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



SDS No. : 673959
V002.0

LOCTITE ABLESTIK ABP 8303A 8303A 5CC/10CC SY

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

### 1.1. Product identifier

LOCTITE ABLESTIK ABP 8303A 8303A 5CC/10CC SY
UFI: PDND-7XE2-3206-00RT

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

Intended use:
Die attach adhesive

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

Henkel Ireland
Operations and Research Limited
Tallaght Business Park, Whitestown
24 Dublin

Ireland

Phone: +353 (0353) 1 404 6444

SDSinfo.Adhesive@henkel.com
For Safety Data Sheet updates please visit our website www.mysds.henkel.com or www.henkel-adhesives.com.

### 1.4. Emergency telephone number

00353 14046280

National Poisons Information Centre: Members of Public: +353 (1) 809 2166. (8.00 a.m. to 10.00 p.m. 7 days a week)
Healthcare Professionals: +353 (1) 809 2566 (24-hour service)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification (CLP):**

| | |
|---|---|
| Acute toxicity | Category 4 |
| H332 Harmful if inhaled. | |
| Route of Exposure: Inhalation | |
| Skin sensitizer | Category 1 |
| H317 May cause an allergic skin reaction. | |
| Toxic to reproduction | Category 2 |
| H361f Suspected of damaging fertility. | |
| Specific target organ toxicity - repeated exposure | Category 2 |
| H373 May cause damage to organs through prolonged or repeated exposure. | |
| Acute hazards to the aquatic environment | Category 1 |
| H400 Very toxic to aquatic life. | |
| Chronic hazards to the aquatic environment | Category 1 |
| H410 Very toxic to aquatic life with long lasting effects. | |

**2.2. Label elements**

**Label elements (CLP):**

| | |
|---|---|
| **Hazard pictogram:** |  |
| **Contains** | Silver >= 99,9 % Ag in powder (>100nm<1mm )<br><br>2-Propenoic acid, dodecyl ester<br>N,N-(m-phenylene)dimaleimide<br>2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane<br><br>2,6-Diglycidyl phenyl allyl ether oligomer<br>Epoxycyclohexylethyltrimethoxysilane |
| **Signal word:** | Warning |
| **Hazard statement:** | H317 May cause an allergic skin reaction.<br>H332 Harmful if inhaled.<br>H361f Suspected of damaging fertility.<br>H373 May cause damage to organs through prolonged or repeated exposure.<br>H410 Very toxic to aquatic life with long lasting effects. |
| **Precautionary statement: Prevention** | P261 Avoid breathing vapors.<br>P273 Avoid release to the environment.<br>P280 Wear protective gloves/protective clothing. |
| **Precautionary statement: Response** | P333+P313 If skin irritation or rash occurs: Get medical advice/attention. |

**2.3. Other hazards**

None if used properly.

**Following substances are present in a concentration ≥ the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):**

This mixture does not contain any substances in a concentration ≥ the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

## SECTION 3: Composition/information on ingredients

**3.2. Mixtures**

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

| Hazardous components<br>CAS-No.<br>EC Number<br>REACH-Reg No. | Concentration | Classification | Specific Conc. Limits, M-factors and ATEs | Add. Information |
|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4<br>231-131-3<br>01-2119555669-21 | 50- < 100 % | Repr. 2, H361f<br>STOT RE 2, H373<br>Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410 | M acute = 10<br>M chronic = 10 | EU OEL |
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6<br>271-608-3 | 5- < 10 % | Acute Tox. 4, Inhalation, H332<br>Aquatic Chronic 2, H411 | inhalation:ATE = 2,791 mg/l;dust/mist | |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0<br>218-463-4<br>01-2119976296-23 | 1- < 5 % | Skin Sens. 1, H317<br>STOT SE 3, H335<br>Skin Irrit. 2, H315<br>Eye Irrit. 2, H319<br>Aquatic Chronic 2, H411 | STOT SE 3; H335; C >= 10 % | |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | 1- < 5 % | Acute Tox. 4, Oral, H302<br>Acute Tox. 4, Dermal, H312<br>Skin Irrit. 2, H315<br>Aquatic Acute 1, H400<br>Aquatic Chronic 1, H410 | M acute = 10<br>M chronic = 1<br>=====<br>dermal:ATE = 1.100 mg/kg<br>oral:ATE = 500 mg/kg | |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7<br>221-112-8<br>01-2120756106-57 | 1- < 5 % | Acute Tox. 4, Oral, H302<br>Skin Sens. 1A, H317<br>Acute Tox. 2, Inhalation, H330<br>Aquatic Chronic 2, H411 | oral:ATE = 500 mg/kg | |
| 2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane<br>13561-08-5<br>236-951-5 | 0,1- < 1 % | Skin Irrit. 2, Dermal, H315<br>Skin Sens. 1, H317<br>Eye Irrit. 2, H319<br>Aquatic Chronic 2, H411<br>Muta. 2, H341 | | |
| 2,6-Diglycidyl phenyl allyl ether oligomer<br><br>417-470-1 | 0,1- < 1 % | Muta. 2, H341<br>Skin Sens. 1, H317 | | |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3<br>222-217-1<br>01-2120736721-57 | 0,1- < 1 % | Skin Sens. 1B, H317<br>Muta. 2, H341<br>Carc. 2, H351<br>Aquatic Chronic 3, H412 | | |

**If no ATE values are displayed, please refer to LD/LC50 values in Section 11.**
**For full text of the H - statements and other abbreviations see section 16 "Other information".**

## 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:
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**
SKIN: Rash, Urticaria.

RESPIRATORY: Irritation, coughing, shortness of breath, chest tightness.

Prolonged or repeated contact may cause eye irritation.

**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 (CO2) and nitrogen oxides (NOx) 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.
Keep away from sources of ignition.

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

**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)**
Die attach adhesive

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

**Occupational Exposure Limits**

Valid for
Ireland

| Ingredient [Regulated substance] | ppm | mg/m$^3$ | Value type | Short term exposure limit category / Remarks | Regulatory list |
|---|---|---|---|---|---|
| Silver<br>7440-22-4<br>[Silver, metallic] | | 0,1 | Time Weighted Average (TWA): | Indicative | ECTLV |
| Silver<br>7440-22-4<br>[Silver (metallic)] | | 0,1 | Time Weighted Average (TWA): | Indicative OELV | IR_OEL |

**Occupational Exposure Limits**

Valid for
Great Britain

| Ingredient [Regulated substance] | ppm | mg/m$^3$ | Value type | Short term exposure limit category / Remarks | Regulatory list |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment<br>7440-22-4<br>[SILVER (METALLIC)] | | 0,1 | Time Weighted Average (TWA): | | EH40 WEL |

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

| Name on list | Environmental Compartment | Exposure period | Value | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | mg/l | ppm | mg/kg | others | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | aqua (freshwater) | | 0,00004 mg/l | | | | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | aqua (marine water) | | 0,00086 mg/l | | | | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | sewage treatment plant (STP) | | 0,025 mg/l | | | | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | sediment (freshwater) | | | | 438,13 mg/kg | | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | sediment (marine water) | | | | 438,13 mg/kg | | |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | Air | | | | | | no hazard identified |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | Soil | | | | 1,41 mg/kg | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | aqua (freshwater) | | 0,01 mg/l | | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | aqua (marine water) | | 0,001 mg/l | | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | sewage treatment plant (STP) | | 0,051 mg/l | | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | sediment (freshwater) | | | | 0,346 mg/kg | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | sediment (marine water) | | | | 0,035 mg/kg | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Soil | | | | 0,063 mg/kg | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | oral | | | | 0,05 mg/kg | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Freshwater - intermittent | | 0,1 mg/l | | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Marine water - intermittent | | 0,01 mg/l | | | | |

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

| Name on list | Application Area | Route of Exposure | Health Effect | Exposure Time | Value | Remarks |
|---|---|---|---|---|---|---|
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | Workers | inhalation | Long term exposure - systemic effects | | 0,1 mg/m3 | no hazard identified |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | General population | inhalation | Long term exposure - systemic effects | | 0,04 mg/m3 | no hazard identified |
| Silver >= 99,9 % Ag as powder (>100nm<1mm ) classified for environment 7440-22-4 | General population | oral | Long term exposure - systemic effects | | 1,2 mg/kg | no hazard identified |
| Dodecyl acrylate 2156-97-0 | Workers | inhalation | Long term exposure - systemic effects | | 97,9 mg/m3 | |
| Dodecyl acrylate 2156-97-0 | Workers | dermal | Long term exposure - systemic effects | | 138,9 mg/kg | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | inhalation | Long term exposure - systemic effects | | 0,176 mg/m3 | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | dermal | Long term exposure - systemic effects | | 0,05 mg/kg | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | General population | dermal | Long term exposure - systemic effects | | 0,025 mg/kg | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | General population | oral | Long term exposure - systemic effects | | 0,025 mg/kg | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | General population | inhalation | Long term exposure - systemic effects | | 0,043 mg/m3 | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | inhalation | Acute/short term exposure - systemic effects | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | dermal | Long term exposure - local effects | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | dermal | Acute/short term exposure - local effects | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | Workers | dermal | Long term exposure - local effects | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | General population | dermal | Long term exposure - local effects | | | |
| 1,1'-(1,3-Phenylene)bis-1H-pyrrole-2,5-dione 3006-93-7 | General population | dermal | Acute/short term exposure - local effects | | | |

**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**

| | |
|---|---|
| Delivery form | paste |
| Colour | Silver |
| Odor | mild |
| Physical state | liquid |
| Melting point | Not applicable, Product is a liquid |
| Initial boiling point | Currently under determination |
| Flammability | The product is not flammable. |
| Explosive limits | Not applicable, The product is not flammable. |
| Flash point | > 93 °C (> 199.4 °F) |
| Auto-ignition temperature | Not applicable, The product is not flammable. |
| Decomposition temperature | Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use |
| pH | Not applicable, Product is non-polar/aprotic. |
| Viscosity (kinematic) | Currently under determination |
| Solubility (qualitative)<br>(20 °C (68 °F); Solvent: Water) | Insoluble |
| Partition coefficient: n-octanol/water | Not applicable<br>Mixture |
| Vapour pressure | Currently under determination |
| Density<br>(20 °C (68 °F)) | 3,5 g/cm3 no method / method unknown |
| Relative vapour density: | Currently under determination |
| Particle characteristics | Not applicable<br>Product is a liquid |

**9.2. Other information**

Other information not applicable for this product

## SECTION 10: Stability and reactivity

**10.1. Reactivity**
Reacts with strong oxidants.
Acids.
Reducing agents.
Strong bases.

**10.2. Chemical stability**
Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**
See section reactivity

**10.4. Conditions to avoid**
Stable under normal conditions of storage and use.

**10.5. Incompatible materials**
See section reactivity.

**10.6. Hazardous decomposition products**
carbon oxides.
Hydrocarbons
nitrogen oxides
Rapid polymerisation may generate excessive heat and pressure.

## SECTION 11: Toxicological information

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

**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 |
|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm ) 7440-22-4 | LD50 | > 2.000 mg/kg | rat | OECD Guideline 401 (Acute Oral Toxicity) |
| Dicyclopentenyloxyethyl Methacrylate. 68586-19-6 | LD50 | > 5.000 mg/kg | rat | not specified |
| 2-Propenoic acid, dodecyl ester 2156-97-0 | LD50 | > 5.570 mg/kg | rat | equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity) |
| Amines, C36-alkylenedi-, maleated 682800-79-9 | Acute toxicity estimate (ATE) | 500 mg/kg | | Expert judgement |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | Acute toxicity estimate (ATE) | 500 mg/kg | | Expert judgement |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | LD50 | > 300 - 2.000 mg/kg | rat | OECD Guideline 423 (Acute Oral toxicity) |
| 2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane 13561-08-5 | LD50 | 4.240 mg/kg | rat | not specified |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | LD50 | 13.000 mg/kg | rat | not specified |

**Acute dermal toxicity:**

Prolonged or repeated skin contact with silver and its salts may cause a blue-gray discoloration of the skin and mucous membranes that is irreversible (Argyria).

| Hazardous substances<br>CAS-No. | Value type | Value | Species | Method |
|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | LD50 | > 2.000 mg/kg | rat | OECD Guideline 402 (Acute Dermal Toxicity) |
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | LD50 | > 5.000 mg/kg | rabbit | not specified |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | LD50 | > 5.000 mg/kg | rat | OECD Guideline 402 (Acute Dermal Toxicity) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | Acute toxicity estimate (ATE) | 1.100 mg/kg | | Expert judgement |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | LD50 | 6.700 mg/kg | rabbit | not specified |

**Acute inhalative 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 | Test atmosphere | Exposure time | Species | Method |
|---|---|---|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | LC50 | > 2,79 mg/l | dust/mist | 4 h | rat | not specified |
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | Acute toxicity estimate (ATE) | 2,791 mg/l | dust/mist | 4 h | | Expert judgement |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | LC50 | 0,055 mg/l | dust | 4 h | rat | OECD Guideline 403 (Acute Inhalation Toxicity) |

**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 |
|---|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | slightly irritating | 24 h | rabbit | not specified |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | irritating | | not specified | Expert judgement |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | not corrosive | 60 min | Human, EpiDermTM SIT (EPI-200), Reconstructed Human Epidermis (RHE) | OECD Guideline 431 (In Vitro Skin Corrosion: Reconstructed Human Epidermis (RHE) Test Method) |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | not irritating | 60 min | Human, EpiDermTM SIT (EPI-200), Reconstructed Human Epidermis (RHE) | OECD Guideline 439 (In Vitro Skin Irritation: Reconstructed Human Epidermis (RHE) Test Method) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | not irritating | 4 h | rabbit | equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion) |

**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 |
|---|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate. 68586-19-6 | not irritating | | rabbit | not specified |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | not irritating | | Bovine, cornea, in vitro test | OECD Guideline 437 (BCOP) |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | not irritating | | rabbit | equivalent or similar to 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 CAS-No. | Result | Test type | Species | Method |
|---|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate. 68586-19-6 | not sensitising | Buehler test | guinea pig | not specified |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | not sensitising | Mouse local lymphnode assay (LLNA) | mouse | OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay) |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | 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 |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm ) 7440-22-4 | negative | in vitro mammalian cell micronucleus test | with and without | | OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test) |
| Dicyclopentenyloxyethyl Methacrylate. 68586-19-6 | negative | bacterial reverse mutation assay (e.g Ames test) | | | not specified |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | negative | bacterial reverse mutation assay (e.g Ames test) | with and without | | OECD Guideline 471 (Bacterial Reverse Mutation Assay) |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | negative | in vitro mammalian chromosome aberration test | with and without | | OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test) |
| N,N-(m-phenylene)dimaleimide 3006-93-7 | negative | mammalian cell gene mutation assay | with and without | | OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test) |
| 2,6-Diglycidyl phenyl allyl ether oligomer | positive with metabolic activation | bacterial reverse mutation assay (e.g Ames test) | | | not specified |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | positive | mammalian cell gene mutation assay | with and without | | equivalent or similar to OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test) |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | negative | bacterial reverse mutation assay (e.g Ames test) | with and without | | OECD Guideline 471 (Bacterial Reverse Mutation Assay) |
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | positive | sister chromatid exchange assay in mammalian cells | with and without | | EU Method B.19 (Sister Chromatid Exchange Assay In Vitro) |
| 2,6-Diglycidyl phenyl allyl ether oligomer | positive | intraperitoneal | | | 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 |
|---|---|---|---|---|---|---|
| Epoxycyclohexylethyltrimethoxysilane 3388-04-3 | carcinogenic | dermal | Chronic 3 d / week | mouse | male | not specified |

**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 |
|---|---|---|---|---|---|
| N,N-(m-phenylene)dimaleimide 3006-93-7 | NOAEL P 240 mg/kg<br><br>NOAEL F1 240 mg/kg | screening | oral: gavage | rat | OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the 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 |
|---|---|---|---|---|---|
| N,N-(m-phenylene)dimaleimide 3006-93-7 | NOAEL 15 mg/kg | oral: gavage | 42-52 d daily | rat | OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test) |

**Aspiration hazard:**

No data available.

**11.2 Information on other hazards**

not applicable

## 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.

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | LC50 | 0,0012 mg/l | 96 h | Pimephales promelas | other guideline: |
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | EC10 | 0,00019 mg/l | 217 d | Salmo trutta | OECD Guideline 210 (fish early lite stage toxicity test) |
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | LC50 | 9 mg/l | 96 h | Lepomis macrochirus | OECD Guideline 203 (Fish, Acute Toxicity Test) |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | LC50 | Toxicity > Water solubility | 96 h | Pimephales promelas | other guideline: |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | NOEC | Toxicity > Water solubility | 30 d | Brachydanio rerio (new name: Danio rerio) | OECD Guideline 210 (fish early lite stage toxicity test) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | LC0 | > 0,354 mg/l | 96 h | Danio rerio | OECD Guideline 203 (Fish, Acute Toxicity Test) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | LC50 | 42,3 mg/l | 96 h | Cyprinus carpio | OECD Guideline 203 (Fish, Acute Toxicity Test) |

**Toxicity (aquatic invertebrates):**

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

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | EC50 | 0,00022 mg/l | 48 h | Daphnia magna | other guideline: |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | EC50 | Toxicity > Water solubility | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | EC50 | 31,6 mg/l | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | EC50 | 58 mg/l | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |

**Chronic toxicity (aquatic invertebrates):**

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | Value type | Value | Exposure time | Species | Method |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | NOEC | 0,00032 mg/l | 21 d | Daphnia magna | EPA OPPTS 850.1300 (Daphnid Chronic Toxicity Test) |

| | | | | | |
|---|---|---|---|---|---|
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | NOEC | Toxicity > Water solubility | 21 d | Daphnia magna | OECD 211 (Daphnia magna, Reproduction Test) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | EC10 | 0,016 mg/l | 21 day | Daphnia magna | OECD 211 (Daphnia magna, Reproduction Test) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | NOEC | 16 mg/l | 21 d | Daphnia magna | OECD 211 (Daphnia magna, Reproduction Test) |

**Toxicity (Algae):**

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

The table below presents the data of the classified substances present in the mixture.

| **Hazardous substances<br>CAS-No.** | **Value type** | **Value** | **Exposure time** | **Species** | **Method** |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | EC10 | 0,00016 mg/l | 15 d | other: | other guideline: |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | EC50 | Toxicity > Water solubility | 72 h | Pseudokirchneriella subcapitata | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | EC50 | 0,056 mg/l | 72 h | Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | EC10 | 0,015 mg/l | 72 h | Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | ErC50 | 67,898 mg/l | 72 h | Desmodesmus subspicatus | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | EC10 | 0,308 mg/l | 72 h | Desmodesmus subspicatus | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | NOEC | 6 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | EC50 | 90 mg/l | 72 h | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |

**Toxicity (microorganisms):**

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

The table below presents the data of the classified substances present in the mixture.

| **Hazardous substances<br>CAS-No.** | **Value type** | **Value** | **Exposure time** | **Species** | **Method** |
|---|---|---|---|---|---|
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | EC 50 | > 10.000 mg/l | 30 min | | not specified |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | EC 50 | > 100 mg/l | 30 min | | OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test) |

**12.2. Persistence and degradability**

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | Result | Test type | Degradability | Exposure time | Method |
|---|---|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | not readily biodegradable. | aerobic | 0 % | 30 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | readily biodegradable | aerobic | 80 - 90 % | 28 d | OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | not readily biodegradable. | aerobic | 0 % | 28 day | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | not readily biodegradable. | aerobic | 0 % | 28 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |
| 2,6-Diglycidyl phenyl allyl ether oligomer | | | 7 % | 28 day | not specified |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | | aerobic | 28 % | 28 d | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test) |

**12.3. Bioaccumulative potential**

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | Bioconcentration factor (BCF) | Exposure time | Temperature | Species | Method |
|---|---|---|---|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm )<br>7440-22-4 | 70 | 42 d | 20 °C | Cyprinus carpio | other guideline: |

**12.4. Mobility in soil**

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | LogPow | Temperature | Method |
|---|---|---|---|
| Dicyclopentenyloxyethyl Methacrylate.<br>68586-19-6 | 3,39 | | not specified |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | 6,13 | | QSAR (Quantitative Structure Activity Relationship) |
| Amines, C36-alkylenedi-, maleated<br>682800-79-9 | > 4 | | |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | 0,67 | 24 °C | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method) |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3 | 4,1 | 23 °C | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method) |

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

The table below presents the data of the classified substances present in the mixture.

| Hazardous substances<br>CAS-No. | PBT / vPvB |
|---|---|
| Silver >= 99,9 % Ag in powder (>100nm<1mm)<br>7440-22-4 | Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria. |
| 2-Propenoic acid, dodecyl ester<br>2156-97-0 | Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria. |
| N,N-(m-phenylene)dimaleimide<br>3006-93-7 | Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria. |

**12.6. Endocrine disrupting properties**

not applicable

**12.7. 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 or ID number**

| | |
|---|---|
| ADR | 3082 |
| RID | 3082 |
| IMDG | 3082 |
| IATA | 3082 |

**14.2. UN proper shipping name**

| | |
|---|---|
| ADR | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver) |
| RID | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver) |
| IMDG | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver) |
| IATA | Environmentally hazardous substance, liquid, n.o.s. (Silver) |

**14.3. Transport hazard class(es)**

| | |
|---|---|
| ADR | 9 |
| RID | 9 |
| IMDG | 9 |
| IATA | 9 |

**14.4. Packing group**

| | |
|---|---|
| ADR | III |
| RID | III |
| IMDG | III |
| IATA | III |

**14.5. Environmental hazards**

| | |
|---|---|
| ADR | Environmentally Hazardous |
| RID | Environmentally Hazardous |
| ADN | Environmentally Hazardous |
| IMDG | Marine Pollutant |
| IATA | Environmentally Hazardous |

**14.6. Special precautions for user**

| | |
|---|---|
| ADR | not applicable<br>Tunnelcode: |
| RID | not applicable |
| ADN | not applicable |
| IMDG | not applicable |
| IATA | not applicable |

The transport classifications in this section apply generally to packed and bulk goods alike. For containers with a net volume of no more than 5 L for liquid substances or a net mass of no more than 5 kg for solid substances per individual or inner package, the exemptions SP 375 (ADR), A197 (IATA), 2.10.2.7 (IMDG), NZ 4.3(10) may be applied, which can result in a deviation from the transport classification for packed goods.

**14.7. Maritime transport in bulk according to IMO instruments**

not applicable

## SECTION 15: Regulatory information

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

| | |
|---|---|
| Ozone Depleting Substance (ODS) (Regulation (EC) No 2024/590): | Not applicable |
| Prior Informed Consent (PIC) (Regulation (EU) No 649/2012): | Not applicable |
| Persistent organic pollutants (Regulation (EU) 2019/1021): | Not applicable |
| VOC content (2010/75/EC) | < 3 % |

**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.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H361f Suspected of damaging fertility.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

| | |
|---|---|
| ED: | Substance identified as having endocrine disrupting properties |
| EU OEL: | Substance with a Union workplace exposure limit |
| EU EXPLD 1: | Substance listed in Annex I, Reg (EC) No. 2019/1148 |
| EU EXPLD 2 | Substance listed in Annex II, Reg (EC) No. 2019/1148 |
| SVHC: | Substance of very high concern (REACH Candidate List) |
| PBT: | Substance fulfilling persistent, bioaccumulative and toxic criteria |
| PBT/vPvB: | Substance fulfilling persistent, bioaccumulative and toxic plus very persistent and very bioaccumulative criteria |
| vPvB: | Substance fulfilling very persistent and very bioaccumulative criteria |

**Further information:**

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