



## Safety Data Sheet according to Regulation (EC) No 1907/2006

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LOCTITE CAT 43

SDS No. : 403541  
V006.0

Revision: 09.04.2018

printing date: 18.11.2019

Replaces version from: 22.11.2016

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

#### 1.1. Product identifier

LOCTITE CAT 43

#### Contains:

3,6,9-Triazaundecamethylenediamine  
2-Piperazin-1-ylethylamine  
Imidazole  
Triethylenetetramine  
Diethylenetriamine  
2-(2-Aminoethylamino)ethanol

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

Intended use:  
Catalyst

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

Henkel Ltd  
Wood Lane End  
HP2 4RQ Hemel Hempstead

Great Britain

Phone: +44 1442 278000

Fax-no.: +44 1442 278071

ua-productsafety.uk@henkel.com

#### 1.4. Emergency telephone number

24 Hours Emergency Tel: +44 (0)1442 278497

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification (CLP):**

Acute toxicity H302 Harmful if swallowed. Route of Exposure: Oral	Category 4
Acute toxicity H312 Harmful in contact with skin. Route of Exposure: Dermal	Category 4
Skin corrosion H314 Causes severe skin burns and eye damage.	Category 1B
Serious eye damage H318 Causes serious eye damage.	Category 1
Skin sensitizer H317 May cause an allergic skin reaction.	Category 1
<b>Toxic to reproduction</b> <b>H360Df May damage the unborn child. Suspected of damaging fertility.</b>	<b>Category 1B</b>
Chronic hazards to the aquatic environment H411 Toxic to aquatic life with long lasting effects.	Category 2

**2.2. Label elements**

**Label elements (CLP):**

<b>Hazard pictogram:</b>	
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<b>Signal word:</b>	<b>Danger</b>
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<b>Hazard statement:</b>	H360Df May damage the unborn child. Suspected of damaging fertility. H314 Causes severe skin burns and eye damage. H302+H312 Harmful if swallowed or in contact with skin H317 May cause an allergic skin reaction. H411 Toxic to aquatic life with long lasting effects.
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**Supplemental information**      Restricted to professional users.

<b>Precautionary statement:</b>	P201 Obtain special instructions before use.
<b>Prevention</b>	P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.

<b>Precautionary statement:</b>	P308+P313 IF exposed or concerned: Get medical advice/attention.
<b>Response</b>	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

**2.3. Other hazards**

None if used properly.

Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

##### Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS-No.	EC Number REACH-Reg No.	content	Classification
3,6,9-Triazaundecamethylenediamine 112-57-2	203-986-2 01-2119487290-37	50- 100 %	Acute Tox. 4; Dermal H312 Acute Tox. 4; Oral H302 Skin Sens. 1 H317 Aquatic Chronic 2 H411 Skin Corr. 1B H314
2-Piperazin-1-ylethylamine 140-31-8	205-411-0 01-2119471486-30	10- 20 %	Acute Tox. 3; Dermal H311 Acute Tox. 4; Oral H302 Skin Corr. 1B H314 Aquatic Chronic 3 H412 Skin Sens. 1 H317 Repr. 2 H361
Imidazole 288-32-4	206-019-2 01-2119485825-24	10- 20 %	Skin Corr. 1C H314 Acute Tox. 4; Oral H302 Repr. 1B H360D
Triethylenetetramine 112-24-3	203-950-6 01-2119487919-13	1- < 5 %	Acute Tox. 4; Oral H302 Acute Tox. 4; Dermal H312 Skin Sens. 1 H317 Skin Corr. 1B H314 Aquatic Chronic 3 H412
Diethylenetriamine 111-40-0	203-865-4 01-2119473793-27	0,1- < 1 %	Acute Tox. 4; Oral H302 Acute Tox. 4; Dermal H312 Skin Corr. 1B H314 Skin Sens. 1 H317 Acute Tox. 2; Inhalation H330 STOT SE 3 H335
2-(2-Aminoethylamino)ethanol 111-41-1	203-867-5 01-2119456894-24	0,1- < 0,3 %	Repr. 1B H360Df Skin Sens. 1 H317 Skin Corr. 1B H314

For full text of the H - statements and other abbreviations see section 16 "Other information".  
Substances without classification may have community workplace exposure limits available.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

**Inhalation:**

Should not be a problem as product is of low volatility. However, if feeling unwell remove patient to fresh air.

**Skin contact:**

Rinse with running water and soap.  
Obtain medical attention if irritation persists.

**Eye contact:**

Rinse immediately with plenty of running water (for 10 minutes), seek medical attention from a specialist.

**Ingestion:**

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

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

INGESTION: Nausea, vomiting, diarrhea, abdominal pain.

Causes burns.

SKIN: Rash, Urticaria.

SKIN: Redness, inflammation.

**4.3. Indication of any immediate medical attention and special treatment needed**

See section: Description of first aid measures

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing media:**

water, carbon dioxide, foam, powder

**Extinguishing media which must not be used for safety reasons:**

High pressure waterjet

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

In the event of a fire, carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) can be released.

**5.3. Advice for firefighters**

Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

**Additional information:**

In case of fire, keep containers cool with water spray.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Avoid contact with skin and eyes.

Wear protective equipment.

Ensure adequate ventilation.

**6.2. Environmental precautions**

Do not empty into drains / surface water / ground water.

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

For small spills wipe up with paper towel and place in container for disposal.

For large spills absorb onto inert absorbent material and place in sealed container for disposal.

Dispose of contaminated material as waste according to Section 13.

**6.4. Reference to other sections**

See advice in section 8

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Avoid skin and eye contact.  
See advice in section 8

## Hygiene measures:

Good industrial hygiene practices should be observed.  
Wash hands before work breaks and after finishing work.  
Do not eat, drink or smoke while working.

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

Ensure good ventilation/extraction.  
Keep container tightly sealed.  
Store at room temperature.  
Refer to Technical Data Sheet

**7.3. Specific end use(s)**

Catalyst

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Occupational Exposure Limits**

Valid for  
Great Britain

Ingredient [Regulated substance]	ppm	mg/m <sup>3</sup>	Value type	Short term exposure limit category / Remarks	Regulatory list
2,2'-Iminodi(ethylamine) 111-40-0 [2,2'-IMINODI(ETHYLAMINE)]			Skin designation:	Can be absorbed through the skin.	EH40 WEL
2,2'-Iminodi(ethylamine) 111-40-0 [2,2'-IMINODI(ETHYLAMINE)]	1	4,3	Time Weighted Average (TWA):		EH40 WEL

**Occupational Exposure Limits**

Valid for  
Ireland

Ingredient [Regulated substance]	ppm	mg/m <sup>3</sup>	Value type	Short term exposure limit category / Remarks	Regulatory list
2,2'-Iminodi(ethylamine) 111-40-0 [DIETHYLENE TRIAMINE]	1	4	Time Weighted Average (TWA):		IR_OEL
2,2'-Iminodi(ethylamine) 111-40-0 [DIETHYLENE TRIAMINE]			Skin designation:	Can be absorbed through the skin.	IR_OEL

**Predicted No-Effect Concentration (PNEC):**

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
3,6,9-Triazaundecamethylenediamine 112-57-2	soil				0,683 mg/kg		
3,6,9-Triazaundecamethylenediamine 112-57-2	aqua (freshwater)		0,0068 mg/l				
3,6,9-Triazaundecamethylenediamine 112-57-2	aqua (marine water)		0,00068 mg/l				
3,6,9-Triazaundecamethylenediamine 112-57-2	sediment (freshwater)				3,43 mg/kg		
3,6,9-Triazaundecamethylenediamine 112-57-2	sediment (marine water)				0,343 mg/kg		
3,6,9-Triazaundecamethylenediamine 112-57-2	sewage treatment plant (STP)		9,73 mg/l				
2-Piperazin-1-ylethylamine 140-31-8	aqua (freshwater)		0,058 mg/l				
2-Piperazin-1-ylethylamine 140-31-8	aqua (marine water)		0,0058 mg/l				
2-Piperazin-1-ylethylamine 140-31-8	sediment (freshwater)				215 mg/kg		
2-Piperazin-1-ylethylamine 140-31-8	sediment (marine water)				21,5 mg/kg		
2-Piperazin-1-ylethylamine 140-31-8	soil				42,9 mg/kg		
2-Piperazin-1-ylethylamine 140-31-8	sewage treatment plant (STP)		250 mg/l				
2-Piperazin-1-ylethylamine 140-31-8	aqua (intermittent releases)		0,58 mg/l				
Imidazole 288-32-4	aqua (freshwater)		0,13 mg/l				
Imidazole 288-32-4	aqua (marine water)		0,013 mg/l				
Imidazole 288-32-4	aqua (intermittent releases)		1,3 mg/l				
Imidazole 288-32-4	sediment (freshwater)				0,336 mg/kg		
Imidazole 288-32-4	sediment (marine water)				0,0336 mg/kg		
Imidazole 288-32-4	soil				0,0425 mg/kg		
Imidazole 288-32-4	sewage treatment plant (STP)		10 mg/l				
Trientine 112-24-3	aqua (freshwater)		0,19 mg/l				
Trientine 112-24-3	aqua (marine water)		0,038 mg/l				
Trientine 112-24-3	sediment (freshwater)				95,9 mg/kg		
Trientine 112-24-3	sediment (marine water)				19,2 mg/kg		
Trientine 112-24-3	soil				19,1 mg/kg		
Trientine 112-24-3	aqua (intermittent releases)		0,2 mg/l				
Trientine 112-24-3	Sewage treatment plant		4,25 mg/l				
Trientine 112-24-3	oral				0,18 mg/kg		
2,2'-Iminodi(ethylamine) 111-40-0	aqua (freshwater)		0,56 mg/l				
2,2'-Iminodi(ethylamine) 111-40-0	aqua (marine water)		0,056 mg/l				
2,2'-Iminodi(ethylamine) 111-40-0	aqua (intermittent releases)		0,32 mg/l				

2,2'-Iminodi(ethylamine) 111-40-0	sediment (freshwater)				1072 mg/kg		
2,2'-Iminodi(ethylamine) 111-40-0	sediment (marine water)				107,2 mg/kg		
2,2'-Iminodi(ethylamine) 111-40-0	sewage treatment plant (STP)		6 mg/l				
2,2'-Iminodi(ethylamine) 111-40-0	soil				7,97 mg/kg		
2,2'-Iminodi(ethylamine) 111-40-0	Air						
2-(2-Aminoethylamino)ethanol 111-41-1	aqua (freshwater)		0,022 mg/l				
2-(2-Aminoethylamino)ethanol 111-41-1	aqua (intermittent releases)		0,22 mg/l				
2-(2-Aminoethylamino)ethanol 111-41-1	sewage treatment plant (STP)		82,2 mg/l				
2-(2-Aminoethylamino)ethanol 111-41-1	sediment (freshwater)				0,172 mg/kg		
2-(2-Aminoethylamino)ethanol 111-41-1	sediment (marine water)				0,0172 mg/kg		
2-(2-Aminoethylamino)ethanol 111-41-1	soil				0,0189 mg/kg		

**Derived No-Effect Level (DNEL):**

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
3,6,9-Triazaundecamethylenediamine 112-57-2	Workers	dermal	Long term exposure - systemic effects		0,74 mg/kg	
3,6,9-Triazaundecamethylenediamine 112-57-2	Workers	inhalation	Long term exposure - systemic effects		1,29 mg/m <sup>3</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	Workers	inhalation	Acute/short term exposure - systemic effects		6940 mg/m <sup>3</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	dermal	Long term exposure - systemic effects		0,32 mg/kg	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	inhalation	Long term exposure - systemic effects		0,38 mg/m <sup>3</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	oral	Long term exposure - systemic effects		0,53 mg/kg	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	oral	Acute/short term exposure - systemic effects		26 mg/kg	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	inhalation	Acute/short term exposure - systemic effects		2071 mg/m <sup>3</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	dermal	Acute/short term exposure - systemic effects		10 mg/kg	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	dermal	Acute/short term exposure - local effects		1,29 mg/cm <sup>2</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	General population	dermal	Long term exposure - local effects		0,56 mg/cm <sup>2</sup>	
3,6,9-Triazaundecamethylenediamine 112-57-2	Workers	dermal	Long term exposure - local effects		0,036 mg/cm <sup>2</sup>	
2-Piperazin-1-ylethylamine 140-31-8	Workers	dermal	Acute/short term exposure - systemic effects		20 mg/kg	
2-Piperazin-1-ylethylamine 140-31-8	Workers	Inhalation	Acute/short term exposure - systemic effects		10,6 mg/m <sup>3</sup>	
2-Piperazin-1-ylethylamine 140-31-8	Workers	dermal	Acute/short term exposure - local effects		0,04 mg/cm <sup>2</sup>	
2-Piperazin-1-ylethylamine 140-31-8	Workers	dermal	Long term exposure - systemic effects		3,3 mg/kg	
2-Piperazin-1-ylethylamine 140-31-8	Workers	Inhalation	Long term exposure - systemic effects		10,6 mg/m <sup>3</sup>	
2-Piperazin-1-ylethylamine 140-31-8	Workers	dermal	Long term exposure - local effects		0,006 mg/cm <sup>2</sup>	
2-Piperazin-1-ylethylamine 140-31-8	General population	dermal	Acute/short term exposure - systemic effects		10 mg/kg	
2-Piperazin-1-ylethylamine 140-31-8	General population	Inhalation	Acute/short term exposure - systemic effects		5,3 mg/m <sup>3</sup>	
2-Piperazin-1-ylethylamine 140-31-8	General population	oral	Acute/short term exposure - systemic effects		1,5 mg/kg	
2-Piperazin-1-ylethylamine 140-31-8	General population	oral	Acute/short term exposure - local effects		0,02 mg/cm <sup>2</sup>	
2-Piperazin-1-ylethylamine 140-31-8	General population	dermal	Long term exposure - systemic effects		1,7 mg/kg	
2-Piperazin-1-ylethylamine 140-31-8	General population	Inhalation	Long term exposure -		0,9 mg/m <sup>3</sup>	



			systemic effects		
2-Piperazin-1-ylethylamine 140-31-8	General population	oral	Long term exposure - systemic effects		0,3 mg/kg
2-Piperazin-1-ylethylamine 140-31-8	General population	dermal	Long term exposure - local effects		0,003 mg/cm <sup>2</sup>
Imidazole 288-32-4	Workers	Inhalation	Long term exposure - systemic effects		10,6 mg/m <sup>3</sup>
Imidazole 288-32-4	Workers	dermal	Long term exposure - systemic effects		1,5 mg/kg
Trientine 112-24-3	General population	inhalation	Long term exposure - systemic effects		0,29 mg/m <sup>3</sup>
Trientine 112-24-3	General population	dermal	Long term exposure - systemic effects		0,25 mg/kg
Trientine 112-24-3	Workers	dermal	Long term exposure - local effects		0,028 mg/cm <sup>2</sup>
Trientine 112-24-3	Workers	dermal	Long term exposure - systemic effects		0,57 mg/kg
Trientine 112-24-3	Workers	inhalation	Acute/short term exposure - systemic effects		5380 mg/m <sup>3</sup>
Trientine 112-24-3	General population	inhalation	Acute/short term exposure - systemic effects		1600 mg/m <sup>3</sup>
Trientine 112-24-3	General population	dermal	Acute/short term exposure - systemic effects		8 mg/kg
Trientine 112-24-3	General population	dermal	Long term exposure - local effects		0,43 mg/cm <sup>2</sup>
Trientine 112-24-3	General population	dermal	Acute/short term exposure - local effects		1 mg/cm <sup>2</sup>
Trientine 112-24-3	General population	oral	Long term exposure - systemic effects		0,41 mg/kg
Trientine 112-24-3	General population	oral	Acute/short term exposure - systemic effects		20 mg/kg
Trientine 112-24-3	Workers	inhalation	Long term exposure - systemic effects		1 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	Workers	dermal	Long term exposure - systemic effects		11,4 mg/kg
2,2'-Iminodi(ethylamine) 111-40-0	Workers	dermal	Long term exposure - local effects		1,1 mg/kg
2,2'-Iminodi(ethylamine) 111-40-0	Workers	Inhalation	Acute/short term exposure - systemic effects		92,1 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	Workers	Inhalation	Acute/short term exposure - local effects		2,6 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	Workers	Inhalation	Long term exposure - systemic effects		15,4 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	Workers	Inhalation	Long term exposure - local effects		0,87 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	General population	dermal	Acute/short term exposure - local effects		4,88 mg/kg
2,2'-Iminodi(ethylamine) 111-40-0	General population	Inhalation	Acute/short term exposure - systemic effects		27,5 mg/m <sup>3</sup>
2,2'-Iminodi(ethylamine) 111-40-0	General population	dermal	Long term exposure - systemic effects		4,88 mg/kg

2,2'-Iminodi(ethylamine) 111-40-0	General population	Inhalation	Long term exposure - systemic effects	4,6 mg/m3
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**Biological Exposure Indices:**

None

**8.2. Exposure controls:**

Engineering controls:

Ensure good ventilation/extraction.

Respiratory protection:

Ensure adequate ventilation.

An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area

Filter type: A (EN 14387)

Hand protection:

Chemical-resistant protective gloves (EN 374).

Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to &gt; 30 minutes permeation time as per EN 374):

nitrile rubber (NBR;  $\geq$  0.4 mm thickness)

Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to &gt; 480 minutes permeation time as per EN 374):

nitrile rubber (NBR;  $\geq$  0.4 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:

Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing.

Protective eye equipment should conform to EN166.

Skin protection:

Wear suitable protective clothing.

Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

## SECTION 9: Physical and chemical properties

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

Appearance	liquid yellow
Odor	amine-like
Odour threshold	No data available / Not applicable
pH	No data available / Not applicable
Melting point	No data available / Not applicable
Solidification temperature	No data available / Not applicable
Initial boiling point	318 °C (604.4 °F)
Flash point	> 93,3 °C (> 199.94 °F); Closed cup
Evaporation rate	No data available / Not applicable
Flammability	No data available / Not applicable
Explosive limits	No data available / Not applicable
Vapour pressure	< 0,01 mm hg

(25 °C (77 °F))	
Relative vapour density:	No data available / Not applicable
Density	0,99 g/cm3
( )	
Bulk density	No data available / Not applicable
Solubility	No data available / Not applicable
Solubility (qualitative)	Soluble
(Solvent: Water)	
Partition coefficient: n-octanol/water	No data available / Not applicable
Auto-ignition temperature	No data available / Not applicable
Decomposition temperature	No data available / Not applicable
Viscosity	No data available / Not applicable
Viscosity (kinematic)	No data available / Not applicable
Explosive properties	No data available / Not applicable
Oxidising properties	No data available / Not applicable

## 9.2. Other information

No data available / Not applicable

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reacts with alcohols and amines.

Reacts with oxidants, acids and lyes

Reaction with some curing agents may produce an exothermic reaction which in large masses could cause runaway polymerization.

### 10.2. Chemical stability

Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

See section reactivity

### 10.4. Conditions to avoid

No decomposition if stored and applied as directed.

### 10.5. Incompatible materials

See section reactivity.

### 10.6. Hazardous decomposition products

Hydrocarbons

carbon oxides.

nitrogen oxides

Rapid polymerisation may generate excessive heat and pressure.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
3,6,9-Triazaundecamethylenedi amine 112-57-2	LD50	1.716 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
Triethylenetetramine 112-24-3	LD50	1.591 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
Diethylenetriamine 111-40-0	LD50	1.553 mg/kg	rat	not specified
2-(2-Aminoethylamino)ethanol 111-41-1	LD50	2.150 mg/kg	rat	BASF Test

**Acute dermal toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Species	Method
3,6,9-Triazaundecamethylenedi amine 112-57-2	LD50	1.260 mg/kg	rabbit	not specified
2-Piperazin-1- ylethylamine 140-31-8	LD50	866 mg/kg	rabbit	Draize Test
Triethylenetetramine 112-24-3	LD50	1.465 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
Diethylenetriamine 111-40-0	LD50	1.045 mg/kg	rabbit	not specified
2-(2- Aminoethylamino)ethanol 111-41-1	LD50	> 2.000 mg/kg	rabbit	BASF Test

**Acute inhalative toxicity:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
Diethylenetriamine 111-40-0	NOEL	0,07 mg/l			rat	OECD Guideline 403 (Acute Inhalation Toxicity)
Diethylenetriamine 111-40-0	Acute toxicity estimate (ATE)	0,07 mg/l	dust/mist			Expert judgement

**Skin corrosion/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
3,6,9-Triazaundecamethylenedi amine 112-57-2	corrosive	4 h	rabbit	Draize Test
2-Piperazin-1- ylethylamine 140-31-8	corrosive	20 min	rabbit	not specified
Triethylenetetramine 112-24-3	corrosive		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Diethylenetriamine 111-40-0	corrosive	15 min	rabbit	BASF Test
2-(2- Aminoethylamino)ethanol 111-41-1	corrosive		rabbit	BASF Test

**Serious eye damage/irritation:**

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Diethylenetriamine 111-40-0	corrosive	30 s	rabbit	not specified
2-(2- Aminoethylamino)ethanol 111-41-1	irritating		rabbit	BASF Test

**Respiratory or skin sensitization:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

<b>Hazardous substances CAS-No.</b>	<b>Result</b>	<b>Test type</b>	<b>Species</b>	<b>Method</b>
3,6,9-Triazaundecamethylenedi amine 112-57-2	sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
2-Piperazin-1- ylethylamine 140-31-8	sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Triethylenetetramine 112-24-3	sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Diethylenetriamine 111-40-0	sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2-(2- Aminoethylamino)ethanol 111-41-1	sensitising	Patch-Test	guinea pig	Patch Test

**Germ cell mutagenicity:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

<b>Hazardous substances CAS-No.</b>	<b>Result</b>	<b>Type of study / Route of administration</b>	<b>Metabolic activation / Exposure time</b>	<b>Species</b>	<b>Method</b>
3,6,9-Triazaundecamethylenedi amine 112-57-2	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
3,6,9-Triazaundecamethylenedi amine 112-57-2	ambiguous	sister chromatid exchange assay in mammalian cells	with and without		OECD Guideline 479 (Genetic Toxicology: In Vitro Sister Chromatid Exchange Assay in Mammalian Cells)
3,6,9-Triazaundecamethylenedi amine 112-57-2	negative	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro	with and without		OECD Guideline 482 (Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells In Vitro)
2-Piperazin-1- ylethylamine 140-31-8	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
2-Piperazin-1- ylethylamine 140-31-8	negative	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro	with and without		not specified
2-Piperazin-1- ylethylamine 140-31-8	negative	mammalian cell gene mutation assay	with and without		not specified
Triethylenetetramine 112-24-3	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Triethylenetetramine 112-24-3	negative	DNA damage and repair assay, unscheduled DNA synthesis in mammalian cells in vitro	with and without		OECD Guideline 482 (Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells In Vitro)
Diethylenetriamine 111-40-0	positive	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Diethylenetriamine 111-40-0	negative	in vitro mammalian chromosome aberration test	with and without		Chromosome Aberration Test
2-(2- Aminoethylamino)ethanol 111-41-1	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
3,6,9-Triazaundecamethylenedi amine 112-57-2	negative	intraperitoneal		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
2-Piperazin-1- ylethylamine 140-31-8	negative	intraperitoneal		mouse	not specified
Triethylenetetramine 112-24-3	negative	intraperitoneal		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Diethylenetriamine 111-40-0	negative	oral: gavage		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Diethylenetriamine 111-40-0	negative	oral: gavage		mouse	not specified

**Carcinogenicity**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
Diethylenetriamine 111-40-0	not carcinogenic	dermal	lifetime (appr. 587 d) 3 d/w	mouse	male	OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

**Reproductive toxicity:**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
2-Piperazin-1- ylethylamine 140-31-8	NOAEL P 8000 ppm NOAEL F1 8000 ppm	screening	oral: drinking water	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Diethylenetriamine 111-40-0	NOAEL P 100 mg/kg NOAEL F1 30 mg/kg	screening	oral: gavage	rat	OECD Guideline 421 (Reproduction / Developmental Toxicity Screening Test)

**STOT-single exposure:**

No data available.

**STOT-repeated exposure::**

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
3,6,9-Triazaundecamethylenedi amine 112-57-2	LOAEL 50 mg/kg	oral: gavage	26 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
3,6,9-Triazaundecamethylenedi amine 112-57-2	NOAEL 50 mg/kg	oral: gavage	26 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
2-Piperazin-1- ylethylamine 140-31-8	NOAEL 2000 ppm	oral: drinking water	>= 28 d daily	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Imidazole 288-32-4	NOAEL 62,5 mg/kg	oral: gavage	28 days once daily, 5 d/w	rat	not specified
Triethylenetetramine 112-24-3	LOAEL 50 mg/kg	oral: gavage	26 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Triethylenetetramine 112-24-3	NOAEL 50 mg/kg	oral: gavage	26 w daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Diethylenetriamine 111-40-0	NOAEL 70 - 80 mg/kg	oral: feed	90 d daily	rat	not specified
Diethylenetriamine 111-40-0	NOAEL 0,55 mg/l	inhalation: vapour	15 d 6 h/d	rat	not specified
2-(2- Aminoethylamino)ethanol 111-41-1	LOAEL >= 250 mg/kg	oral: gavage	28 days daily	rat	Guidelines for 28-Day Repeat Dose Toxicity Test (Japan)
2-(2- Aminoethylamino)ethanol 111-41-1	NOAEL 1.000 mg/kg		4 weeks 6 hours/day, 5 days/week	rat	EPA Guideline

**Aspiration hazard:**

No data available.



## SECTION 12: Ecological information

### General ecological information:

Do not empty into drains / surface water / ground water.

### 12.1. Toxicity

#### Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	LC50	420 mg/l	96 h	Poecilia reticulata	OECD Guideline 203 (Fish, Acute Toxicity Test)
2-Piperazin-1-ylethylamine 140-31-8	LC50	> 100 mg/l	96 h	Salmo gairdneri (new name: Oncorhynchus mykiss)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Imidazole 288-32-4	LC50	280 mg/l	48 h	Leuciscus idus	OECD Guideline 203 (Fish, Acute Toxicity Test)
Triethylenetetramine 112-24-3	LC50	570 mg/l	96 h	Poecilia reticulata	OECD Guideline 203 (Fish, Acute Toxicity Test)
Diethylenetriamine 111-40-0	LC50	430 mg/l	96 h	Poecilia reticulata	EU Method C.1 (Acute Toxicity for Fish)
Diethylenetriamine 111-40-0	NOEC	> 10 mg/l	28 d	Gasterosteus aculeatus	OECD Guideline 210 (fish early lite stage toxicity test)
2-(2-Aminoethylamino)ethanol 111-41-1	LC50	> 243 mg/l	48 h	Leuciscus idus	DIN 38412-15

#### Toxicity (Daphnia):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	EC50	24,1 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2-Piperazin-1-ylethylamine 140-31-8	EC50	32 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Imidazole 288-32-4	EC50	341,5 mg/l	48 h	Daphnia magna	EU Method C.2 (Acute Toxicity for Daphnia)
Triethylenetetramine 112-24-3	EC50	31 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Diethylenetriamine 111-40-0	EC50	64,6 mg/l	48 h	Daphnia magna	EU Method C.2 (Acute Toxicity for Daphnia)
2-(2-Aminoethylamino)ethanol 111-41-1	EC50	22 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

#### Chronic toxicity to aquatic invertebrates

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Diethylenetriamine 111-40-0	NOEC	5,6 mg/l	21 d	Daphnia magna	EU Method C.20 (Daphnia magna Reproduction Test)

#### Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	NOEC	0,5 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
3,6,9-Triazaundecamethylenediamine 112-57-2	EC50	6,8 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-Piperazin-1-ylethylamine 140-31-8	NOEC	31 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-Piperazin-1-ylethylamine 140-31-8	EC50	495 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Imidazole 288-32-4	EC50	130 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	DIN 38412-09
Imidazole 288-32-4	EC10	59 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	DIN 38412-09
Triethylenetetramine 112-24-3	EC10	< 2,5 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Triethylenetetramine 112-24-3	EC50	20 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Diethylenetriamine 111-40-0	EC50	1.164 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Diethylenetriamine 111-40-0	NOEC	10 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-(2-Aminoethylamino)ethanol 111-41-1	EC50	358 mg/l	72 h	Desmodesmus subspicatus	DIN 38412-09
2-(2-Aminoethylamino)ethanol 111-41-1	EC10	156 mg/l	72 h	Desmodesmus subspicatus	DIN 38412-09

### Toxicity to microorganisms

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	EC 50	1.600 mg/l	1 h		EU Method C.11 (Biodegradation: Activated Sludge Respiration Inhibition Test)
2-Piperazin-1-ylethylamine 140-31-8	EC10	100 mg/l	17 h		not specified
Imidazole 288-32-4	EC 50	> 45 mg/l	30 min		OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Triethylenetetramine 112-24-3	EC0	137 mg/l	30 min		not specified
Diethylenetriamine 111-40-0	NOEC	6 mg/l	3 h	anaerobic bacteria	not specified
2-(2-Aminoethylamino)ethanol 111-41-1	EC10	82,2 mg/l	17 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)

### 12.2. Persistence and degradability

The product is not biodegradable.

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	under test conditions no biodegradation observed	aerobic	0 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
2-Piperazin-1-ylethylamine 140-31-8	under test conditions no biodegradation observed	aerobic	0 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Imidazole 288-32-4	readily biodegradable	aerobic	90 - 100 %	18 d	OECD Guideline 301 A (new version) (Ready Biodegradability: DOC Die Away Test)
Imidazole 288-32-4	inherently biodegradable	aerobic	83 %	8 d	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
Triethylenetetramine 112-24-3		aerobic	0 %	162 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Triethylenetetramine 112-24-3	under test conditions no biodegradation observed	aerobic	0 %	28 d	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
Diethylenetriamine 111-40-0	inherently biodegradable	aerobic	83 %	28 d	EU Method C.9 (Biodegradation: Zahn-Wellens Test)
Diethylenetriamine 111-40-0	readily biodegradable	aerobic	87 %	21 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
2-(2-Aminoethylamino)ethanol 111-41-1	readily biodegradable	aerobic	> 60 %	28 d	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)

### 12.3. Bioaccumulative potential

No data available.

Hazardous substances CAS-No.	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
Diethylenetriamine 111-40-0	> 0,3 - < 6,3	42 d		Cyprinus carpio	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)
2-(2-Aminoethylamino)ethanol 111-41-1	2,1 - 3,7	42 d	25 °C	Cyprinus carpio	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)

### 12.4. Mobility in soil

Cured adhesives are immobile.

Hazardous substances CAS-No.	LogPow	Temperature	Method
3,6,9-Triazaundecamethylenediamine 112-57-2	-3,16		not specified
2-Piperazin-1-ylethylamine 140-31-8	-1,48		OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Imidazole 288-32-4	-0,02		OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Triethylenetetramine 112-24-3	-2,65		OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Diethylenetriamine 111-40-0	-1,58	20 °C	QSAR (Quantitative Structure Activity Relationship)
2-(2-Aminoethylamino)ethanol 111-41-1	-1,46	25 °C	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)

### 12.5. Results of PBT and vPvB assessment

Hazardous substances CAS-No.	PBT / vPvB
3,6,9-Triazaundecamethylenediamine 112-57-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
2-Piperazin-1-ylethylamine 140-31-8	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Imidazole 288-32-4	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Triethylenetetramine 112-24-3	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Diethylenetriamine 111-40-0	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

### 12.6. Other adverse effects

No data available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Product disposal:

Collection and delivery to recycling enterprise or other registered elimination institution.

Dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:

After use, tubes, cartons and bottles containing residual product should be disposed of as chemically contaminated waste in an authorised legal land fill site or incinerated.

Waste code

08 04 09 waste adhesives and sealants containing organic solvents and other dangerous substances

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.

## SECTION 14: Transport information

### 14.1. UN number

ADR	2735
RID	2735
ADN	2735
IMDG	2735
IATA	2735

### 14.2. UN proper shipping name

ADR	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (Tetraethylene pentamine,N-Aminoethylpiperazine)
RID	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (Tetraethylene pentamine,N-Aminoethylpiperazine)
ADN	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (Tetraethylene pentamine,N-Aminoethylpiperazine)
IMDG	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (Tetraethylene pentamine,N-Aminoethylpiperazine)
IATA	Polyamines, liquid, corrosive, n.o.s. (Tetraethylene pentamine,N-Aminoethylpiperazine)

### 14.3. Transport hazard class(es)

ADR	8
RID	8
ADN	8
IMDG	8
IATA	8

### 14.4. Packing group

ADR	III
RID	III
ADN	III
IMDG	III
IATA	III

### 14.5. Environmental hazards

ADR	Environmentally Hazardous
RID	Environmentally Hazardous
ADN	Environmentally Hazardous
IMDG	Marine pollutant
IATA	not applicable

### 14.6. Special precautions for user

ADR	not applicable Tunnelcode: (E)
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

## SECTION 15: Regulatory information

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

VOC content < 3 %

(2010/75/EC)

#### 15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

### SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H330 Fatal if inhaled.

H335 May cause respiratory irritation.

H360D May damage the unborn child.

H360Df May damage the unborn child. Suspected of damaging fertility.

H361 Suspected of damaging fertility or the unborn child.

H411 Toxic to aquatic life with long lasting effects.

H412 Harmful to aquatic life with long lasting effects.

#### Further information:

This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

**Relevant changes in this safety data sheet are indicated by vertical lines at the left margin in the body of this document. Corresponding text is displayed in a different color on shadowed fields.**