEL : >= 56.3 mg/kg/d

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Application Route : Skin contact  
Number of exposures : 3 d  
Method : Chronic toxicity  
Remarks : Based on data from similar materials

Species : Rat, male and female  
NOAEL : 41 mg/kg  
NOAEL : 1,000 mg/l, ppm  
Application Route : oral (feed)  
Exposure time : 20 months  
Number of exposures : 3 times/week  
Dose : 1000/7500/15000 ppm  
Method : OECD Test Guideline 408

### **2,4,6-tris(dimethylaminomethyl)phenol:**

Species : Rat, male and female  
NOEL : 15 mg/kg  
Application Route : Ingestion  
Exposure time : 1,032 h  
Number of exposures : 7 d  
Method : Subacute toxicity

### **N,N,4-trimethylpiperazine-1-ethylamine:**

Species : Rat, male and female  
NOAEL : 50 mg/kg  
Application Route : Oral  
Exposure time : 6 - 10 weeks  
Number of exposures : 7 days/week  
Dose : 0, 10, 25, 50mg/kg bw/day  
Method : OECD Test Guideline 422  
GLP : yes

### **n-butyl acetate:**

Species : Rat, male and female  
NOAEL : 2.4 mg/l  
Application Route : Inhalation  
Test atmosphere : vapour

### **Aspiration toxicity**

Not classified due to lack of data.

## 11.2 Information on other hazards

### **Endocrine disrupting properties**

#### **Product:**

Assessment : This substance/mixture does not contain components considered to have endocrine disrupting properties for human health according to UK REACH Article 57(f),

### **Experience with human exposure**

No data available

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### Toxicology, Metabolism, Distribution

No data available

### Neurological effects

No data available

### Further information

No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

#### Components:

#### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 5.7 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.76 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 3.11 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: OECD Test Guideline 201  
GLP: yes

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

#### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 203  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9.2 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water

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Method: OECD Test Guideline 202

GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
GLP: yes

NOEC (Selenastrum capricornutum (green algae)): 5.7 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
GLP: yes

Toxicity to microorganisms : EC50 (Pseudomonas putida): 181 mg/l  
Exposure time: 16 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Fresh water  
Method: DIN 38 412 Part 8  
GLP: no

### 2,4,6-tris(dimethylaminomethyl)phenol:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 175 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates : LC50 (Palaeomonetes vulgaris (Grass shrimp)): 718 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Test substance: Marine water

Toxicity to algae/aquatic plants : ErC50 (Desmodesmus subspicatus (green algae)): 84 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 6.25 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201

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### **N,N,4-trimethylpiperazine-1-ethylamine:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 29 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 66 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): 29 mg/l  
Exposure time: 72 h  
Test substance: Fresh water  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 3.2 mg/l  
Exposure time: 72 h  
Test substance: Fresh water  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 209  
GLP: yes

### **Ecotoxicology Assessment**

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

### **n-butyl acetate:**

Toxicity to fish : EC50 (Menidia beryllina (Silverside)): 185 mg/l  
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 18 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 : 205 mg/l  
Exposure time: 24 h

EC50 : 44 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 674.7 mg/l  
Exposure time: 72 h

Toxicity to microorganisms : IC0 : 1,200 mg/l

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Exposure time: 24 h

### 12.2 Persistence and degradability

#### Components:

##### **2,2'-[1,2-ethanediylbis(oxy)]bis(ethanethiol):**

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Concentration: 38.2 mg/l  
Result: Not biodegradable  
Biodegradation: < 10 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301A

##### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

Biodegradability : Test Type: aerobic  
Result: Readily biodegradable.  
Biodegradation: 100 %  
Related to: Dissolved organic carbon (DOC)  
Exposure time: 28 d  
Method: OECD Test Guideline 301A  
Test substance: Fresh water  
GLP: yes

##### **2,4,6-tris(dimethylaminomethyl)phenol:**

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 2 mg/l  
Result: Not biodegradable  
Biodegradation: 4 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

##### **N,N,4-trimethylpiperazine-1-ethylamine:**

Biodegradability : Test Type: aerobic  
Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B  
Test substance: Fresh water

##### **n-butyl acetate:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 98 %  
Exposure time: 28 d

### 12.3 Bioaccumulative potential

#### Components:

##### **N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:**

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Partition coefficient: n-octanol/water : log Pow: -0.56 (25 °C)  
pH: 11.6  
Method: OECD Test Guideline 107

### 2,4,6-tris(dimethylaminomethyl)phenol:

Partition coefficient: n-octanol/water : Pow:  $\geq$  0.219 (21.5 °C)  
log Pow: -0.66 (21.5 °C)  
Method: OPPTS 830.7550

### N,N,4-trimethylpiperazine-1-ethylamine:

Partition coefficient: n-octanol/water : log Pow: -0.591 (21 °C)  
pH: 9.6

### n-butyl acetate:

Bioaccumulation : Bioconcentration factor (BCF): 4 - 14

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

### Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## 12.6 Other adverse effects

### Product:

Endocrine disrupting potential : This substance/mixture does not contain components considered to have endocrine disrupting properties for environment according to UK REACH Article 57(f).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Dispose of contents and container in accordance with all local, regional, national and international regulations.  
Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

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### SECTION 14: Transport information

#### 14.1 UN number or ID number

**ADR** : UN 3082  
**RID** : UN 3082  
**IMDG** : UN 3082  
**IATA** : UN 3082

#### 14.2 UN proper shipping name

**ADR** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIETHYLENEGLYCOL-DIMERCAPTANE)  
**RID** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIETHYLENEGLYCOL-DIMERCAPTANE)  
**IMDG** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (TRIETHYLENEGLYCOL-DIMERCAPTANE)  
**IATA** : Environmentally hazardous substance, liquid, n.o.s. (TRIETHYLENEGLYCOL-DIMERCAPTANE)

#### 14.3 Transport hazard class(es)

	Class	Subsidiary risks
<b>ADR</b>	: 9	
<b>RID</b>	: 9	
<b>IMDG</b>	: 9	
<b>IATA</b>	: 9	

#### 14.4 Packing group

**ADR**  
Packing group : III  
Classification Code : M6  
Hazard Identification Number : 90  
Labels : 9  
Tunnel restriction code : (-)

**RID**  
Packing group : III  
Classification Code : M6  
Hazard Identification Number : 90  
Labels : 9

**IMDG**  
Packing group : III  
Labels : 9  
EmS Code : F-A, S-F



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### IATA (Cargo)

Packing instruction (cargo aircraft) : 964  
Packing instruction (LQ) : Y964  
Packing group : III  
Labels : Miscellaneous

### IATA (Passenger)

Packing instruction (passenger aircraft) : 964  
Packing instruction (LQ) : Y964  
Packing group : III  
Labels : Miscellaneous

### 14.5 Environmental hazards

#### ADR

Environmentally hazardous : yes

#### RID

Environmentally hazardous : yes

#### IMDG

Marine pollutant : yes

### 14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

## SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	: Conditions of restriction for the following entries should be considered: Number on list 3
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	: This product does not contain substances of very high concern.
UK REACH List of substances subject to authorisation (Annex XIV)	: Not applicable

#### Other regulations:

Take note of The Management of Health and Safety at Work Regulations 1999 (requirements relating to protection of young people at work contained in Regulation 19) and of Directive 94/33/EC on the protection of young people at work.

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### The components of this product are reported in the following inventories:

- DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.
- AIIC : All components are listed on the inventory, regulatory obligations/restrictions apply. Please contact your sales representative for more information before import into Australia
- ENCS : On the inventory, or in compliance with the inventory
- KECI : On the inventory, or in compliance with the inventory
- PICCS : Not in compliance with the inventory
- IECSC : On the inventory, or in compliance with the inventory
- TCSI : On the inventory, or in compliance with the inventory
- TSCA : On or in compliance with the active portion of the TSCA inventory

### Inventories

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

### 15.2 Chemical safety assessment

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

## SECTION 16: Other information

### Full text of H-Statements

- H226 : Flammable liquid and vapour.
- H301 : Toxic if swallowed.
- 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.

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H336	:	May cause drowsiness or dizziness.
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.
EUH066	:	Repeated exposure may cause skin dryness or cracking.

### Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage
Flam. Liq.	:	Flammable liquids
Skin Corr.	:	Skin corrosion
Skin Sens.	:	Skin sensitisation
STOT SE	:	Specific target organ toxicity - single exposure
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

### Further information

#### Classification of the mixture:

Eye Irrit. 2	H319
Skin Sens. 1	H317
Aquatic Chronic 2	H411

#### Classification procedure:

Based on product data or assessment
Based on product data or assessment
Calculation method

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## ARALDITE® RAPID HARDENER

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