



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

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LOCTITE ABLESTIK ABP 6389 5CC

SDS No. : 708362

V004.0

Revision: 09.10.2025

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Replaces version from: 07.02.2025

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

#### 1.1. Product identifier

LOCTITE ABLESTIK ABP 6389 5CC

UFI: T6WC-KX1V-D20J-DUED

#### 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](http://www.mysds.henkel.com) or [www.henkel-adhesives.com](http://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):

|                                                                         |             |
|-------------------------------------------------------------------------|-------------|
| Serious eye irritation                                                  | Category 2  |
| H319 Causes serious eye irritation.                                     |             |
| Skin sensitizer                                                         | Category 1  |
| H317 May cause an allergic skin reaction.                               |             |
| Germ cell mutagenicity                                                  | Category 2  |
| H341 Suspected of causing genetic defects.                              |             |
| Carcinogenicity                                                         | Category 1B |
| H350 May cause cancer.                                                  |             |
| 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  $\geq 99,9\%$  Ag in powder ( $>100\text{nm}<1\text{mm}$ )

Dihydro-3-(tetrapropenyl)furan-2,5-dione

Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met

Diglycidyl resorcinol ether

Polyglycidyl ester

1,6-Naphthalenediol diglycidyl ether

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane

Epoxycyclohexylethyltrimethoxysilane

Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol

maleic anhydride

##### Signal word:

Danger

##### Hazard statement:

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H361f Suspected of damaging fertility.

H373 May cause damage to organs through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.

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|                                                |                                                                                                                                                                                                                       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supplemental information</b>                | Restricted to professional users.                                                                                                                                                                                     |
| <b>Precautionary statement:<br/>Prevention</b> | P201 Obtain special instructions before use.<br>P273 Avoid release to the environment.<br>P280 Wear protective gloves/protective clothing.                                                                            |
| <b>Precautionary statement:<br/>Response</b>   | P308+P313 IF exposed or concerned: Get medical advice/attention.<br>P333+P313 If skin irritation or rash occurs: Get medical advice/attention.<br>P337+P313 If eye irritation persists: Get medical advice/attention. |

### 2.3. Other hazards

None if used properly.

**Following substances are present in a concentration  $\geq$  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  $\geq$  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 No<br>REACH-Reg. No.                                                        | Concentration | Classification                                                                                                                                                                          | Specific Conc. Limits, M-factors and ATEs                     | Add. Information |
|-------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------|
| Silver >= 99,9 % Ag in powder<br>(>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           |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7<br>247-781-6<br>01-2119979080-37                           | 5- < 10 %     | Skin Sens. 1A, H317<br>Eye Irrit. 2, H319<br>Aquatic Chronic 4, H413<br>STOT RE 2, H373                                                                                                 |                                                               |                  |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                                                  | 1- < 5 %      | Muta. 2, H341<br>Skin Sens. 1B, H317<br>Aquatic Chronic 4, H413                                                                                                                         |                                                               |                  |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4<br>204-685-9<br>01-2119475110-51                                      | 1- < 5 %      | Eye Irrit. 2, H319                                                                                                                                                                      |                                                               |                  |
| Diglycidyl resorcinol ether<br>101-90-6<br>202-987-5                                                              | 1- < 5 %      | Acute Tox. 4, Oral, H302<br>Eye Irrit. 2, H319<br>Skin Irrit. 2, H315<br>Skin Sens. 1, H317<br>Aquatic Chronic 2, H411<br>Carc. 1B, H350<br>Muta. 2, H341<br>Acute Tox. 3, Dermal, H311 | dermal:ATE = 300 mg/kg<br>oral:ATE = 500 mg/kg                |                  |
| Polyglycidyl ester<br>68475-94-5<br>500-215-4                                                                     | 1- < 5 %      | Aquatic Chronic 4, H413<br>Skin Sens. 1, H317<br>STOT SE 3, H335<br>Eye Irrit. 2, H319<br>Skin Irrit. 2, H315                                                                           | oral:ATE = 2.500 mg/kg                                        |                  |
| 1,6-Naphthalenediol diglycidyl ether<br>27610-48-6<br>429-960-2                                                   | 1- < 5 %      | Muta. 2, H341<br>Acute Tox. 4, Dermal, H312<br>Skin Irrit. 2, H315<br>Skin Sens. 1, H317<br>Eye Irrit. 2, H319<br>Aquatic Chronic 3, H412                                               | oral:ATE = 2.500 mg/kg                                        |                  |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3<br>216-823-5<br>01-2119456619-26 | 0,1- < 1 %    | Eye Irrit. 2, H319<br>Aquatic Chronic 2, H411<br>Skin Sens. 1, H317<br>Skin Irrit. 2, H315                                                                                              | Eye Irrit. 2; H319; C >= 5 %<br>Skin Irrit. 2; H315; C >= 5 % |                  |
| 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                                                                                                        |                                                               |                  |
| Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol<br>9003-36-5                    | 0,1- < 1 %    | Skin Irrit. 2, H315<br>Skin Sens. 1, H317<br>Eye Irrit. 2, H319<br>Aquatic Chronic 2, H411                                                                                              |                                                               |                  |
| (tetrapropenyl)succinic acid<br>27859-58-1<br>248-698-8<br>01-2120752504-57                                       | 0,1- < 1 %    | Aquatic Chronic 3, H412<br>Skin Corr. 1, H314<br>Eye Dam. 1, H318<br>STOT RE 1, H372<br>Repr. 2, H361d                                                                                  |                                                               |                  |

|                                                               |               |                                                                                                                                                  |                                   |  |
|---------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--|
| maleic anhydride<br>108-31-6<br>203-571-6<br>01-2119472428-31 | 0,01- < 0,1 % | STOT RE 1, Inhalation, H372<br>Acute Tox. 4, Oral, H302<br>Skin Sens. 1A, H317<br>Resp. Sens. 1, H334<br>Eye Dam. 1, H318<br>Skin Corr. 1B, H314 | Skin Sens. 1A; H317; C >= 0,001 % |  |
|---------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--|

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.

EYE: Irritation, conjunctivitis.

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).

### 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**

Dispose of contaminated material as waste according to Section 13.

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.

**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**

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 <sup>3</sup> | 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          |
| Maleic anhydride<br>108-31-6<br>[MALEIC ANHYDRIDE] | 0,01 |                   | Time Weighted Average (TWA): |                                              | IR_OEL          |

**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 |
|---------------------------------------------------------------------------------------------------------------|-----|-------------------|-----------------------------------|----------------------------------------------|-----------------|
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4<br>[SILVER (METALLIC)] |     | 0,1               | Time Weighted Average (TWA):      |                                              | EH40 WEL        |
| maleic anhydride<br>108-31-6<br>[MALEIC ANHYDRIDE]                                                            |     | 1                 | Time Weighted Average (TWA):      |                                              | EH40 WEL        |
| maleic anhydride<br>108-31-6<br>[MALEIC ANHYDRIDE]                                                            |     | 3                 | Short Term Exposure Limit (STEL): | 15 minutes                                   | EH40 WEL        |

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

| Name on list                                                                                                                                           | Environmental<br>Compartment       | Exposure<br>period | Value           |     |                 |        | Remarks                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------|-----------------|-----|-----------------|--------|-------------------------------------|
|                                                                                                                                                        |                                    |                    | mg/l            | ppm | mg/kg           | others |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | aqua<br>(freshwater)               |                    | 0,00004<br>mg/l |     |                 |        |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | aqua (marine<br>water)             |                    | 0,00086<br>mg/l |     |                 |        |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | sewage<br>treatment plant<br>(STP) |                    | 0,025 mg/l      |     |                 |        |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | sediment<br>(freshwater)           |                    |                 |     | 438,13<br>mg/kg |        |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | sediment<br>(marine water)         |                    |                 |     | 438,13<br>mg/kg |        |                                     |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | Air                                |                    |                 |     |                 |        | no hazard identified                |
| Silver >= 99,9 % Ag as powder<br>(>100nm<1mm ) classified for environment<br>7440-22-4                                                                 | Soil                               |                    |                 |     | 1,41 mg/kg      |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | aqua<br>(freshwater)               |                    | 0,02 mg/l       |     |                 |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | sediment<br>(freshwater)           |                    |                 |     | 1,7 mg/kg       |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | aqua (marine<br>water)             |                    | 0,002 mg/l      |     |                 |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | sediment<br>(marine water)         |                    |                 |     | 0,17 mg/kg      |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | aqua<br>(intermittent<br>releases) |                    | 0,2 mg/l        |     |                 |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | Soil                               |                    |                 |     | 0,2 mg/kg       |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | sewage<br>treatment plant<br>(STP) |                    | 10 mg/l         |     |                 |        |                                     |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | Air                                |                    |                 |     |                 |        | no hazard identified                |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                                                                 | Predator                           |                    |                 |     |                 |        | no potential for<br>bioaccumulation |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | aqua<br>(freshwater)               |                    | 0,108 mg/l      |     |                 |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | Freshwater -<br>intermittent       |                    | 0,6 mg/l        |     |                 |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | sewage<br>treatment plant<br>(STP) |                    | 100 mg/l        |     |                 |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | sediment<br>(freshwater)           |                    |                 |     | 0,8 mg/kg       |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | sediment<br>(marine water)         |                    |                 |     | 0,08 mg/kg      |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | Soil                               |                    |                 |     | 0,29 mg/kg      |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | aqua (marine<br>water)             |                    | 0,011 mg/l      |     |                 |        |                                     |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                                                                            | oral                               |                    |                 |     | 70 mg/kg        |        |                                     |
| 4,4'-Isopropylidenediphenol, oligomeric<br>reaction products with 1-chloro-2,3-<br>epoxypropane, number average molecular<br>weight ≤ 700<br>1675-54-3 | aqua<br>(freshwater)               |                    | 0,006 mg/l      |     |                 |        |                                     |
| 4,4'-Isopropylidenediphenol, oligomeric<br>reaction products with 1-chloro-2,3-<br>epoxypropane, number average molecular<br>weight ≤ 700              | Freshwater -<br>intermittent       |                    | 0,018 mg/l      |     |                 |        |                                     |



|                                                                                                                                              |                              |  |            |  |             |  |                      |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--|------------|--|-------------|--|----------------------|
| 1675-54-3                                                                                                                                    |                              |  |            |  |             |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | aqua (marine water)          |  | 0,001 mg/l |  |             |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | Marine water - intermittent  |  | 0,002 mg/l |  |             |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | sewage treatment plant (STP) |  | 10 mg/l    |  |             |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | sediment (freshwater)        |  |            |  | 0,341 mg/kg |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | sediment (marine water)      |  |            |  | 0,034 mg/kg |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | Soil                         |  |            |  | 0,065 mg/kg |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | oral                         |  |            |  | 11 mg/kg    |  |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700<br>1675-54-3 | Air                          |  |            |  |             |  | no hazard identified |
| maleic anhydride<br>108-31-6                                                                                                                 | aqua (freshwater)            |  | 0,038 mg/l |  |             |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | aqua (marine water)          |  | 0,004 mg/l |  |             |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | Soil                         |  |            |  | 0,037 mg/kg |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | sediment (freshwater)        |  |            |  | 0,296 mg/kg |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | sediment (marine water)      |  |            |  | 0,03 mg/kg  |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | sewage treatment plant (STP) |  | 44,6 mg/l  |  |             |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | Freshwater - intermittent    |  | 0,379 mg/l |  |             |  |                      |
| maleic anhydride<br>108-31-6                                                                                                                 | Marine water - intermittent  |  | 0,038 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 |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione 26544-38-7                                                                                       | Workers            | dermal            | Long term exposure - systemic effects     |               | 0,33 mg/kg   | no hazard identified |
| 2-(2-Butoxyethoxy)ethyl acetate 124-17-4                                                                                                  | General population | oral              | Long term exposure - systemic effects     |               | 7,9 mg/kg    |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | inhalation        | Long term exposure - systemic effects     |               | 4,93 mg/m3   | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | dermal            | Long term exposure - systemic effects     |               | 0,75 mg/kg   | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | General population | inhalation        | Long term exposure - systemic effects     |               | 0,87 mg/m3   | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | General population | dermal            | Long term exposure - systemic effects     |               | 0,0893 mg/kg | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | General population | oral              | Long term exposure - systemic effects     |               | 0,5 mg/kg    | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | inhalation        | Long term exposure - local effects        |               |              | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | inhalation        | Acute/short term exposure - local effects |               |              | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | dermal            | Long term exposure - local effects        |               |              | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | Workers            | dermal            | Acute/short term exposure - local effects |               |              | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | General population | inhalation        | Long term exposure - local effects        |               |              | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 1675-54-3 | General population | inhalation        | Acute/short term exposure - local effects |               |              | no hazard identified |

|                                                                                                                                                   |                    |            |                                              |  |             |                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------|----------------------------------------------|--|-------------|----------------------|
| 1675-54-3                                                                                                                                         |                    |            |                                              |  |             |                      |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight $\leq 700$<br>1675-54-3 | General population | dermal     | Long term exposure - local effects           |  |             | no hazard identified |
| 4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight $\leq 700$<br>1675-54-3 | General population | dermal     | Acute/short term exposure - local effects    |  |             | no hazard identified |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | inhalation | Acute/short term exposure - systemic effects |  | 0,2 mg/m3   |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | inhalation | Acute/short term exposure - local effects    |  | 0,2 mg/m3   |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | inhalation | Long term exposure - systemic effects        |  | 0,081 mg/m3 |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | inhalation | Long term exposure - local effects           |  | 0,081 mg/m3 |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | dermal     | Acute/short term exposure - systemic effects |  |             |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | dermal     | Acute/short term exposure - local effects    |  |             |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | dermal     | Long term exposure - systemic effects        |  |             |                      |
| maleic anhydride<br>108-31-6                                                                                                                      | Workers            | dermal     | Long 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 &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**

|                                                             |                                                              |
|-------------------------------------------------------------|--------------------------------------------------------------|
| Delivery form                                               | paste                                                        |
| Colour                                                      | Silver                                                       |
| Odor                                                        | Mild                                                         |
| Physical state                                              | liquid                                                       |
| Melting point                                               | Not applicable, Product is a liquid                          |
| Solidification temperature                                  | -55 °C (-67 °F)                                              |
| Initial boiling point                                       | Not applicable, Polymerizes before boiling point is reached. |
| Flammability                                                | non flammable                                                |
| Explosive limits                                            | Not applicable, The product is not flammable.                |
| Flash point                                                 | > 93 °C (> 199.4 °F)                                         |
| Auto-ignition temperature                                   | 105 °C (221 °F)                                              |
| Decomposition temperature                                   | > 200 °C (> 392 °F);                                         |
| pH                                                          | Not applicable, Product is non-soluble (in water).           |
| Viscosity (kinematic)<br>(40 °C (104 °F); )                 | 1.250 mm <sup>2</sup> /s                                     |
| Viscosity, dynamic<br>( )                                   | 4.000 mPa.s                                                  |
| Solubility (qualitative)<br>(20 °C (68 °F); Solvent: Water) | Insoluble                                                    |
| Partition coefficient: n-octanol/water                      | Not applicable                                               |
| Vapour pressure<br>(20 °C (68 °F))                          | Mixture<br>< 0,1 hPa                                         |
| Density<br>(20 °C (68 °F))                                  | 3,2 g/cm <sup>3</sup> no method / method unknown             |
| Relative vapour density:<br>(20 °C)                         | > 1                                                          |
| Particle characteristics                                    | Average particle size <= 0,02 mm no method / method unknown  |

**9.2. Other information**

Other information not applicable for this product

**SECTION 10: Stability and reactivity****10.1. Reactivity**

Reacts with strong oxidants.

Reaction with strong acids.

**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.

**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.

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

| Hazardous substances<br>CAS-No.                                                                          | Value<br>type                          | Value         | Species | Method                                                            |
|----------------------------------------------------------------------------------------------------------|----------------------------------------|---------------|---------|-------------------------------------------------------------------|
| Silver >= 99,9 % Ag in<br>powder (>100nm<1mm )<br>7440-22-4                                              | LD50                                   | > 2.000 mg/kg | rat     | OECD Guideline 401 (Acute Oral Toxicity)                          |
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                                           | LD50                                   | 2.900 mg/kg   | rat     | OECD Guideline 423 (Acute Oral toxicity)                          |
| Phenol, polymer with<br>3a,4,7,7a-tetrahydro-4,7-<br>met<br>119345-05-0                                  | LD50                                   | > 2.000 mg/kg | rat     | OECD Guideline 423 (Acute Oral toxicity)                          |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                                           | LD50                                   | 11.920 mg/kg  | rat     | equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity) |
| Diglycidyl resorcinol<br>ether<br>101-90-6                                                               | Acute<br>toxicity<br>estimate<br>(ATE) | 500 mg/kg     |         | Expert judgement                                                  |
| Polyglycidyl ester<br>68475-94-5                                                                         | LD50                                   | > 2.000 mg/kg | rat     | OECD Guideline 420 (Acute Oral Toxicity)                          |
| Polyglycidyl ester<br>68475-94-5                                                                         | Acute<br>toxicity<br>estimate<br>(ATE) | 2.500 mg/kg   |         | Expert judgement                                                  |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                                    | LD50                                   | > 2.000 mg/kg | rat     | EPA OTS 798.1175 (Acute Oral Toxicity)                            |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                                    | Acute<br>toxicity<br>estimate<br>(ATE) | 2.500 mg/kg   |         | Expert judgement                                                  |
| 2,2'-[(1-<br>methylethylidene)bis(4,1-<br>phenyleneoxymethylene)]<br>bisoxirane<br>1675-54-3             | LD50                                   | > 2.000 mg/kg | rat     | OECD Guideline 420 (Acute Oral Toxicity)                          |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                                    | LD50                                   | 13.000 mg/kg  | rat     | not specified                                                     |
| Formaldehyde, polymer<br>reaction products with 1-<br>chloro-2,3-epoxypropane<br>and phenol<br>9003-36-5 | LD50                                   | > 5.000 mg/kg | rat     | equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity) |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                                            | LD50                                   | 2.100 mg/kg   | rat     | equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity) |
| maleic anhydride<br>108-31-6                                                                             | LD50                                   | 1.090 mg/kg   | rat     | OECD Guideline 401 (Acute Oral Toxicity)                          |

**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).

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

| Hazardous substances<br>CAS-No.                                                                          | Value<br>type                          | Value                      | Species | Method                                                                 |
|----------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------|---------|------------------------------------------------------------------------|
| Silver >= 99,9 % Ag in<br>powder (>100nm<1mm )<br>7440-22-4                                              | LD50                                   | > 2.000 mg/kg              | rat     | OECD Guideline 402 (Acute Dermal Toxicity)                             |
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                                           | LD50                                   | 6.200 mg/kg                | rabbit  | OECD Guideline 402 (Acute Dermal Toxicity)                             |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                                           | LD50                                   | 5.400 mg/kg                | rabbit  | equivalent or similar to OECD Guideline 402 (Acute<br>Dermal Toxicity) |
| Diglycidyl resorcinol<br>ether<br>101-90-6                                                               | Acute<br>toxicity<br>estimate<br>(ATE) | 300 mg/kg                  |         | Expert judgement                                                       |
| Polyglycidyl ester<br>68475-94-5                                                                         | LD50                                   | > 2.000 mg/kg              | rat     | OECD Guideline 402 (Acute Dermal Toxicity)                             |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                                    | LD50                                   | > 1.000 - <<br>2.000 mg/kg | rat     | EPA OTS 798.1100 (Acute Dermal Toxicity)                               |
| 2,2'-(1-<br>methylethylidene)bis(4,1-<br>phenyleneoxymethylene)]<br>bisoxirane<br>1675-54-3              | LD50                                   | > 2.000 mg/kg              | rat     | OECD Guideline 402 (Acute Dermal Toxicity)                             |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                                    | LD50                                   | 6.700 mg/kg                | rabbit  | not specified                                                          |
| Formaldehyde, polymer<br>reaction products with 1-<br>chloro-2,3-epoxypropane<br>and phenol<br>9003-36-5 | LD50                                   | > 2.000 mg/kg              | rat     | equivalent or similar to OECD Guideline 402 (Acute<br>Dermal Toxicity) |
| maleic anhydride<br>108-31-6                                                                             | LD50                                   | 2.620 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.

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

| Hazardous substances<br>CAS-No.                        | Value<br>type | Value     | Test atmosphere | Exposure<br>time | Species | Method        |
|--------------------------------------------------------|---------------|-----------|-----------------|------------------|---------|---------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7 | LC50          | 5,3 mg/l  | dust/mist       | 4 h              | rat     | not specified |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4            | LC50          | 72,5 mg/l | dust/mist       | 4 h              | rat     | not specified |

**Skin corrosion/irritation:**

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

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

| Hazardous substances<br>CAS-No.                                                   | Result            | Exposure<br>time | Species                                    | Method                                                                                         |
|-----------------------------------------------------------------------------------|-------------------|------------------|--------------------------------------------|------------------------------------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                            | not irritating    |                  | rabbit                                     | other guideline:                                                                               |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                  | not corrosive     |                  | Human, reconstructed epidermis (RhE) model | OECD Guideline 431 (In Vitro Skin Corrosion: Reconstructed Human Epidermis (RHE) Test Method)  |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                  | not irritating    |                  | Human, reconstructed epidermis (RhE) model | OECD Guideline 439 (In Vitro Skin Irritation: Reconstructed Human Epidermis (RHE) Test Method) |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                       | not irritating    | 24 h             | rabbit                                     | OECD Guideline 404 (Acute Dermal Irritation / Corrosion)                                       |
| Polyglycidyl ester<br>68475-94-5                                                  | irritating        |                  | rabbit                                     | not specified                                                                                  |
| 1,6-Naphthalenediol diglycidyl ether<br>27610-48-6                                | irritating        |                  | rabbit                                     | EPA OTS 798.4470 (Acute Dermal Irritation)                                                     |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | irritating        |                  |                                            | Weight of evidence                                                                             |
| Epoxycyclohexylethyltri methoxysilane<br>3388-04-3                                | not irritating    | 4 h              | rabbit                                     | equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)              |
| (tetrapropenyl)succinic acid<br>27859-58-1                                        | corrosive         | 4 h              | rabbit                                     | equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)              |
| maleic anhydride<br>108-31-6                                                      | highly irritating |                  | rabbit                                     | 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<br>CAS-No.                                                      | Result                                                | Exposure<br>time | Species                                                     | Method                                                                             |
|--------------------------------------------------------------------------------------|-------------------------------------------------------|------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                               | irritating                                            |                  | rabbit                                                      | Evaluated according F.H.S.A.= Federal Hazardous Substance Act.                     |
| Phenol, polymer with<br>3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                  | not irritating                                        |                  | Bovine, cornea,<br>in vitro test                            | OECD Guideline 437 (BCOP)                                                          |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                       | Category 2A<br>(irritating to<br>eyes)                | 2 h              | Human, in vitro,<br>reconstituted<br>human corneal<br>model | OECD Guideline 492 (Reconstructed Human Cornea-like Epithelium (RhCE) Test Method) |
| Polyglycidyl ester<br>68475-94-5                                                     | irritating                                            |                  | rabbit                                                      | not specified                                                                      |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                | irritating                                            |                  | rabbit                                                      | EPA OTS 798.4500 (Acute Eye Irritation)                                            |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]<br>bisoxirane<br>1675-54-3 | irritating                                            |                  |                                                             | Weight of evidence                                                                 |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                | not irritating                                        |                  | rabbit                                                      | equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)     |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                        | Category 1<br>(irreversible<br>effects on the<br>eye) |                  | rabbit                                                      | other guideline:                                                                   |
| maleic anhydride<br>108-31-6                                                         | corrosive                                             |                  | 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                                                          |
|-----------------------------------------------------------------------------------|-------------------------------|------------------------------------|------------|-----------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                            | sensitising                   | Guinea pig maximisation test       | guinea pig | OECD Guideline 406 (Skin Sensitisation)                         |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                  | Sub-Category 1B (sensitising) | Mouse local lymphnode assay (LLNA) | mouse      | OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay) |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                       | not sensitising               | Buehler test                       | guinea pig | EU Method B.6 (Skin Sensitisation)                              |
| Polyglycidyl ester<br>68475-94-5                                                  | sensitising                   | Mouse local lymphnode assay (LLNA) | mouse      | OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay) |
| 1,6-Naphthalenediol diglycidyl ether<br>27610-48-6                                | sensitising                   | Buehler test                       | guinea pig | EPA OTS 798.4100 (Skin Sensitisation)                           |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | sensitising                   | Mouse local lymphnode assay (LLNA) | mouse      | OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay) |
| Epoxycyclohexylethyltri methoxysilane<br>3388-04-3                                | sensitising                   | Buehler test                       | guinea pig | OECD Guideline 406 (Skin Sensitisation)                         |
| (tetrapropenyl)succinic acid<br>27859-58-1                                        | not sensitising               | Buehler test                       | guinea pig | OECD Guideline 406 (Skin Sensitisation)                         |
| maleic anhydride<br>108-31-6                                                      | sensitising                   | Guinea pig maximisation 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<br>CAS-No.                                                              | Result   | Type of study /<br>Route of<br>administration            | Metabolic<br>activation /<br>Exposure time | Species | Method                                                                                                    |
|----------------------------------------------------------------------------------------------|----------|----------------------------------------------------------|--------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------|
| Silver >= 99,9 % Ag in<br>powder (>100nm<1mm )<br>7440-22-4                                  | negative | in vitro mammalian<br>cell micronucleus<br>test          | with and without                           |         | OECD Guideline 487 (In vitro<br>Mammalian Cell<br>Micronucleus Test)                                      |
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                               | negative | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | OECD Guideline 471<br>(Bacterial Reverse Mutation<br>Assay)                                               |
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                               | negative | in vitro mammalian<br>chromosome<br>aberration test      | with and without                           |         | OECD Guideline 473 (In vitro<br>Mammalian Chromosome<br>Aberration Test)                                  |
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                               | negative | mammalian cell<br>gene mutation assay                    | with and without                           |         | OECD Guideline 476 (In vitro<br>Mammalian Cell Gene<br>Mutation Test)                                     |
| Phenol, polymer with<br>3a,4,7,7a-tetrahydro-4,7-<br>met<br>119345-05-0                      | positive | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | OECD Guideline 471<br>(Bacterial Reverse Mutation<br>Assay)                                               |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                               | negative | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | OECD Guideline 471<br>(Bacterial Reverse Mutation<br>Assay)                                               |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                               | negative | in vitro mammalian<br>chromosome<br>aberration test      | with and without                           |         | equivalent or similar to OECD<br>Guideline 473 (In vitro<br>Mammalian Chromosome<br>Aberration Test)      |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                               | negative | mammalian cell<br>gene mutation assay                    | with and without                           |         | equivalent or similar to OECD<br>Guideline 476 (In vitro<br>Mammalian Cell Gene<br>Mutation Test)         |
| Diglycidyl resorcinol<br>ether<br>101-90-6                                                   | positive | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | not specified                                                                                             |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                        | negative | in vitro mammalian<br>chromosome<br>aberration test      | with                                       |         | OECD Guideline 473 (In vitro<br>Mammalian Chromosome<br>Aberration Test)                                  |
| 1,6-Naphthalenediol<br>diglycidyl ether<br>27610-48-6                                        | positive | in vitro mammalian<br>chromosome<br>aberration test      | without                                    |         | OECD Guideline 473 (In vitro<br>Mammalian Chromosome<br>Aberration Test)                                  |
| 2,2'-[(1-<br>methylethylidene)bis(4,1-<br>phenyleneoxymethylene)]<br>bisoxirane<br>1675-54-3 | negative | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | OECD Guideline 472 (Genetic<br>Toxicology: Escherichia coli,<br>Reverse Mutation Assay)                   |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                        | positive | mammalian cell<br>gene mutation assay                    | with and without                           |         | equivalent or similar to OECD<br>Guideline 476 (In vitro<br>Mammalian Cell Gene<br>Mutation Test)         |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                        | negative | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | OECD Guideline 471<br>(Bacterial Reverse Mutation<br>Assay)                                               |
| Epoxycyclohexylethyltri<br>methoxysilane<br>3388-04-3                                        | positive | sister chromatid<br>exchange assay in<br>mammalian cells | with and without                           |         | EU Method B.19 (Sister<br>Chromatid Exchange Assay In<br>Vitro)                                           |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                                | negative | in vitro mammalian<br>chromosome<br>aberration test      | with and without                           |         | OECD Guideline 473 (In vitro<br>Mammalian Chromosome<br>Aberration Test)                                  |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                                | negative | bacterial reverse<br>mutation assay (e.g<br>Ames test)   | with and without                           |         | equivalent or similar to OECD<br>Guideline 471 (Bacterial<br>Reverse Mutation Assay)                      |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                                | negative | mammalian cell<br>gene mutation assay                    | with and without                           |         | OECD Guideline 490 (In<br>Vitro Mammalian Cell Gene<br>Mutation Tests Using the<br>Thymidine Kinase Gene) |
| maleic anhydride<br>108-31-6                                                                 | negative | bacterial reverse<br>mutation assay (e.g                 | with and without                           |         | OECD Guideline 471<br>(Bacterial Reverse Mutation                                                         |

|                                                                                  |          | Ames test)        |  |       | Assay)                                                                |
|----------------------------------------------------------------------------------|----------|-------------------|--|-------|-----------------------------------------------------------------------|
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                 | positive | oral: unspecified |  | mouse | OECD Guideline 489 (In Vivo Mammalian Alkaline Comet Assay)           |
| 1,6-Naphthalenediol diglycidyl ether<br>27610-48-6                               | positive | intraperitoneal   |  | mouse | OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)          |
| 2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | negative | oral: gavage      |  | mouse | not specified                                                         |
| maleic anhydride<br>108-31-6                                                     | negative | inhalation        |  | rat   | OECD Guideline 475 (Mammalian Bone Marrow Chromosome Aberration Test) |

### 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                                                                   |
|----------------------------------------------------------------------------------|------------------|----------------------|----------------------------------------|---------|-------------|--------------------------------------------------------------------------|
| Diglycidyl resorcinol ether<br>101-90-6                                          | carcinogenic     | oral: gavage         | 2 y                                    | rat     | male/female | not specified                                                            |
| 2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | not carcinogenic | dermal               | 2 y daily                              | mouse   | male        | OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies) |
| 2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | not carcinogenic | oral: gavage         | 2 y daily                              | rat     | male/female | OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies) |
| Epoxycyclohexylethyltri methoxysilane<br>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                                                                    |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------|----------------------|---------|---------------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                           | NOAEL P 50 mg/kg                                                      | screening             | oral: gavage         | rat     | OECD Guideline 421 (Reproduction / Developmental Toxicity Screening Test) |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                      | NOAEL P 720 mg/kg<br>NOAEL F1 720 mg/kg                               | multigeneration study | oral: drinking water | mouse   | other guideline:                                                          |
| 2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)] bisoxirane<br>1675-54-3 | NOAEL P >= 50 mg/kg<br>NOAEL F1 >= 750 mg/kg<br>NOAEL F2 >= 750 mg/kg | Two generation study  | oral: gavage         | rat     | OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)           |
| (tetrapropenyl)succinic acid<br>27859-58-1                                       | NOAEL P 100 mg/kg                                                     | screening             | oral: gavage         | rat     | OECD Guideline 421 (Reproduction / Developmental Toxicity Screening Test) |
| maleic anhydride<br>108-31-6                                                     | NOAEL P 55 mg/kg<br>NOAEL F1 55 mg/kg                                 | Two generation study  | oral: gavage         | rat     | OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)           |

**STOT-single exposure:**

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

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

| Hazardous substances<br>CAS-No.  | Assessment                                       | Route of<br>exposure | Target Organs | Remarks |
|----------------------------------|--------------------------------------------------|----------------------|---------------|---------|
| Polyglycidyl ester<br>68475-94-5 | Category 3 with respiratory tract<br>irritation. |                      |               |         |

**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<br>application    | Exposure time /<br>Frequency of<br>treatment | Species | Method                                                                   |
|----------------------------------------------------------------------------------------------|-----------------|----------------------------|----------------------------------------------|---------|--------------------------------------------------------------------------|
| Dihydro-3-<br>(tetrapropenyl)furan-2,5-<br>dione<br>26544-38-7                               | NOAEL 50 mg/kg  | oral: gavage               | 28 days                                      | rat     | EPA Guideline                                                            |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                               | NOAEL 250 mg/kg | oral:<br>drinking<br>water | 90 d<br>daily                                | rat     | OECD Guideline 408<br>(Repeated Dose 90-Day<br>Oral Toxicity in Rodents) |
| 2,2'-[(1-<br>methylethylidene)bis(4,1-<br>phenyleneoxymethylene)]<br>bisoxirane<br>1675-54-3 | NOAEL 50 mg/kg  | oral: gavage               | 14 w<br>daily                                | rat     | OECD Guideline 408<br>(Repeated Dose 90-Day<br>Oral Toxicity in Rodents) |
| (tetrapropenyl)succinic<br>acid<br>27859-58-1                                                | NOAEL 50 mg/kg  | oral: gavage               | 90 d<br>daily                                | rat     | OECD Guideline 408<br>(Repeated Dose 90-Day<br>Oral Toxicity in Rodents) |
| maleic anhydride<br>108-31-6                                                                 | NOAEL 40 mg/kg  | oral: feed                 | 90 d<br>daily                                | rat     | not specified                                                            |

**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<br>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) |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                           | LC50          | Toxicity > Water solubility | 96 h          | Oncorhynchus mykiss                       | OECD Guideline 203 (Fish, Acute Toxicity Test)           |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                      | LC50          | 50 - 70 mg/l                | 96 h          | Brachydanio rerio (new name: Danio rerio) | OECD Guideline 203 (Fish, Acute Toxicity Test)           |
| Diglycidyl resorcinol ether<br>101-90-6                                          | LC50          | 5,8 mg/l                    | 96 h          | Oncorhynchus mykiss                       | OECD Guideline 203 (Fish, Acute Toxicity Test)           |
| Polyglycidyl ester<br>68475-94-5                                                 | LL50          | Toxicity > Water solubility | 96 h          | Oncorhynchus mykiss                       | OECD Guideline 203 (Fish, Acute Toxicity Test)           |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3 | LC50          | 1,75 mg/l                   | 96 h          | Oncorhynchus mykiss                       | 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)           |
| (tetrapropenyl)succinic acid<br>27859-58-1                                       | LC50          | > 100 mg/l                  | 96 h          | Oncorhynchus mykiss                       | OECD Guideline 203 (Fish, Acute Toxicity Test)           |
| maleic anhydride<br>108-31-6                                                     | LC50          | 75 mg/l                     | 96 h          | Lepomis macrochirus                       | 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<br>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:                                           |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7           | EC50          | Toxicity > Water solubility | 48 h          | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0 | EC50          | Toxicity > Water solubility | 48 h          | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                      | EC50          | 665 mg/l                    | 48 h          | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Diglycidyl resorcinol ether<br>101-90-6                          | EC50          | 6 mg/l                      | 48 h          | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| Polyglycidyl ester<br>68475-94-5                                 | EL50          | Toxicity > Water solubility | 48 h          | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute                      |

|                                                                                                |      |            |      |               | Immobilisation Test)                                       |
|------------------------------------------------------------------------------------------------|------|------------|------|---------------|------------------------------------------------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3               | EC50 | 1,7 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) |
| Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol<br>9003-36-5 | EC50 | 1,9 mg/l   | 24 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| (tetrapropenyl)succinic acid<br>27859-58-1                                                     | EC50 | > 100 mg/l | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |
| maleic anhydride<br>108-31-6                                                                   | EC50 | 77 mg/l    | 48 h | Daphnia magna | OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test) |

**Chronic 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<br>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) |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3               | NOEC          | 0,3 mg/l     | 21 d          | 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)        |
| Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol<br>9003-36-5 | NOEC          | 0,3 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<br>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:                                  |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                         | EC50          | Toxicity > Water solubility | 96 h          | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                         | NOEC          | Toxicity > Water solubility | 96 h          | Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata) | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                               | EC50          | Toxicity > Water solubility | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Diglycidyl resorcinol ether<br>101-90-6                                                        | EC50          | 4,5 mg/l                    | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Diglycidyl resorcinol ether<br>101-90-6                                                        | NOEC          | 0,28 mg/l                   | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Polyglycidyl ester<br>68475-94-5                                                               | EL50          | Toxicity > Water solubility | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| Polyglycidyl ester<br>68475-94-5                                                               | NOELR         | Toxicity > Water solubility | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3               | EC50          | > 11 mg/l                   | 72 h          | Scenedesmus capricornutum                                             | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3               | NOEC          | 4,2 mg/l                    | 72 h          | Scenedesmus capricornutum                                             | 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) |
| Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol<br>9003-36-5 | EC50          | 1,8 mg/l                    | 72 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| (tetrapropenyl)succinic acid<br>27859-58-1                                                     | EC50          | 100 mg/l                    | 96 h          | Pseudokirchneriella subcapitata                                       | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| maleic anhydride<br>108-31-6                                                                   | EC50          | 29 mg/l                     | 72 h          | Scenedesmus subspicatus (new name: Desmodesmus subspicatus)           | OECD Guideline 201 (Alga, Growth Inhibition Test) |
| maleic anhydride<br>108-31-6                                                                   | EC10          | 23 mg/l                     | 72 h          | Scenedesmus subspicatus (new name: Desmodesmus subspicatus)           | 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<br>type | Value                       | Exposure time | Species                                             | Method                                                             |
|--------------------------------------------------------|---------------|-----------------------------|---------------|-----------------------------------------------------|--------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7 | EC50          | Toxicity > Water solubility | 3 h           | activated sludge, domestic                          | OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test) |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4            | EC0           | 1.575 mg/l                  | 30 min        |                                                     | not specified                                                      |
| Diglycidyl resorcinol ether<br>101-90-6                | EC50          | 640 mg/l                    | 3 h           | activated sludge of a predominantly domestic sewage | OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test) |

|                                                                                  |      |            |        |                              |                                                                    |
|----------------------------------------------------------------------------------|------|------------|--------|------------------------------|--------------------------------------------------------------------|
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3 | IC50 | > 100 mg/l | 3 h    | activated sludge, industrial | other guideline:                                                   |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3                                | EC50 | > 100 mg/l | 30 min |                              | OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test) |
| maleic anhydride<br>108-31-6                                                     | EC10 | 44,6 mg/l  |        | Pseudomonas putida           | DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-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<br>time | Method                                                                             |
|------------------------------------------------------------------------------------------------|----------------------------|-----------|---------------|------------------|------------------------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                         | not readily biodegradable. | aerobic   | 9,9 %         | 28 d             | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)                  |
| Phenol, polymer with 3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                               | not readily biodegradable. | aerobic   | 2 %           | 28 day           | OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)        |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                    |                            | aerobic   | > 90 %        | 14 d             | OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)           |
| 2-(2-Butoxyethoxy)ethyl acetate<br>124-17-4                                                    | readily biodegradable      | aerobic   | 100 %         | 30 d             | EU Method C.4-E (Determination of the "Ready" Biodegradability/Closed Bottle Test) |
| Diglycidyl resorcinol ether<br>101-90-6                                                        | not readily biodegradable. | aerobic   | 7 %           | 28 d             | OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)                  |
| Polyglycidyl ester<br>68475-94-5                                                               | not readily biodegradable. | aerobic   | 28 %          | 28 d             | OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)                  |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane<br>1675-54-3               | not readily biodegradable. | aerobic   | 5 %           | 28 d             | OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)        |
| Epoxycyclohexylethyltrimethoxysilane<br>3388-04-3                                              |                            | aerobic   | 28 %          | 28 d             | OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)                  |
| Formaldehyde, polymer reaction products with 1-chloro-2,3-epoxypropane and phenol<br>9003-36-5 | not readily biodegradable. | aerobic   | 0 %           | 28 d             | EU Method C.4-E (Determination of the "Ready" Biodegradability/Closed Bottle Test) |
| (tetrapropenyl)succinic acid<br>27859-58-1                                                     | not readily biodegradable. | aerobic   | 18,3 %        | 28 d             | OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)        |
| maleic anhydride<br>108-31-6                                                                   | readily biodegradable      | aerobic   | 98 %          | 7 d              | OECD Guideline 301 E (Ready biodegradability: Modified OECD Screening 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                                                                             |
|----------------------------------------------------------------------------------------------------------|---------------|-------------|------------------------------------------------------------------------------------|
| Dihydro-3-(tetrapropenyl)furan-2,5-dione<br>26544-38-7                                                   | 4,39          | 22 °C       | OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method) |
| Phenol, polymer with<br>3a,4,7,7a-tetrahydro-4,7-met<br>119345-05-0                                      | > 6,20 - 6,37 |             | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)        |
| 2-(2-Butoxyethoxy)ethyl<br>acetate<br>124-17-4                                                           | 1,3           |             | not specified                                                                      |
| Diglycidyl resorcinol ether<br>101-90-6                                                                  | 1,46          | 30 °C       | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)        |
| Polyglycidyl ester<br>68475-94-5                                                                         | > 6,5         | 20 °C       | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)        |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]biso<br>xirane<br>1675-54-3                     | 3,242         | 25 °C       | EU Method A.8 (Partition Coefficient)                                              |
| Epoxy cyclohexylethyltrimetho<br>xysilane<br>3388-04-3                                                   | 4,1           | 23 °C       | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)        |
| Formaldehyde, polymer<br>reaction products with 1-<br>chloro-2,3-epoxypropane and<br>phenol<br>9003-36-5 | > 2,7 - 3,6   |             | OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)        |
| (tetrapropenyl)succinic acid<br>27859-58-1                                                               | > 4           |             | QSAR (Quantitative Structure Activity Relationship)                                |
| maleic anhydride<br>108-31-6                                                                             | -2,61         | 19,8 °C     | OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method) |

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

This mixture does not contain any substances that are assessed to be a PBT or vPvB.

#### 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 < 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.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H318 Causes serious eye damage.  
H319 Causes serious eye irritation.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H335 May cause respiratory irritation.  
H341 Suspected of causing genetic defects.  
H350 May cause cancer.  
H351 Suspected of causing cancer.  
H361d Suspected of damaging the unborn child.  
H361f Suspected of damaging fertility.  
H372 Causes damage to organs through prolonged or repeated exposure.  
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.  
H413 May cause long lasting harmful effects to aquatic life.

Abbreviations and acronyms:

ADG(-Code): Australian Dangerous Goods (Code)  
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road  
ASTM: American Society for Testing and Materials  
ATE: acute toxicity estimate  
AS: Australian Standard  
AwSV: Ordinance on Installations for the Handling of Substances Hazardous to Water  
CAS: Chemical Abstract Service  
CLP: Regulation (EC) No 1272/2008  
CMR: cancerogenic, mutagenic or reprotoxic  
DIN: German Institute for Standardization  
ECx: Effective concentration (x% effective level)  
ECHA: European Chemicals Agency  
EC-Nummer: Substance number in the EU-inventories EINECS/ELINCS  
ECTLV: European community threshold limit value  
ED: Substance identified as having endocrine disrupting properties  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
EN : European Standard  
ENCS: Japanese chemical inventory  
EPA: US Environmental Protection Agency  
EU: European Union  
EU EXPLD1: Substance listed in Annex I, Reg (EC) No. 2019/1148  
EU EXPLD2: Substance listed in Annex II, Reg (EC) No. 2019/1148  
EWC: European Waste Catalogue  
GHS: Globally Harmonised System for Classification and Labelling of Chemicals  
GLP: Good Laboratory Practice  
HSNO: Hazardous Substances and New Organisms  
IARC: International Agency for Research of Cancer  
IATA: International Air Transport Association  
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk  
IC50: half maximal inhibitory concentration  
ICAO: International Civil Aviation Organization  
IMDG-Code: International Maritime Code for Dangerous Goods  
IMO: International Maritime Organization  
ISO: International Standardization Organisation

LC50: Median lethal concentration  
LD50: Median lethal dose  
MARPOL: International Convention for the Prevention of Marine Pollution from Ships  
n.o.s.: not otherwise specified  
NO(A)EC: No (adverse) effect concentration  
NO(A)EL: No (adverse) effect level  
NZS: New Zealand Standard  
OECD: Organisation for Economic Co-operation and Development  
OEL: Occupational Exposure Limit  
OPPT: US EPA Office of Pollution Prevention and Toxics  
OPPTS: US EPA Office of Prevention, Pesticides and Toxic Substances  
PBT: Persistent, bioaccumulative, toxic  
(Q)SAR: (Quantitative) structure–activity relationship  
REACH: Regulation (EC) No. 1907/2006  
RID: Regulations concerning the International Transport of Dangerous Goods by Rail  
SADT: Self Accelerating Decomposition Temperature  
SDS: Safety Data Sheet  
STOT: Specific Target Organ Toxicity  
STOT SE: Specific Target Organ Toxicity - single exposure  
STOT RE: Specific Target Organ Toxicity - repeated exposure  
SUSMP: Standard for the Uniform Scheduling of Medicines and Poisons  
SVHC: Substance of very high concern (REACH Candidate List)  
TRGS: German Technical Rules for hazardous substances  
UN: United Nations  
VOC: Volatile Organic Compound  
814.018 VOC Reg CH: Swiss Ordinance 814.018 on the Incentive Tax on Volatile Organic Compounds  
vPvB: Very persistent, very bioaccumulative  
VwVwS: Administrative Regulation on Substances Hazardous to Waters  
WGK: Water hazard class

**Further information:**

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