



Kit Revision Date: 7/3/2025

## **8331S SILVER CONDUCTIVE EPOXY ADHESIVE KIT**

### **MG Chemicals Multipart Product Kit**

This product is a kit made up of multiple parts. Each part is an independently packaged chemical component and has independent hazard assessments.

#### **Kit Content**

<b>Part</b>	<b>Product Name</b>	<b>Product Use</b>
A	8331S-A	Epoxy Resin
B	8331S-B	Epoxy hardener

*Safety Data Sheets for each part listed above follow this cover sheet.*

#### **Transportation Instruction**

Before offering this product kit for transport, read Section 14 for all parts listed above.



## Safety Data Sheet

according to WHMIS 2023 and HCS 2024

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Version number 7.01

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### 1 Identification

#### · Product identifier

##### · Trade name: 8331S-A

· Other Means of Identification: Silver Conductive Epoxy Adhesive (Part A)

· Related Part Number: 8331S-Part A, 8331S-15G, 8331S-50ML, 8331S-200ML

##### · Application of the substance / the mixture

Electrically conductive epoxy adhesive resin part for use with hardeners

##### · Uses advised against

Not available

#### · Details of the supplier of the safety data sheet

##### Manufacturer/Supplier:

MG Chemicals (Head Office)

1210 Corporate Drive

Burlington, Ontario L7L 5R6

CANADA

+(1) 800-340-0772

+(1) 905-331-1396

info@mgchemicals.com

##### Distributor:

Masline

511 Clinton Ave S

Rochester, New York 14620

United States

+(1) 586-546-5373

#### · Information department: sds@mgchemicals.com

#### · Emergency telephone number:

For hazardous material incidents ONLY (leaks, spills, fires, exposures or accidents)

USA or CANADA-Call Verisk 3E at +1-866-519-4752 or +1-760-476-3962 (Service access code: 335388)

For emergencies involving the transport of dangerous goods; 24/7 service

CANADA-Call CANUTEC collect at +1-613-996-6666 or \*666 on cellular phones

### 2 Hazard identification

#### · Classification of the substance or mixture

Skin Irritation - Category 2 H315 Causes skin irritation.

Eye damage/irritation – Category 2A H319 Causes serious eye irritation.

Sensitization - skin – Category 1 H317 May cause an allergic skin reaction.

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

#### · Label elements

##### · GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

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· Hazard pictograms



GHS07 GHS09

· Signal word Warning

· Hazard-determining components of labeling:

phenol, polymer with formaldehyde, glycidyl ether  
1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane

· Hazard statements

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H410 Very toxic to aquatic life with long lasting effects.

· Precautionary statements

- P102 Keep out of reach of children.
- P261 Avoid breathing fumes and vapors.
- P264 Wash hands thoroughly after handling.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear eye protection / face protection.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- 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 rash occurs: Get medical advice.
- P337+P313 If eye irritation persists: Get medical advice.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P391 Collect spillage.
- P501 Dispose of contents and container in accordance with local, regional, and national regulations.

· Other hazards

Long term exposure to silver powder or compounds can lead to an irreversible blue-grey discoloration of the skin.

## \* 3 Composition/Information on ingredients

· Chemical characterization: Mixtures

· Description: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:		
7440-22-4	Silver (Powder)	67.0% w/w
28064-14-4	phenol, polymer with formaldehyde, glycidyl ether Alternative CAS number: 9003-36-5	31.0% w/w

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17557-23-2	1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane	2.0% w/w

## 4 First-aid measures

### · Description of first aid measures

#### · After inhalation:

Remove person to fresh air and keep comfortable for breathing.  
If feeling unwell: Call a POISON CENTRE or doctor.

#### · After skin contact:

Wash with plenty water.  
If skin irritation or rash occurs: Get medical advice or attention.  
Take off contaminated clothing and wash it before reuse.

#### · After eye contact:

Rinse cautiously with water for 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice or attention.

#### · After swallowing:

Rinse mouth.  
Do NOT induce vomiting.  
If symptoms persist consult doctor.

### · Most important symptoms and effects, both acute and delayed

If exposed to metal fumes, chills and fever-like symptoms may occur 4-12 hours after exposure.

### · Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## 5 Fire-fighting measures

### · Extinguishing media

· Suitable extinguishing agents: Use fire fighting measures that suit the environment.

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

The flu-like symptoms of metal fever may be delayed, occurring 4 to 12 hours after exposure.  
Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires.  
Prevent fire-fighting wash from entering waterway or sewer system.  
Inhalation of metal fumes may cause metal fever and irritate the respiratory tract.

#### · Hazardous combustion products:

Carbon Oxides (COx)  
toxic metal fumes  
Zinc oxides

### · Advice for firefighters

· Protective equipment: Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

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### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Remove or keep away all sources of extreme heat or open flames.  
Avoid breathing the fumes or vapors.

- **Environmental precautions:**

Avoid release to the environment.  
Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up:**

Not readily flowable.  
Collect in a sealable, chemical-resistant container.  
Wipe the residues with a paper towel and place dirty towels in container.  
Use soap and water to remove the last traces of residue.

- **Reference to other sections**

See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and storage

- **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.  
Wear protective gloves and eye protection.  
Wash hands and exposed skin thoroughly after handling.  
Take off contaminated clothing and wash it before reuse.  
Collect spillage.  
Contaminated work clothing should not be allowed out of the workplace.  
Avoid breathing fumes or vapours.

· **Information about protection against explosions and fires:** No special measures required.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**

- **Requirements to be met by storerooms and receptacles:**  
Keep in a dry and clean area, away from incompatible substances  
DO NOT FREEZE. Store in a clean and dry area between 5 to 35 °C.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:** Keep receptacle tightly sealed.

- **Specific end use(s)** See section 1.2

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## 8 Exposure controls/ Personal protection

### · Control parameters

#### · Components with limit values that require monitoring at the workplace:

<b>7440-22-4 Silver (Powder)</b>	
TLV (USA)	TWA: 0.1* mg/m <sup>3</sup> *metal: dust and fume

### · Additional information:

The lists that were valid during the creation were used as basis.

Refer to the national or regional occupational exposure limit regulation for abbreviations and acronyms.

### · Exposure controls

#### · Appropriate engineering controls

No further data; see section 7.

#### · Personal protective equipment:

##### · General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

##### · Breathing equipment:

Advice should be sought from respiratory protection specialists.

If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply.

##### · Protection of hands:

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.



Protective gloves: EN374

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

#### · Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

#### · Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· Eye protection:



Safety glasses or tightly sealed goggles: EN 166

## 9 Physical and chemical properties

· Information on basic physical and chemical properties

· Physical state	Solid
· Form:	Pasty
· Color:	Silver grey
· Odor:	Light
· Odor threshold:	Not determined.
· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	Undetermined.
· Flammability:	Non flammable
· Explosion limits:	
· Lower:	Not applicable
· Upper:	Not applicable
· Flash point:	150 °C (302 °F)
· Auto igniting:	Not determined
· Decomposition temperature:	Not determined.
· pH-value:	Not applicable.
· Viscosity:	
· Kinematic:	Not applicable.
· Dynamic:	Not applicable.
· Solubility in / Miscibility with	
· Water:	Insoluble.
· Partition coefficient (n-octanol/water):	Not determined.
· Vapor pressure:	Not applicable.
· Relative density at 20 °C (68 °F):	2.55
· Vapor density (air=1):	Not applicable.
· Particle characteristics	Not determined.

· Other information

· Important information on protection of health and environment, and on safety.

· Ignition temperature:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Solvent content:	
· Organic solvents:	Not available
· VOC content:	2.000 %
· Solids content:	100.0 %

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· Evaporation rate	Not applicable.
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## 10 Stability and reactivity

- **Reactivity** Reacts exothermically with amines.
- **Chemical stability** Chemically stable at normal temperatures and pressures.
- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** Avoid ignition sources, open flames, and incompatible substances.
- **Incompatible materials:**  
Strong acids  
Strong bases  
Strong oxidizing agents
- **Hazardous decomposition products:**  
No dangerous decomposition products known.  
Hazardous combustion products: see section 5.

## 11 Toxicological information

### · Information on toxicological effects

#### · Acute toxicity:

- LD/LC50 values that are relevant for classification:

7440-22-4 Silver (Powder)		
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	≥5.16 mg/L /≥4 h (rat)
28064-14-4 phenol, polymer with formaldehyde, glycidyl ether		
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)
17557-23-2 1,3-bis(2,3-epoxypropoxy)-2,2-dimethylpropane		
Oral	LD50	2,000 mg/kg (rat)
Dermal	LD50	2,150 mg/kg (rabbit)

#### · Primary irritant effect:

- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.

- **Sensitization:** Sensitization possible through skin contact.

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### · Summary of effects and symptoms by route of exposure

- **Eyes:** redness, serious irritation
- **Skin:**
  - rash, allergic contact dermatitis
  - redness, irritation
  - dry skin
- **Inhalation:**
  - Inhalation of fumes may cause metal fever and irritate the respiratory tract.
  - The flu-like symptoms of metal fume fever may be delayed, occurring 4–12 hours after exposure.
- **Swallowed:**
  - abdominal pain
  - nausea, vomiting

### · Delayed and immediate effects as well as chronic effects from short and long-term exposure

Prolonged and repeated exposure to uncured epoxy hardener may lead to skin sensitization.  
Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.

### · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

#### · Carcinogenic categories

##### · IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

##### · NTP (National Toxicology Program)

None of the ingredients is listed.

## 12 Ecological information

### · Toxicity

#### · Aquatic toxicity:

Very toxic to aquatic life with long lasting effect.  
Avoid release to the environment.  
Collect spillage.

#### 28064-14-4 phenol, polymer with formaldehyde, glycidyl ether

LC50 96h >1–≤10 mg/L (not defined)

In Europe, similar epoxy resin mixtures with CAS 28064-14-4 are generally classified as chronic category 2 marine pollutant due to LC50 96 h of >1 mg/L but ≤10 mg/L.

### · Persistence and degradability

No further relevant information available.

### · Bioaccumulative potential

No further relevant information available.

### · Mobility in soil

No further relevant information available.

### · Results of PBT and vPvB assessment

#### · PBT:

Not applicable.

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· **vPvB:** Not applicable.

· **Other adverse effects**

· **Remark:** Very toxic for fish

## 13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:** This material and its container must be disposed of as hazardous waste.

· **Uncleaned packagings:**

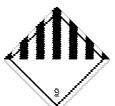
· **Recommendation:**

Containers may still present a chemical hazard/ danger when empty.

Dispose of contents in accordance with all local, regional, national, and international regulations.

Where possible retain label warnings and SDS and observe all notices pertaining to the product.

## 14 Transport information

· <b>UN-Number</b>	
· DOT/TDG, IMDG, IATA	UN3077
· <b>UN proper shipping name</b>	
· DOT/TDG	NOT REGULATED by DOT Environmentally hazardous substance, solid, n.o.s. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)
· IMDG	NOT REGULATED for sea freight IMDG according to 2.10.2.7 for sizes up to 5 kg. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)
· IATA	NOT REGULATED by Air IATA Special Provision A197 for sizes 5kg or less. Environmentally hazardous substance, solid, n.o.s. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)
· <b>Transport hazard class(es)</b>	
· DOT/TDG, IMDG	
	
· <b>Class</b>	9 Miscellaneous dangerous substances and articles

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· Label	9
· IATA	
 	
· Class	9 Miscellaneous dangerous substances and articles
· Label	9
· Packing group	
· DOT/TDG, IMDG, IATA	III
· Environmental hazards:	
· Marine pollutant:	MARINE POLLUTANT
· Special marking (IATA):	ENVIRONMENTALLY HAZARDOUS Symbol (fish and tree)
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· DOT/TDG	
· Quantity limitations	On passenger aircraft/rail: 400 kg On cargo aircraft only: 400 kg
· IMDG	
· Limited quantities (LQ)	5 kg
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· Special precautions for user	Not applicable.
· Hazard identification number (Kemler code):	90
· EMS Number:	F-A,S-F
· Stowage Category	A
· Stowage Code	SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.
· UN "Model Regulation":	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (SILVER (POWDER), PHENOL, POLYMER WITH FORMALDEHYDE, GLYCIDYL ETHER), 9, III

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### \*15 Regulatory information

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

##### · OSHA Hazard Communication Standard (29 CFR Part 1900)

The safety data sheet and label comply with HCS 2024.

##### · Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2023.

##### · Sara

###### · Section 355 (extremely hazardous substances):

None of the ingredients is listed.

###### · Section 313 (Specific toxic chemical listings):

None of the ingredients is listed.

###### · TSCA (Toxic Substances Control Act):

28064-14-4	phenol, polymer with formaldehyde, glycidyl ether	ACTIVE
17557-23-2	1,3-bis(2,3-epoxypoxy)-2,2-dimethylpropane	ACTIVE

###### · Hazardous Air Pollutants

None of the ingredients is listed.

#### · Proposition 65

###### · Chemicals known to cause cancer:

None of the ingredients is listed.

###### · Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

###### · Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

###### · Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

#### · Carcinogenic categories

###### · TLV (Threshold Limit Value)

None of the ingredients is listed.

###### · NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

#### · Canadian substance listings:

###### · Canadian Domestic Substances List (DSL)

28064-14-4	phenol, polymer with formaldehyde, glycidyl ether
17557-23-2	1,3-bis(2,3-epoxypoxy)-2,2-dimethylpropane

###### · Canadian Non-Domestic Substances List (NDSL)

None of the ingredients is listed.

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· Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients is listed.

· Canadian Ingredient Disclosure list (limit 1%)

None of the ingredients is listed.

· HMIS-ratings (scale 0 - 4)

Health = \* 2

Fire = 1

Reactivity = 0

· Europe

· RoHS (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

· WEEE (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

· Per- and polyfluoroalkyl substances (PFAS)

None of the ingredients is listed.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Regulatory department

· Contact: sds@mgchemicals.com

· Version number of previous version: 7.00

· Date of preparation 07/03/2025

· Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

· \* Data compared to the previous version altered.

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## 1 Identification

### · Product identifier

#### · Trade name: 8331S-B

· Other Means of Identification: Silver Conductive Epoxy Adhesive (Part B)

· Related Part Number: 8331S-Part B, 8331S-15G (B), 8331S-50ML (B), 8331S-200ML (B)

#### · Application of the substance / the mixture

Electrically conductive epoxy adhesive hardener part for use with resins.

#### · Uses advised against

Not available

### · Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

MG Chemicals (Head Office)

1210 Corporate Drive

Burlington, Ontario L7L 5R6

CANADA

+(1) 800-340-0772

+(1) 905-331-1396

info@mgchemicals.com

#### Distributor:

Masline

511 Clinton Ave S

Rochester, New York 14620

United States

+(1) 586-546-5373

### · Information department: sds@mgchemicals.com

### · Emergency telephone number:

For hazardous material incidents ONLY (leaks, spills, fires, exposures or accidents)

USA or CANADA-Call Verisk 3E at +1-866-519-4752 or +1-760-476-3962 (Service access code: 335388)

For emergencies involving the transport of dangerous goods; 24/7 service

CANADA-Call CANUTEC collect at +1-613-996-6666 or \*666 on cellular phones

## 2 Hazard identification

### · Classification of the substance or mixture

Skin Irritation - Category 2 H315 Causes skin irritation.

Eye damage/irritation – Category 1 H318 Causes serious eye damage.

Sensitization - skin – Category 1 H317 May cause an allergic skin reaction.

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

### · Label elements

#### · GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

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· **Hazard pictograms**



GHS05    GHS07    GHS09

· **Signal word** Danger

· **Hazard-determining components of labeling:**

fatty acids, C18-unsatd., dimers, reactionproducts with polyethylenepolyamines  
 3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine  
 triethylenetetramine

· **Hazard statements**

H315 Causes skin irritation.  
 H318 Causes serious eye damage.  
 H317 May cause an allergic skin reaction.  
 H410 Very toxic to aquatic life with long lasting effects.

· **Precautionary statements**

P102	Keep out of reach of children.
P261	Avoid breathing fumes and vapors.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves / eye protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P333+P313	If skin irritation or rash occurs: Get medical advice.
P362+P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.
P501	Dispose of contents and container in accordance with local, regional, and national regulations.

· **Other hazards**

Long term exposure to silver powder or compounds can lead to an irreversible blue-grey discoloration of the skin.

## 3 Composition/Information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

7440-22-4	Silver (Powder)	67.0% w/w
68410-23-1	fatty acids, C18-unsatd., dimers, reactionproducts with polyethylenepolyamines	15.0% w/w
68541-13-9	fatty acids, c18-unsat, dimer, polymers, w/3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine	14.0% w/w

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4246-51-9	3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine	2.0% w/w
112-24-3	triethylenetetramine	0.2% w/w

## 4 First-aid measures

### · Description of first aid measures

#### · After inhalation:

Remove person to fresh air and keep comfortable for breathing.  
If feeling unwell: Call a POISON CENTRE or doctor.

#### · After skin contact:

Wash with plenty water.  
If skin irritation or rash occurs: Get medical advice or attention.  
Take off contaminated clothing and wash it before reuse.

#### · After eye contact:

Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Immediately call a POISON CENTER or doctor.

#### · After swallowing:

Rinse mouth.  
Do NOT induce vomiting.  
If symptoms persist consult doctor.

### · Most important symptoms and effects, both acute and delayed

If exposed to metal fumes, chills and fever-like symptoms may occur 4-12 hours after exposure.

### · Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## 5 Fire-fighting measures

### · Extinguishing media

· Suitable extinguishing agents: Use fire fighting measures that suit the environment.

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

Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires.  
Prevent fire-fighting wash from entering waterway or sewer system.  
Inhalation of metal fumes may cause metal fever and irritate the respiratory tract.  
The flu-like symptoms of metal fever may be delayed, occurring 4 to 12 hours after exposure.

#### · Hazardous combustion products:

Carbon Oxides (COx)  
Nitrogen Oxides (NOx)  
toxic metal fumes  
Zinc oxides  
ammonia  
nitric acid

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- **Advice for firefighters**

- **Protective equipment:** Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Remove or keep away all sources of extreme heat or open flames.

Avoid breathing mist, spray, or vapors.

- **Environmental precautions:**

Avoid release to the environment.

Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up:**

Use neutralizing agent.

Dispose contaminated material as waste according to section 13.

Ensure adequate ventilation.

Not readily flowable.

Collect in a sealable, chemical-resistant container.

Wipe the residues with a paper towel and place dirty towels in container.

Use soap and water to remove the last traces of residue.

- **Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

## 7 Handling and storage

- **Precautions for safe handling**

Wear protective gloves and eye protection.

Wash hands and exposed skin thoroughly after handling.

Take off contaminated clothing and wash it before reuse.

Collect spillage.

Contaminated work clothing should not be allowed out of the workplace.

Avoid breathing the fumes, mist, and vapors.

- **Information about protection against explosions and fires:** No special measures required.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**

- **Requirements to be met by storerooms and receptacles:**

Keep in a dry and clean area, away from incompatible substances

- **Information about storage in one common storage facility:** Not required.

- **Further information about storage conditions:** Keep receptacle tightly sealed.

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- **Specific end use(s)** See section 1.2

## 8 Exposure controls/ Personal protection

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

7440-22-4 Silver (Powder)	
TLV (USA)	TWA: 0.1* mg/m <sup>3</sup> *metal: dust and fume
112-24-3 triethylenetetramine	
EV (Canada)	TWA: 3 mg/m <sup>3</sup> , 0.5 ppm
WEEL (USA)	Skin TWA: 6 mg/m <sup>3</sup> , 1 ppm

- **Additional information:**

The lists that were valid during the creation were used as basis.

Refer to the national or regional occupational exposure limit regulation for abbreviations and acronyms.

- **Exposure controls**

- **Appropriate engineering controls** No further data; see section 7.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

- **Breathing equipment:**

If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply.

- **Protection of hands:**

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.



Protective gloves: EN374

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Safety glasses or tightly sealed goggles: EN 166

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· <b>Physical state</b>	Solid
· <b>Form:</b>	Pasty
· <b>Color:</b>	Silver grey
· <b>Odor:</b>	Amine-like
· <b>Odor threshold:</b>	Not determined.
· <b>Melting point/Melting range:</b>	Undetermined.
· <b>Boiling point/Boiling range:</b>	>221 °C (>429.8 °F)
· <b>Flammability:</b>	Non flammable
· <b>Explosion limits:</b>	
· <b>Lower:</b>	Not applicable
· <b>Upper:</b>	Not applicable
· <b>Flash point:</b>	93 °C (199.4 °F)
· <b>Auto igniting:</b>	Not determined
· <b>Decomposition temperature:</b>	Not determined.
· <b>pH-value:</b>	Not applicable.
· <b>Viscosity:</b>	
· <b>Kinematic:</b>	Not applicable.
· <b>Dynamic:</b>	Not applicable.
· <b>Solubility in / Miscibility with</b>	
· <b>Water:</b>	Insoluble.
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Vapor pressure at 20 °C (68 °F):</b>	<4.8 hPa (<3.6 mm Hg)
· <b>Relative density at 20 °C (68 °F):</b>	2.38
· <b>Vapor density (air=1):</b>	Not applicable.
· <b>Particle characteristics</b>	Not determined.

· **Other information**

· **Important information on protection of health and environment, and on safety.**

· <b>Ignition temperature:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Product does not present an explosion hazard.
· <b>Solvent content:</b>	
· <b>Organic solvents:</b>	Not available
· <b>VOC content:</b>	0.000 %

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· Solids content:	100.0 %
· Evaporation rate	Not applicable.

## 10 Stability and reactivity

### · Reactivity

Reacts exothermically with amines.

Reacts exothermically with ketones, halogenated hydrocarbons, cyanides, nitriles, and epoxides.

May attack metals such as aluminum, zinc, copper, and their alloys.

### · Chemical stability

Chemically stable at normal temperatures and pressures.

#### · Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

### · Possibility of hazardous reactions

No dangerous reactions known.

### · Conditions to avoid

Avoid ignition sources, open flames, and incompatible substances.

### · Incompatible materials:

Strong oxidizing agents

Strong acids

Strong bases

Acetylenic compounds

Ammonia

Peroxides

### · Hazardous decomposition products:

No dangerous decomposition products known.

Hazardous combustion products: see section 5.

## 11 Toxicological information

### · Information on toxicological effects

#### · Acute toxicity:

##### · LD/LC50 values that are relevant for classification:

7440-22-4 Silver (Powder)		
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	≥5.16 mg/L /≥4 h (rat)
4246-51-9 3,3'-(oxybis(2,1-ethane-diyoxy))bis-1-propanamine		
Oral	LD50	4,310 mg/kg (rat)
Dermal	LD50	2,510 mg/kg (rabbit)
112-24-3 triethylenetetramine		
Oral	LD50	2,500 mg/kg (rat)

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Dermal	LD50	805 mg/kg (rabbit)	(Contd. of page 7)
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· **Primary irritant effect:**

- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** Sensitization possible through skin contact.

· **Summary of effects and symptoms by route of exposure**

· **Eyes:**

eye damage, pain  
redness, serious irritation

· **Skin:**

rash, allergic contact dermatitis  
redness, irritation

· **Inhalation:**

Inhalation of fumes may cause metal fever and irritate the respiratory tract.

The flu-like symptoms of metal fume fever may be delayed, occurring 4–12 hours after exposure.  
irritation of the respiratory tract

· **Swallowed:**

abdominal pain  
burning sensation

· **Delayed and immediate effects as well as chronic effects from short and long-term exposure**

Prolonged and repeated exposure to uncured epoxy hardener may lead to skin sensitization.

Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.

· **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

## 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

Very toxic to aquatic life with long lasting effect.

Avoid release to the environment.

Collect spillage.

<b>4246-51-9 3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine</b>	
LC50 96h	>1,000 mg/L (fish)
<b>112-24-3 triethylenetetramine</b>	
EC50/ 48 h	24 mg/L (daphnia)

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LC50 96h	420 mg/L (guppie)	
IC50 72h	2 mg/L (algae)	

- **Persistence and degradability** No further relevant information available.
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.
- **Other adverse effects**
  - **Remark:** Very toxic for fish

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:** This material and its container must be disposed of as hazardous waste.
- **Uncleaned packagings:**
  - **Recommendation:**  
Containers may still present a chemical hazard/ danger when empty.  
Dispose of contents in accordance with all local, regional, national, and international regulations.  
Where possible retain label warnings and SDS and observe all notices pertaining to the product.

## 14 Transport information

· <b>UN-Number</b>	
· <b>DOT/TDG, IMDG, IATA</b>	UN3077
· <b>UN proper shipping name</b>	
· <b>DOT/TDG</b>	NOT REGULATED by DOT Environmentally hazardous substance, solid, n.o.s. (Silver (Powder))
· <b>IMDG</b>	NOT REGULATED for sea freight IMDG according to 2.10.2.7 for sizes up to 5 kg. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder))
· <b>IATA</b>	NOT REGULATED by Air IATA Special Provision A197 for sizes 5kg or less. Environmentally hazardous substance, solid, n.o.s. (Silver (Powder))

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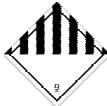
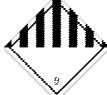
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<ul style="list-style-type: none"> <li>Transport hazard class(es)           <ul style="list-style-type: none"> <li>DOT/TDG, IMDG                </li> <li>Class 9</li> <li>Label 9</li> </ul> </li> </ul>		9 Miscellaneous dangerous substances and articles 9
<ul style="list-style-type: none"> <li>IATA             </li> </ul>		9 Miscellaneous dangerous substances and articles 9
<ul style="list-style-type: none"> <li>Packing group           <ul style="list-style-type: none"> <li>DOT/TDG, IMDG, IATA</li> </ul> </li> </ul>		III
<ul style="list-style-type: none"> <li>Environmental hazards:           <ul style="list-style-type: none"> <li>Marine pollutant:</li> <li>Special marking (IATA):</li> </ul> </li> </ul>		MARINE POLLUTANT ENVIRONMENTALLY HAZARDOUS Symbol (fish and tree)
<ul style="list-style-type: none"> <li>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</li> </ul>		Not applicable.
<ul style="list-style-type: none"> <li>Transport/Additional information:           <ul style="list-style-type: none"> <li>DOT/TDG               <ul style="list-style-type: none"> <li>Quantity limitations</li> </ul> </li> </ul> </li> </ul>		On passenger aircraft/rail: 400 kg On cargo aircraft only: 400 kg
<ul style="list-style-type: none"> <li>IMDG               <ul style="list-style-type: none"> <li>Limited quantities (LQ)</li> <li>Excepted quantities (EQ)</li> </ul> </li> </ul>		5 kg Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
<ul style="list-style-type: none"> <li>Special precautions for user               <ul style="list-style-type: none"> <li>Hazard identification number (Kemler code): 90</li> <li>EMS Number:</li> <li>Stowage Category</li> <li>Stowage Code</li> </ul> </li> </ul>		Not applicable. F-A,S-F A SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.

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· UN "Model Regulation":	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (SILVER (POWDER)), 9, III
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## \*15 Regulatory information

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

#### · OSHA Hazard Communication Standard (29 CFR Part 1900)

The safety data sheet and label comply with HCS 2024.

#### · Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2023.

#### · Sara

##### · Section 355 (extremely hazardous substances):

None of the ingredients is listed.

##### · Section 313 (Specific toxic chemical listings):

None of the ingredients is listed.

##### · TSCA (Toxic Substances Control Act):

68410-23-1	fatty acids, C18-unsatd., dimers, reactionproducts with polyethylenepolyamines	ACTIVE
68541-13-9	fatty acids, c18-unsat, dimer, polymers, w/3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine	ACTIVE
4246-51-9	3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine	ACTIVE
112-24-3	triethylenetetramine	ACTIVE

##### · Hazardous Air Pollutants

None of the ingredients is listed.

#### · Proposition 65

##### · Chemicals known to cause cancer:

None of the ingredients is listed.

##### · Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

##### · Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

##### · Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

#### · Carcinogenic categories

##### · TLV (Threshold Limit Value)

None of the ingredients is listed.

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· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· Canadian substance listings:

· Canadian Domestic Substances List (DSL)

68410-23-1	fatty acids, C18-unsatd., dimers, reactionproducts with polyethylenepolyamines
68541-13-9	fatty acids, c18-unsat, dimer, polymers, w/3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine
4246-51-9	3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine
112-24-3	triethylenetetramine

· Canadian Non-Domestic Substances List (NDSL)

None of the ingredients is listed.
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· Canadian Ingredient Disclosure list (limit 0.1%)

112-24-3	triethylenetetramine
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· Canadian Ingredient Disclosure list (limit 1%)

None of the ingredients is listed.
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· HMIS-ratings (scale 0 - 4)

Health = \* 3  
Fire = 1  
Reactivity = 0

· Europe

· RoHS (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

· WEEE (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

· Per- and polyfluoroalkyl substances (PFAS)

None of the ingredients is listed.
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## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Regulatory department

· Contact: sds@mgchemicals.com

· Version number of previous version: 7.00

· Date of preparation 07/03/2025

· Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

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CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

• \* **Data compared to the previous version altered.**

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