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



SDS No. : 328806
V006.0

LOCTITE CAT 9

Revision: 17.06.2019
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Replaces version from: 29.07.2015

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

**1.1. Product identifier**
LOCTITE CAT 9

**1.2. Relevant identified uses of the substance or mixture and uses advised against**
Intended use:
Hardener

**1.3. Details of the supplier of the safety data sheet**
Henkel Belgium N.V.
Esplanade 1
1020 Brussels

Belgium

Phone: +32 (2) 421 2711
Fax-no.: +32 (2) 420 7025

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

**2.2. Label elements**

**Label elements (CLP):**

| | |
|---|---|
| **Hazard pictogram:** |  |
| **Contains** | 3,6,9-Triazaundecamethylenediamine<br><br>Triethylenetetramine<br><br>Amines, polyethylenepoly-<br><br>3,6,9,12-tetraazatetradecamethylenediamine |
| **Signal word:** | Danger |
| **Hazard statement:** | H312 Harmful in contact with skin.<br>H302 Harmful if swallowed.<br>H314 Causes severe skin burns and eye damage.<br>H317 May cause an allergic skin reaction.<br>H411 Toxic to aquatic life with long lasting effects. |
| **Precautionary statement: Prevention** | P280 Wear protective gloves/protective clothing/eye protection/face protection.<br>P273 Avoid release to the environment. |
| **Precautionary statement: Response** | P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].<br>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P310 Immediately call a POISON CENTER or doctor.<br>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**

**General chemical description:**
Hardener
**Base substances of preparation:**
organic amine

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

| Hazardous components<br>CAS-No. | EC Number<br>REACH-Reg No. | content | Classification |
|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | 203-986-2<br>01-2119487290-37 | 50- 100 % | Acute Tox. 4; Dermal<br>H312<br>Acute Tox. 4; Oral<br>H302<br>Skin Sens. 1<br>H317<br>Aquatic Chronic 2<br>H411<br>Skin Corr. 1B<br>H314 |
| Triethylenetetramine<br>112-24-3 | 203-950-6<br>01-2119487919-13 | 5- < 10 % | Acute Tox. 4; Oral<br>H302<br>Acute Tox. 4; Dermal<br>H312<br>Skin Sens. 1<br>H317<br>Skin Corr. 1B<br>H314<br>Aquatic Chronic 3<br>H412 |
| Amines, polyethylenepoly-<br>68131-73-7 | 268-626-9<br>01-2119485823-28 | 1- < 5 % | Acute Tox. 4; Dermal<br>H312<br>Skin Corr. 1B<br>H314<br>Skin Sens. 1<br>H317<br>Aquatic Acute 1<br>H400<br>Aquatic Chronic 1<br>H410<br>Acute Tox. 4; Oral<br>H302 |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | 223-775-9<br>01-2119485826-22 | 1- < 5 % | Skin Corr. 1B<br>H314<br>Skin Sens. 1<br>H317<br>Aquatic Acute 1<br>H400<br>Aquatic Chronic 1<br>H410<br>Acute Tox. 4<br>H302<br>Acute Tox. 4<br>H312 |

**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:
Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:
Immediately remove soiled or soaked clothing.
Rinse with running water and soap.
Seek medical advice.

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**
SKIN: Redness, inflammation.

INGESTION: Nausea, vomiting, diarrhea, abdominal pain.

SKIN: Rash, Urticaria.

Causes burns.

**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) and carbon dioxide (CO2) can be released.
In case of fire, keep containers cool with water spray.

**5.3. Advice for firefighters**
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**
Avoid contact with skin and eyes.
Wear protective equipment.

**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.
Do not eat, drink or smoke while working.
Wash hands before work breaks and after finishing work.

**7.2. Conditions for safe storage, including any incompatibilities**
Ensure good ventilation/extraction.
Keep container tightly sealed.
Refer to Technical Data Sheet

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

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Occupational Exposure Limits**

Valid for
Great Britain

None

**Occupational Exposure Limits**

Valid for
Ireland

None

**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 | | | | |
| 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 | | |
| Amines, polyethylenepoly- 68131-73-7 | aqua (freshwater) | | 0,0016 mg/l | | | | |
| Amines, polyethylenepoly- 68131-73-7 | aqua (marine water) | | 0,0016 mg/l | | | | |
| Amines, polyethylenepoly- 68131-73-7 | aqua (intermittent releases) | | 0,016 mg/l | | | | |
| Amines, polyethylenepoly- 68131-73-7 | sewage treatment plant (STP) | | 3,19 mg/l | | | | |
| Amines, polyethylenepoly- 68131-73-7 | sediment (freshwater) | | | | 0,14 mg/kg | | |
| Amines, polyethylenepoly- 68131-73-7 | sediment (marine water) | | | | 0,14 mg/kg | | |
| Amines, polyethylenepoly- 68131-73-7 | Air | | | | | | |
| Amines, polyethylenepoly- 68131-73-7 | Soil | | | | 10 mg/kg | | |
| Amines, polyethylenepoly- 68131-73-7 | oral | | | | 0,29 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/m3 | |
| 3,6,9-Triazaundecamethylenediamine 112-57-2 | Workers | inhalation | Acute/short term exposure - systemic effects | | 6940 mg/m3 | |
| 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/m3 | |
| 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/m3 | |
| 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/cm2 | |
| 3,6,9-Triazaundecamethylenediamine 112-57-2 | General population | dermal | Long term exposure - local effects | | 0,56 mg/cm2 | |
| 3,6,9-Triazaundecamethylenediamine 112-57-2 | Workers | dermal | Long term exposure - local effects | | 0,036 mg/cm2 | |
| Trientine 112-24-3 | General population | inhalation | Long term exposure - systemic effects | | 0,29 mg/m3 | |
| 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/cm2 | |
| 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/m3 | |
| Trientine 112-24-3 | General population | inhalation | Acute/short term exposure - systemic effects | | 1600 mg/m3 | |
| 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/cm2 | |
| Trientine 112-24-3 | General population | dermal | Acute/short term exposure - local effects | | 1 mg/cm2 | |
| 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 - | | 1 mg/m3 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | systemic effects | | | |
| Amines, polyethylenepoly-<br>68131-73-7 | Workers | inhalation | Long term exposure - systemic effects | | 1,59 mg/m3 | |
| Amines, polyethylenepoly-<br>68131-73-7 | Workers | inhalation | Acute/short term exposure - systemic effects | | 8550 mg/m3 | |
| Amines, polyethylenepoly-<br>68131-73-7 | Workers | dermal | Long term exposure - systemic effects | | 0,91 mg/kg | |
| Amines, polyethylenepoly-<br>68131-73-7 | Workers | dermal | Long term exposure - local effects | | 44 µg/cm2/day | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | inhalation | Long term exposure - systemic effects | | 0,46 mg/m3 | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | inhalation | Acute/short term exposure - systemic effects | | 2542 mg/m3 | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | dermal | Long term exposure - systemic effects | | 0,4 mg/kg | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | dermal | Acute/short term exposure - systemic effects | | 13 mg/kg | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | dermal | Long term exposure - local effects | | 0,68 mg/cm2 | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | dermal | Acute/short term exposure - local effects | | 1,59 mg/cm2 | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | oral | Long term exposure - systemic effects | | 0,65 mg/kg | |
| Amines, polyethylenepoly-<br>68131-73-7 | General population | oral | Acute/short term exposure - systemic effects | | 32 mg/kg | |

**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 > 30 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 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<br>Liquid<br>Amber |
| Odor | Amine |
| Odour threshold | No data available / Not applicable |
| pH | Not applicable |
| Melting point | No data available / Not applicable |
| Solidification temperature | No data available / Not applicable |
| Initial boiling point | 320 °C (608 °F) |
| Flash point | 170 °C (338 °F) |
| Evaporation rate | No data available / Not applicable |
| Flammability | No data available / Not applicable |
| Explosive limits | No data available / Not applicable |
| Vapour pressure | < 0,1 mm hg |
| Relative vapour density: | No data available / Not applicable |
| Density<br>() | 0,99 g/cm3 |
| Bulk density | No data available / Not applicable |
| Solubility | No data available / Not applicable |
| Solubility (qualitative)<br>(Solvent: Water) | Soluble |
| 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**

| | |
|---|---|
| Ignition temperature | 321 °C (609.8 °F) |

## SECTION 10: Stability and reactivity

**10.1. Reactivity**
Strong oxidizing agents.
Acids.

**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<br>CAS-No. | Value type | Value | Species | Method |
|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | LD50 | 1.716 mg/kg | rat | OECD Guideline 401 (Acute Oral Toxicity) |
| Triethylenetetramine<br>112-24-3 | LD50 | 1.591 mg/kg | rat | OECD Guideline 401 (Acute Oral Toxicity) |
| Amines, polyethylenepoly-<br>68131-73-7 | LD50 | 1.716,2 mg/kg | rat | OECD Guideline 401 (Acute Oral Toxicity) |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | LD50 | 1.716,2 mg/kg | rat | OECD Guideline 401 (Acute Oral Toxicity) |

**Acute dermal toxicity:**

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

| Hazardous substances<br>CAS-No. | Value type | Value | Species | Method |
|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | LD50 | 1.260 mg/kg | rabbit | not specified |
| Triethylenetetramine<br>112-24-3 | LD50 | 1.465 mg/kg | rabbit | OECD Guideline 402 (Acute Dermal Toxicity) |
| Amines, polyethylenepoly-<br>68131-73-7 | LD50 | 1.465,4 mg/kg | rabbit | OECD Guideline 402 (Acute Dermal Toxicity) |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | LD50 | 1.465,4 mg/kg | rabbit | OECD Guideline 402 (Acute Dermal Toxicity) |

**Acute inhalative toxicity:**

No data available.

**Skin corrosion/irritation:**

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

| Hazardous substances<br>CAS-No. | Result | Exposure time | Species | Method |
|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | corrosive | 4 h | rabbit | Draize Test |
| Triethylenetetramine<br>112-24-3 | corrosive | | rabbit | OECD Guideline 404 (Acute Dermal Irritation / Corrosion) |
| Amines, polyethylenepoly-<br>68131-73-7 | Category 1B (corrosive) | | | OECD Guideline 435 (In Vitro Membrane Barrier Test Method for Skin Corrosion) |

**Serious eye damage/irritation:**

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

| Hazardous substances<br>CAS-No. | Result | Exposure time | Species | Method |
|---|---|---|---|---|
| Amines, polyethylenepoly-<br>68131-73-7 | Category 1 (irreversible effects on the eye) | | rabbit | OECD Guideline 405 (Acute Eye Irritation / Corrosion) |

**Respiratory or skin sensitization:**

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

| Hazardous substances<br>CAS-No. | Result | Test type | Species | Method |
|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | sensitising | Buehler test | guinea pig | OECD Guideline 406 (Skin Sensitisation) |
| Triethylenetetramine<br>112-24-3 | sensitising | Buehler test | guinea pig | OECD Guideline 406 (Skin Sensitisation) |
| Amines, polyethylenepoly-<br>68131-73-7 | sensitising | Buehler test | guinea pig | OECD Guideline 406 (Skin Sensitisation) |

**Germ cell mutagenicity:**

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

| Hazardous substances CAS-No. | Result | Type of study / Route of administration | Metabolic activation / Exposure time | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine 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-Triazaundecamethylenediamine 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-Triazaundecamethylenediamine 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) |
| 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) |
| Amines, polyethylenepoly- 68131-73-7 | positive | bacterial reverse mutation assay (e.g Ames test) | with and without | | OECD Guideline 471 (Bacterial Reverse Mutation Assay) |

**Carcinogenicity**

No data available.

**Reproductive toxicity:**

No data available.

**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<br>CAS-No. | Result / Value | Route of application | Exposure time / Frequency of treatment | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | LOAEL 50 mg/kg | oral: gavage | 26 w<br>daily | rat | OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) |
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | NOAEL 50 mg/kg | oral: gavage | 26 w<br>daily | rat | OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) |
| Triethylenetetramine<br>112-24-3 | LOAEL 50 mg/kg | oral: gavage | 26 w<br>daily | rat | OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) |
| Triethylenetetramine<br>112-24-3 | NOAEL 50 mg/kg | oral: gavage | 26 w<br>daily | rat | OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) |
| Amines, polyethylenepoly-<br>68131-73-7 | NOAEL 350 mg/kg | oral: gavage | 4 and 8 weeks<br>daily | rat | OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity in Rodents) |

**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<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | LC50 | 420 mg/l | 96 h | Poecilia reticulata | OECD Guideline 203 (Fish, Acute Toxicity Test) |
| Triethylenetetramine<br>112-24-3 | LC50 | 570 mg/l | 96 h | Poecilia reticulata | OECD Guideline 203 (Fish, Acute Toxicity Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | LC50 | 100 mg/l | 96 h | Poecilia reticulata | EU Method C.1 (Acute Toxicity for Fish) |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | LC50 | > 100 mg/l | 96 h | Brachydanio rerio (new name: Danio rerio) | OECD Guideline 203 (Fish, Acute Toxicity Test) |

**Toxicity (Daphnia):**

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

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | EC50 | 24,1 mg/l | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Triethylenetetramine<br>112-24-3 | EC50 | 31 mg/l | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | EC50 | 2,2 mg/l | 48 h | Daphnia magna | EU Method C.2 (Acute Toxicity for Daphnia) |

**Chronic toxicity to aquatic invertebrates**

No data available.

**Toxicity (Algae):**

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

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>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<br>112-57-2 | EC50 | 6,8 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Triethylenetetramine<br>112-24-3 | EC10 | < 2,5 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Triethylenetetramine<br>112-24-3 | EC50 | 20 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | EC50 | 0,5 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | NOEC | 0,16 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |

**Toxicity to microorganisms**

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

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | EC 50 | 1.600 mg/l | 1 h | | EU Method C.11 (Biodegradation: Activated Sludge Respiration Inhibition Test) |
| Triethylenetetramine<br>112-24-3 | EC0 | 137 mg/l | 30 min | Pseudomonas putida | DIN 38412, part 27 (Bacterial oxygen consumption test) |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | EC 50 | > 100 mg/l | | | OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test) |

### 12.2. Persistence and degradability

The product is not biodegradable.

| Hazardous substances<br>CAS-No. | Result | Test type | Degradability | Exposure time | Method |
|---|---|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | under test conditions no biodegradation observed | aerobic | 0 % | 28 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| Triethylenetetramine<br>112-24-3 | not inherently biodegradable | aerobic | 0 % | 28 d | OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test) |
| Triethylenetetramine<br>112-24-3 | not readily biodegradable. | aerobic | 0 % | 162 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | not readily biodegradable. | aerobic | 0 % | 162 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| Amines, polyethylenepoly-<br>68131-73-7 | not inherently biodegradable | aerobic | 16 % | 84 day | OECD Guideline 302 A (Inherent Biodegradability: Modified SCAS Test) |

### 12.3. Bioaccumulative potential

No data available.

**12.4. Mobility in soil**

Cured adhesives are immobile.

| Hazardous substances<br>CAS-No. | LogPow | Temperature | Method |
|---|---|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | -3,16 | | not specified |
| Triethylenetetramine<br>112-24-3 | -2,65 | | OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method) |
| Amines, polyethylenepoly-<br>68131-73-7 | -3,67 | | QSAR (Quantitative Structure Activity Relationship) |
| 3,6,9,12-tetraazatetradecamethylenediamine<br>4067-16-7 | -3,67 | | not specified |

**12.5. Results of PBT and vPvB assessment**

| Hazardous substances<br>CAS-No. | PBT / vPvB |
|---|---|
| 3,6,9-Triazaundecamethylenediamine<br>112-57-2 | Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria. |
| Triethylenetetramine<br>112-24-3 | Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria. |
| Amines, polyethylenepoly-<br>68131-73-7 | 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:
Do not empty into drains / surface water / ground water.
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 | 2320 |
| RID | 2320 |
| ADN | 2320 |
| IMDG | 2320 |
| IATA | 2320 |

**14.2. UN proper shipping name**

| | |
|---|---|
| ADR | TETRAETHYLENEPENTAMINE |
| RID | TETRAETHYLENEPENTAMINE |
| ADN | TETRAETHYLENEPENTAMINE |
| IMDG | TETRAETHYLENEPENTAMINE |
| IATA | Tetraethylenepentamine |

**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<br>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 (2010/75/EC) < 1 %

**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.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

**Further information:**

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