

**Product name:** EM-Tec AG29 Silver filled epoxy, part A  
**Document Nr.:** SDS00115002429A-01

**Date:** September 14<sup>th</sup> 2017  
**Version:** 1.0

## Section 1: Identification of the substance or mixture and the company

### 1.1. Product Identifier

EM-Tec AG29 fast cure, extreme conductivity silver filled epoxy

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

Silver filled electrically conductive epoxy resin for use with hardener.  
Making electrically conductive bonds.  
Uses advised against: Not available

### 1.3. Details of the supplier of the Safety Data Sheet

Vof Micro to Nano  
Wateringweg 79  
2031EK Haarlem  
Netherlands  
Tel: +31(0)85-2013155  
E: info@microtonano.com

### 1.4 Emergency telephone number

112 (NLD) or your national emergency telephone number for chemical spills, leaks, fires, exposures or accidents

## Section 2: Hazards identification

### 2.1. Classification of the substance or mixture

|                       |  |
|-----------------------|--|
| <b>Physical:</b>      | Low flammability   |
| <b>Health:</b>        | Skin corrosion/irritation category 2                                 |
| <b>Environment:</b>   | Chronic aquatic hazard category 1<br>Acute aquatic hazard category 1 |
| <b>Other hazards:</b> | None   |

### Classification according to Regulation EC Nr. 1272/2008

|                     |  |
|---------------------|--|
|                     | Xi: Irritant   |
|                     | Xn: Harmful  |
| <b>Health:</b>      | R38: Irritating to skin  |
| <b>Physical</b>     | Not classified   |
| <b>Environment:</b> | R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in |



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**Other hazards:** the aquatic environment  
Not classified

## 2.2 Labeling elements

### Labelling accordance to Regulation EC Nr. 1272/2008

**Hazard pictogramm(s):**



**Signal word:** Warning

**Hazard statement(s):**  
H315: Causes skin irritation  
H317: May cause an allergic skin reaction  
H319 Causes serious eye irritation  
H410: Very toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

**Prevention:**  
P102: Keep out of reach of children  
P201+P202: Obtain special instructions before use. Do not handle until safety precautions have read and understood  
P261: Avoid breathing fumes/vapours/mist  
P270: Do not eat, drink or smoke when using this product  
P 272: Contaminated work clothing should not be allowed out of the workplace  
P 273: Avoid release to the environment  
P280: Wear protective gloves/protective clothing/eye protection/face protection

**Response:**

P308+P313: If exposed or concerned: Get medical attention  
P302+P352: If on skin: Wash with plenty of water and soap  
P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes.  
Remove contact lenses, if present and easy to do. Continue rinsing.  
P333+P313: If skin irritation or a rash occurs: Get medical attention  
P337+P313: If eye irritation persists: Get medical attention  
P362+P364: Take of contaminated clothing and wash before reuse  
P391: Collect spillage  
P405: Store locked up

**Storage:**



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**Disposal:** P501: Dispose of contents/container in accordance to local/regional/  
international regulations  
**Supplemental hazard info:** none

## 2.3 Other hazards

**Argyria warning:** Long term ingestion or inhalation of silver dust can lead to an irreversible  
blue-grey discoloration of the skin  
**Defats skin:** Prolonged and repeated exposure may cause skin dryness or cracking

## Section 3: Composition / information on components

### 3.1. Substances

Not applicable

### 3.2 Mixtures

| Component                                     | CAS Nr.    | WT% |
|---|------------|-----|
| Silver flakes (<1mm) - Ag                     | 7440-22-4  | 78  |
| Bisphenol F glycidyl / formaldehyde copolymer | 28064-14-4 | 20  |
| Neopentyl glycol diglycidyl ether             | 17557-23-2 | 2   |

(\* Explanation notes: see section 16)

## Section 4: First aid measures

### 4.1. Description of first aid measures

**Contact with eyes:** Rinse cautiously with water for several minutes. If possible, remove contact lenses. Continue rinsing.  
Seek medical attention if irritation persists.

**Contact with skin:** Wash with water and soap.  
Seek medical attention if irritation persists.

**Inhalation:** Fresh air, keep warm and at rest.  
Seek medical attention if ill effects occur

**Ingestion:** If swallowed, do not induce vomiting  
Seek immediate medical advice  
If vomiting appears imminent or occurs hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.



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Regulation EC Nr. 1907/2006 Art.31

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Never give liquid to a person with reduced awareness  
Give water to rinse out mouth, then provide water slowly as much as casually can comfortably drink  
Avoid giving milk or oils  
Avoid giving alcohol

## 4.2. Important symptoms and effects, either immediate or delayed

**Inhalation:** May cause irritation of the respiratory tract  
Symptoms: cough, sore throat, asthma  
**Ingestion:** May cause digestive tract irritation  
Symptoms: sore throat, abdominal pain, nausea, vomiting  
**Skin contact:** Mildly irritating to skin  
Symptoms: redness and pain  
**Eye contact:** Irritating to eyes  
Symptoms: redness and pain, impaired vision

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

**General advice:** If you feel unwell, seek medical advice; show product label if possible  
If symptoms persist, always call a doctor

## Section 5: Firefighting Measures

### 5.1. Extinguishing media

Use dry sand, graphite powder or dry sodium chloride based extinguishers.  
DO NOT USE WATER, CO<sub>2</sub> or FOAM

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

Not flammable or combustible, but will burn if involved in a fire.  
Produces carbon oxides (CO, CO<sub>2</sub>), irritating smoke and toxic fumes in fires

### 5.3 Advice to firefighters

Fight fire from a safe distance, with adequate cover  
Wear self-contained breathing apparatus and full firefighting turn-out gear

## Section 6: Accidental release measures

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



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Ensure adequate ventilation  
Wear suitable protective clothing including eye/face protection

## 6.2 Environmental precautions

Avoid release to the environment  
Do not allow to enter public sewers and waterways

## 6.3 Methods and material for containment and clean up

Clean up spills immediately  
Collect spillage and wipe residue with a paper towel wetted with alcohol.  
Collect spillage and dirty towels in a sealable waste container  
Wash spill area with soap and water to remove last traces of residue

## 6.4 Reference to other sections

For further information see section 8

## Section 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid breathing dust/fumes/mist/vapours  
Ensure adequate ventilation  
Avoid contact with skin and eyes  
Wash thoroughly after use  
Wear protective gloves/protective clothing/eye protection

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

Store locked up in a cool dry place  
Keep out of reach of children

### 7.3 Specific end uses(s)

Silver filled electrically conductive epoxy resin for use with hardener.  
Making electrically conductive bonds.

## Section 8: Exposure control and personal protection



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## 8.1. Control parameters

### Exposure limits

### Occupational exposure limits (OEL)

| Ingredient                                    | TWA                  | STEL          | Peak          | Notes         |
|---|----------------------|---------------|---------------|---------------|
| Silver flakes (<1mm) - Ag                     | 0.1mg/m <sup>3</sup> | Not available | Not available | Not available |
| Bisphenol F glycidyl / formaldehyde copolymer | Not available        | Not available | Not available | Not available |
| Neopentyl glycol diglycidyl ether             | Not available        | Not available | Not available | Not available |
| EM-Tec AG31 Silver filled epoxy, part A       | Not available        | Not available | Not available | Not available |

## 8.2 Exposure controls

**Control procedures:** Ensure adequate ventilation  
**Personal protection:** Take precautions to avoid contact with eyes and skin when handling the products  
**Inhalation:** In case of insufficient ventilation, wear suitable respiratory equipment:  
Air purifying respirator with organic gas/vapour cartridge (type A)  
**Hands and skin:** Wear suitable gloves against chemicals; recommended gloves:  
Nitrile  
**Eyes:** Wear safety goggles or full-face protection

## Section 9: Physical and chemical properties

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

**Appearance/physical state:** Solid, paste  
**Colour:** Silver grey  
**Odour:** Not available  
**pH** Not available  
**Boiling point/range:** Not available  
**Flash point:** >150°C (closed cup)  
**Evaporation rate:** Not available  
**Explosion limits: upper limit:** Not available  
**lower limit:** Not available  
**Vapour pressure:** Not available  
**Specific gravity:** 3.4 g/cm<sup>3</sup> @ 20°C  
**Solubility in water:** Insoluble  
**Auto-ignition:** Not available  
**Viscosity @40°C :** >>20.5 mm<sup>2</sup>/s



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## 9.2 Other information

**VOC:** Not available

## Section 10: Stability and reactivity

### 10.1. Reactivity

Reacts with amines

### 10.2 Chemical stability

Stable at normal temperatures and pressures

### 10.3 Possibility of hazardous reactions

No hazardous reactions known if used for its intended purposes

### 10.4 Conditions to avoid

Incompatible substances

### 10.5 Incompatible materials

Strong oxidising agents, strong acids, strong bases, acetylene, ammonia, strong hydrogen peroxides

### 10.6 Hazardous decomposition products

Carbon oxides (CO, CO<sub>2</sub>), irritating smoke and toxic fumes

## Section 11: Toxicological information

### 11.1. Information on toxicological effects

#### Information on likely routes of exposure:

**Inhalation:** May cause cough, irritation of the respiratory tract, sore throat, or asthma  
**Ingestion:** May cause irritation  
**Skin contact:** May cause mild skin irritation, redness, or rash  
**Eye contact:** May cause redness, mild eye irritation  
**Chronic:** Prolonged and repeated exposure may lead to skin sensitisation



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Prolonged and repeated ingestion or inhalation of silver may yield to an irreversible blue-grey discoloration of the skin

## Toxicological data:

| Ingredient  | Toxicity                               | Irritation            |
|---|--|-----------------------|
| Silver, metal                                       | Dermal (rabbit) LD50: 2000mg/kg        | Not established       |
|   | Inhalation (rat) LC50: 5.16mg/L (4h)   | Not established       |
|   | Oral (Guinea pig) LD50: >5g/kg         | Not established       |
| Bisphenol F glycidyl ether / formaldehyde copolymer | Dermal (rabbit) LD50: 4000g/kg         | Skin: Slight irritant |
|   | Inhalation (rat) LC50: Not established | Eyes: Slight irritant |
|   | Oral (rat) LD50: 4000g/kg              | Not established       |
| Neopentyl glycol diglycidyl ether                   | Dermal (rabbit) LD50: 2150g/kg         | Skin: Sensitiser      |
|   | Inhalation (rat) LC50: Not established | Not established       |
|   | Oral (rat) LD50: 4500g/kg              | Not established       |
| EM-Tec AG32 Silver filled epoxy, part A             | Not established                        | Not established       |

## Section 12: Ecological information

### 12.1. Toxicity

Very toxic to aquatic life

### 12.2 Persistence and degradability

The content is not readily biodegradable

### 12.3 Bioaccumulative potential

No information available

### 12.4 Mobility in soil

No information available

### 12.5 Results of PBT and vPvB assessment



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No information available

## 12.6 Hazardous decomposition products

No experimental data available

## Section 13: Disposal considerations

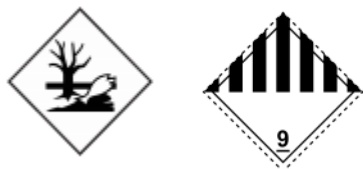
### 13.1. Waste treatment methods

**Product:** This material and its container must be disposed of in a safe way.  
Do not discharge into drains or the environment, dispose to an authorised waste collection point.

**National regulations:** Disposal should be in accordance with local, state, or national legislation.

## Section 14: Transport information

Labels required:



### 14.1. UN number

**UN-number:** 3077

### 14.2 UN proper shipping name

**Proper shipping name:** Environmentally hazardous substance, solid, N.O.S.

### 14.3 Transport hazard class(es)

**Class:** 9  
**ADR/RID-Classification code:** E1

### 14.4 Packing group



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**Packing:** III  
**Limited Quantity:** 5kg  
**Excepted Quantity:** 30g

## 14.5 Incompatible materials

**ADR/RID- Environmentally hazardous:** Not applicable  
**IMDG-Marine pollutant:** Yes  
**IATA/ICAO-Environmentally hazardous:** Not applicable

## 14.6 Special precautions for user

Not applicable

## 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Not applicable

## Section 15: Regulatory information

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

UN-number: 3077

### 15.2 Chemical safety assessment

All substances are listed

## Section 16: Other information

### RoHS Directive Compliant

This product is fully compliant with the directive 2100/65/EU Annex II (RoHS). It does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's or PBDE's.

### WEEE

This product is not a piece of electrical or electronic equipment, and it therefore not governed by Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)

### Abbreviations:



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|        |   |
|--------|---|
| Carc.  | Carcinogenicity   |
| Exp.   | Exposure  |
| Flam.  | Flammable   |
| GHS    | Global Harmonised System of Classification of Labelling Chemicals |
| Irrit. | Irritant  |
| LC50   | Lethal Concentration 50%  |
| LCLo   | Lowest published lethal concentration                             |
| LD50   | Lethal Dose 50%   |
| N/A    | Not applicable  |
| N/E    | Not estimated   |
| PBT    | Persistent Bioaccumulative and Toxic                              |
| WEL    | Workplace Exposure Limit  |
| Repr.  | Reproductive toxicant   |
| RoHS   | Restriction of Hazardous Substance                                |
| STEL   | Short-Term Exposure Limit   |
| STOT   | Specific Target Organ Toxicity                                    |
| TCLo   | Lowest published toxic concentration                              |
| vPvB   | very Persistent and very Bioaccumulative                          |
| WEEE   | Waste Electrical and Electronic Equipment                         |

## DSD / DPD label elements



Full

Text Risk and Hazard codes

H317: May cause an allergic skin reaction  
H341: Suspected of causing genetic defects  
H411: Toxic to aquatic life with long lasting effects

R38: Irritating to skin  
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

## Safety advice:

S02 – Keep out of reach of children.  
S09 – Keep container in a well-ventilated place.  
S13 – Keep away from food, drink and animal feeding stuff.  
S23 – Do not breath gas/fumes/vapour/spray.  
S26 – In case of contact with eyes, rinse with plenty of water and seek medical help.  
S281 – After contact with skin, wash immediately with detergent and plenty of waterways.  
S29 – Do not empty in drains.  
S35 – This material and its container must be disposed of in a safe way.



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- S36 – Wear suitable protective clothing.
- S37 – Wear suitable gloves.
- S38 – In case of insufficient ventilation, wear suitable respiratory equipment.
- S39 - Wear eye / face protection.
- S40 – In case of insufficient ventilation, wear suitable respiratory equipment.
- S43 – In case of fire use....
- S45 – In case of accident or if you feel unwell, immediately contact Doctor or Poisons information center (show label if possible).
- S46 – If swallowed, seek immediate medical advice and show label if possible.
- S52 – Not recommended for interior use on large surfaces.
- S53 – Avoid exposure – obtain special instructions before use.
- S56 – Dispose of this material and its container at hazardous or special waste collection point.
- S57 – Use appropriate container to avoid environment contamination.
- S61 – Avoid release to the environment
- S63 – In case of accident by inhalation, remove casualty to fresh air and keep at rest.
- S64 – If swallowed, rinse mouth with water (only if person is conscious)

This product should be stored, handled, and used in accordance with good industrial hygiene practices and in accordance with any legal regulation.

The information contained herewith is based on the present state of our knowledge and is intended to describe the product from the point of view of safety requirements. It does not guarantee any specific properties.

It is the responsibility of the user to query and verify any information seeming suspect or where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, state, federal and international regulations.



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## Section 1: Identification of the substance or mixture and the company

### 1.1. Product Identifier

EM-Tec AG29 fast cure, extreme conductivity silver filled epoxy

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

Silver filled electrically conductive epoxy hardener for use with resin.  
Making electrically conductive bonds.  
Uses advised against: Not available

### 1.3. Details of the supplier of the Safety Data Sheet

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### 1.4 Emergency telephone number

112 (NLD) or your national emergency telephone number for chemical spills, leaks, fires, exposures or accidents

## Section 2: Hazards identification

### 2.1. Classification of the substance or mixture

|                       |  |
|-----------------------|--|
| <b>Physical:</b>      | Low flammability   |
| <b>Health:</b>        | Corrosive to eyes category 1<br>Skin corrosion/irritation category 1<br>Reproductive toxicity category 2 |
| <b>Environment:</b>   | Chronic aquatic hazard category 1<br>Acute aquatic hazard category 1                                     |
| <b>Other hazards:</b> | None   |

### Classification according to Regulation EC Nr. 1272/2008

Xi: Irritant  
Xn: Harmful

C: Corrosive



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|                       |   |
|-----------------------|---|
| <b>Health:</b>        | R38: Irritating to skin<br>R41: Risk of serious damage to eyes<br>R61: May cause harm to the unborn child |
| <b>Physical</b>       | Not classified  |
| <b>Environment:</b>   | R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment        |
| <b>Other hazards:</b> | Not classified  |

## 2.2 Labeling elements

### Labelling accordance to Regulation EC Nr. 1272/2008

**Hazard pictogramm(s):**



**Signal word:** Danger

**Hazard statement(s):**

- H314: Causes severe skin burns and eye damage
- H317: May cause an allergic skin reaction
- H361: Suspected of damaging fertility or the unborn child
- H410: Very toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

**Prevention:**

- P102: Keep out of reach of children
- P201+P202: Obtain special instructions before use. Do not handle until safety precautions have read and understood
- P260: Do not breath fumes/vapours
- P270: Do not eat, drink or smoke when using this product
- P 272: Contaminated work clothing should not be allowed out of the workplace
- P 273: Avoid release to the environment
- P280: Wear protective gloves/protective clothing/eye protection/face protection

**Response:**

- P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing
- P301+P330+P331: If swallowed: Rinse mouth. Do not induce vomiting
- P303+P361+P353: If on skin (or hair): Take off immediately all contaminated clothing.



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Rinse skin with water/shower.  
P333+P313: If skin irritation or a rash occurs: Get medical attention  
P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing  
P363: Wash contaminated clothing before reuse  
P308+P313: For all routes of exposure: If exposed or concerned: Get medical attention  
P391: Collect spillage  
P405: Store locked up  
P501: Dispose of contents/container in accordance to local/regional/international regulations

**Storage:**  
**Disposal:**  
**Supplemental hazard info:** none

## 2.3 Other hazards

**Argyria warning:** Long term ingestion or inhalation of silver dust can lead to an irreversible blue-grey discoloration of the skin

## Section 3: Composition / information on components

### 3.1. Substances

Not applicable

### 3.2 Mixtures

| Component                 | CAS Nr.    | WT%     |
|---------------------------|------------|---------|
| Silver flakes (<1mm) - Ag | 7440-22-4  | 70-80   |
| 4-nonyl phenol, branched  | 84852-15-3 | 15-30   |
| N-aminoethylpiperazine    | 140-31-8   | 3-6     |
| Diethylene triamine       | 111-40-0   | 0.1-1   |
| Bisphenol A               | 80-05-7    | 0.1-0.5 |

(\* Explanation notes: see section 16)

## Section 4: First aid measures



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## 4.1. Description of first aid measures

|                           |  |
|---------------------------|--|
| <b>Contact with eyes:</b> | Rinse cautiously with water for several minutes. If possible, remove contact lenses. Continue rinsing.<br>Seek medical attention if irritation persists.   |
| <b>Contact with skin:</b> | Wash with water and soap.<br>Seek medical attention if irritation persists.  |
| <b>Inhalation:</b>        | Fresh air, keep warm and at rest.<br>Seek medical attention if ill effects occur   |
| <b>Ingestion:</b>         | If swallowed, do not induce vomiting<br>Seek immediate medical advice<br>If vomiting appears imminent or occurs hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.<br>Never give liquid to a person with reduced awareness<br>Give water to rinse out mouth, then provide water slowly as much as casually can comfortably drink<br>Avoid giving milk or oils<br>Avoid giving alcohol |

## 4.2. Important symptoms and effects, either immediate or delayed

|                      |  |
|----------------------|--|
| <b>Eye contact:</b>  | Corrosive to eyes<br>Symptoms: redness, severe irritation, pain, burns<br>Immediately call a poison center/doctor  |
| <b>Skin contact:</b> | Corrosive to skin<br>Symptoms: redness, severe irritation, rash (allergic contact dermatitis), pains, burns, blistering<br>Immediately call a poison center/doctor |
| <b>Inhalation:</b>   | Corrosive to the respiratory tract<br>Cough, severe irritation or burns<br>Immediately call a poison center/doctor   |
| <b>Ingestion:</b>    | Corrosive to digestive tract<br>Symptoms: severe irritation, burns to mouth, throat, stomach<br>Immediately call a poison center/doctor                            |

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

|                        |  |
|------------------------|--|
| <b>General advice:</b> | If you feel unwell, seek medical advice; show product label if possible<br>If symptoms persist, always call a doctor |
|------------------------|--|

## Section 5: Firefighting Measures

### 5.1. Extinguishing media



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Use dry sand, graphite or dry sodium chloride based extinguishers.  
DONOT USE WATER, CO<sub>2</sub> or FOAM.

## 5.2 Special hazards arising from the substance or mixture

Not flammable or combustible, but will burn if involved in a fire.  
Produces carbon oxides (CO, CO<sub>2</sub>), irritating smoke and toxic fumes in fires  
Inhalation of toxic smoke or fumes may have delayed effects. Exposed person may need to be put under surveillance for 4-12 hrs.

## 5.3 Advice to firefighters

Fight fire from a safe distance, with adequate cover  
Wear self-contained breathing apparatus and full firefighting turn-out gear

## Section 6: Accidental release measures

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

Ensure adequate ventilation  
Keep away from extreme heat or open flames  
Wear suitable protective clothing including eye/face protection

### 6.2 Environmental precautions

Avoid release to the environment  
Do not allow to enter public sewers and waterways

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

Clean up spills immediately  
Collect spillage and wipe residue with a paper towel wetted with alcohol.  
Collect spillage and dirty towels in a sealable waste container made of plastic or steel  
Avoid containers with copper, aluminium, zinc or galvanised surfaces since the waste material can slowly oxidises these metals.  
Wash spill area with soap and water to remove last traces of residue

### 6.4 Reference to other sections

For further information see section 8



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## Section 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid breathing dust/fumes/mist/vapours  
Ensure adequate ventilation  
Avoid contact with skin and eyes  
Wash thoroughly after use  
Wear protective gloves/protective clothing/eye protection

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

Store locked up in a cool dry place  
Keep out of reach of children

### 7.3 Specific end uses(s)

Silver filled electrically conductive epoxy hardener for use with resin.  
Making electrically conductive bonds.

## Section 8: Exposure control and personal protection

### 8.1. Control parameters

#### Exposure limits

#### Occupational exposure limits (OEL)

| Ingedrient                              | TWA                  | STEL          | Peak          | Notes         |
|---|----------------------|---------------|---------------|---------------|
| Silver flakes (<1mm) - Ag               | 0.1mg/m <sup>3</sup> | Not available | Not available | Not available |
| Diethylene triamine                     | 1 ppm                | Not available | Not available | Not available |
| Bisphenol A                             | 10mg/m <sup>3</sup>  | Not available | Not available | Not available |
| EM-Tec AG31 Silver filled epoxy, part B | Not available        | Not available | Not available | Not available |

### 8.2 Exposure controls

**Control procedures:** Ensure adequate ventilation

**Personal protection:** Take precautions to avoid contact with eyes and skin when handling the products



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|                        |  |
|------------------------|--|
| <b>Inhalation:</b>     | In case of insufficient ventilation, wear suitable respiratory equipment:<br>Air purifying respirator with organic gas/vapour cartridge (type A) |
| <b>Hands and skin:</b> | Wear suitable gloves against chemicals; recommended gloves: Nitrile  |
| <b>Eyes:</b>           | Wear safety goggles or full-face protection  |

## Section 9: Physical and chemical properties

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

|                                       |                               |
|---------------------------------------|-------------------------------|
| <b>Appearance/physical state:</b>     | Solid, paste                  |
| <b>Colour:</b>                        | Silver grey                   |
| <b>Odour:</b>                         | Amine-like                    |
| <b>pH</b>                             | Not available                 |
| <b>Boiling point/range:</b>           | Not available                 |
| <b>Flash point:</b>                   | >93°C (closed cup)            |
| <b>Evaporation rate:</b>              | Not available                 |
| <b>Explosion limits: upper limit:</b> | Not available                 |
| <b>lower limit:</b>                   | Not available                 |
| <b>Vapour pressure:</b>               | Not available                 |
| <b>Specific gravity:</b>              | 2.92 g/cm <sup>3</sup> @ 25°C |
| <b>Solubility in water:</b>           | Insoluble                     |
| <b>Auto-ignition:</b>                 | Not available                 |
| <b>Viscosity @40°C :</b>              | >>20.5 mm <sup>2</sup> /s     |

### 9.2 Other information

**VOC:** Not available

## Section 10: Stability and reactivity

### 10.1. Reactivity

Reacts exothermically with epoxide groups. May slowly attack metals such as aluminium, zinc, copper and their alloys.

### 10.2 Chemical stability

Stable at normal temperatures and pressures



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## 10.3 Possibility of hazardous reactions

No hazardous reactions known if used for its intended purposes

## 10.4 Conditions to avoid

Avoid excessive heat and incompatible substances

## 10.5 Incompatible materials

Strong oxidising agents, strong acids, strong bases, ammonia

## 10.6 Hazardous decomposition products

Carbon oxides (CO, CO<sub>2</sub>), ammonia, nitric acids, nitrogen oxides (NO<sub>x</sub>) and silver metal fumes

## Section 11: Toxicological information

### 11.1. Information on toxicological effects

#### Information on likely routes of exposure:

- Eye contact:** May cause redness, severe eye irritation, pain or corrosive eye damage  
**Skin contact:** May cause serious skin irritation, redness, allergic contact dermatitis and chemical burns  
**Inhalation:** May cause cough and severe irritation of the respiratory tract  
**Ingestion:** May cause severe irritations or burns to mouth, throat and stomach  
**Chronic:** Prolonged and repeated exposure may lead to skin sensitisation and to reproductive toxicity  
Prolonged and repeated ingestion or inhalation of silver may yield to an irreversible blue-grey discoloration of the skin

#### Toxicological data:

| Ingredient               | Toxicity                               | Irritation      |
|--------------------------|--|-----------------|
| Silver, metal            | Dermal (rabbit) LD50: 2000mg/kg        | Not established |
|                          | Inhalation (rat) LC50: 5.16mg/L (4h)   | Not established |
|                          | Oral (Guinea pig) LD50: >5g/kg         | Not established |
| 4-nonyl phenol, branched | Dermal (rabbit) LD50: >1246mg/kg       | Not established |
|                          | Inhalation (rat) LC50: Not established | Not established |
|                          | Oral (rat) LD50: 1300mg/kg             | Not established |
| N-aminoethylpiperazine   | Dermal (rabbit) LD50: 866mg/kg         | Not established |



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|   |  |                 |
|---|--|-----------------|
|   | Inhalation (rat) LC50: Not established | Not established |
|   | Oral (rat) LD50: >1000mg/kg            | Not established |
| Diethylene triamine                     | Dermal (rabbit) LD50: 1090mg/kg        | Not established |
|   | Inhalation (rat) LC50: Not established | Not established |
|   | Oral (rat) LD50: 1800 mg/kg            | Not established |
| EM-Tec AG29 Silver filled epoxy, part B | Not established                        | Not established |

## Section 12: Ecological information

### 12.1. Toxicity

Very toxic to aquatic life

### 12.2 Persistence and degradability

The content is not readily biodegradable

### 12.3 Bioaccumulative potential

No information available

### 12.4 Mobility in soil

No information available

### 12.5 Results of PBT and vPvB assessment

No information available

### 12.6 Hazardous decomposition products

No experimental data available

## Section 13: Disposal considerations



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## 13.1. Waste treatment methods

**Product:** This material and its container must be disposed of in a safe way.  
Do not discharge into drains or the environment, dispose to an authorised waste collection point.

**National regulations:** Disposal should be in accordance with local, state or national legislation.

## Section 14: Transport information

Labels required:



### 14.1. UN number

**UN-number:** 3263

### 14.2 UN proper shipping name

**Proper shipping name:** Corrosive solid, basic, organic, N.O.S.

### 14.3 Transport hazard class(es)

**Class:** 8  
**ADR/RID-Classification code:** E2

### 14.4 Packing group

**Packing:** II  
**Limited Quantity:** 5kg  
**Excepted Quantity:** 30g

### 14.5 Incompatible materials



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**ADR/RID- Environmentally hazardous:** Not applicable  
**IMDG-Marine pollutant:** Yes  
**IATA/ICAO-Environmentally hazardous:** Not applicable

## 14.6 Special precautions for user

Not applicable

## 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Not applicable

## Section 15: Regulatory information

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

UN-number: 3077

### 15.2 Chemical safety assessment

All substances are listed

## Section 16: Other information

### RoHS Directive Compliant

This product is fully compliant with the directive 2100/65/EU Annex II (RoHS). It does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's or PBDE's.

### WEEE

This product is not a piece of electrical or electronic equipment, and it therefore not governed by Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)

### Abbreviations:

|          |   |
|----------|---|
| Asp. Tox | Aspiration hazard   |
| Carc.    | Carcinogenicity   |
| Exp.     | Exposure  |
| Flam.    | Flammable   |
| GHS      | Global Harmonised System of Classification of Labelling Chemicals |
| Irrit.   | Irritant  |
| LC50     | Lethal Concentration 50%  |
| LCLo     | Lowest published lethal concentration                             |
| LD50     | Lethal Dose 50%   |



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|       |   |
|-------|---|
| N/A   | Not applicable                            |
| N/E   | Not estimated                             |
| PBT   | Persistent Bioaccumulative and Toxic      |
| WEL   | Workplace Exposure Limit                  |
| Repr. | Reproductive toxicant                     |
| RoHS  | Restriction of Hazardous Substance        |
| SEM   | Scanning Electron Microscope              |
| STEL  | Short-Term Exposure Limit                 |
| STOT  | Specific Target Organ Toxicity            |
| TCLo  | Lowest published toxic concentration      |
| vPvB  | very Persistent and very Bioaccumulative  |
| WEEE  | Waste Electrical and Electronic Equipment |

## DSD / DPD label elements



## Full Text Risk and Hazard codes

H314: Causes severe skin burns and eye damage  
H317: May cause an allergic skin reaction  
H361: Suspected of damaging fertility or the unborn child  
H410: Very toxic to aquatic life with long lasting effects

R41: Risk of serious damage to eyes  
R61: May cause harm to the unborn child  
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

## Safety advice:

S02 – Keep out of reach of children.  
S09 – Keep container in a well-ventilated place.  
S13 – Keep away from food, drink and animal feeding stuff.  
S23 – Do not breath gas/fumes/vapour/spray.  
S26 – In case of contact with eyes, rinse with plenty of water and seek medical help.  
S281 – After contact with skin, wash immediately with detergent and plenty of waterways.  
S29 – Do not empty in drains.  
S35 – This material and its container must be disposed of in a safe way.  
S36 – Wear suitable protective clothing.  
S37 – Wear suitable gloves.  
S38 – In case of insufficient ventilation, wear suitable respiratory equipment.  
S39 - Wear eye / face protection.  
S40 – In case of insufficient ventilation, wear suitable respiratory equipment.



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- S43 – In case of fire use....
- S45 – In case of accident or if you feel unwell, immediately contact Doctor or Poisons information center (show label if possible).
- S46 – If swallowed, seek immediate medical advice and show label if possible.
- S52 – Not recommended for interior use on large surfaces.
- S53 – Avoid exposure – obtain special instructions before use.
- S56 – Dispose of this material and its container at hazardous or special waste collection point.
- S57 – Use appropriate container to avoid environment contamination.
- S61 – Avoid release to the environment
- S63 – In case of accident by inhalation, remove casualty to fresh air and keep at rest.
- S64 – If swallowed, rinse mouth with water (only if person is conscious)

This product should be stored, handled, and used in accordance with good industrial hygiene practices and in accordance with any legal regulation.

The information contained herewith is based on the present state of our knowledge and is intended to describe the product from the point of view of safety requirements. It does not guarantee any specific properties.

It is the responsibility of the user to query and verify any information seeming suspect or where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, state, federal and international regulations.



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