



Silver-Filled Epoxy Systems Part 1

72-08116-1; 72-00218A; 72-00348A; 72-90005B; 72-11011

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SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifier : Silver-Filled Epoxy Systems Part 1

Product Code(s) : 72-08116-1; 72-00218A; 72-00348A; 72-90005B; 72-11011

SDS No. : PHC-001 EUG

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

- : Bonding agent.
- Use pattern: professional use.
- No restrictions on use known.

1.3 Details of the supplier of the safety data sheet:

Parker Hannifin France

SAS-Etablissement de Saint Ouen l'Aumône-PA du vert
Galant-6/8 avenue du Vert
Galant-95310 Saint Ouen l'Aumône-France

Chomerics Europe
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Telephone : +33 (01) 34 32 39 00 (France); +44 (0) 1494 455 400 (UK)

1.4 Emergency Telephone Number

: 001-352-323-3500 (INFOTRAC)

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Silver paste. Irritating odour.

Most important hazards:

Flammable liquid and vapour May be ignited by open flame.

Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. Suspected of causing genetic defects. Suspected of causing cancer. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.

Toxic to aquatic life with long lasting effects. See Section 12 for more environmental information.

This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008. Classification:

Flammable liquid - Category 3; H226

Skin corrosion/irritation - Category 2; H315

Eye damage/irritation - Category 2; H319

Skin sensitization - Category 1; H317

Germ cell mutagenicity - Category 2; H341

Carcinogenicity - Category 2; H351

Chronic aquatic hazard - Category 2; H411

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2.2 Label elements

Hazard pictogram(s)



Hazardous components which must be listed on the label: Reaction product: bisphenol-A-(epichlorohydrin); n-Butyl glycidyl ether.

Signal word:
Warning!

Hazard statements:

- H226 - Flammable liquid and vapour.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H317 - May cause an allergic skin reaction.
- H341 - Suspected of causing genetic defects.
- H351 - Suspected of causing cancer.
- H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements:

- P201 - Obtain special instructions before use.
- P210 - Keep away from heat, sparks and open flame. - No smoking.
- P280 - Wear protective gloves/clothing and eye/face protection.
- P308 + P313 - IF exposed or concerned: Get medical advice/attention.
- P370 + 378 - In case of fire: Use carbon dioxide, dry chemical or foam to extinguish.
- P501 - Dispose of contents/container in accordance with local regulation.

2.3 Other hazards

Other hazards which do not result in classification:

May hydrolyze in the presence of water to Methanol. Methanol is considered to be dangerous. May release peroxides on exposure to light and air, or on contact with incompatibles. Rate of peroxide formation is not known. Toxic fumes may be released during a fire. Mild respiratory irritant. Inhalation of fumes may result in metal fume fever, a flu-like illness. May cause gastrointestinal irritation. Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights. Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

PBT assessment:

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

Chemical nature - Mixture of: Inorganic substances in powdered form; Epoxy resin; Ether; silane compounds.

The following substances shall be indicated according to legislation:

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Chemical name	CAS #	EC No.	Concentration	CLP Classification
Silver	7440-22-4	231-131-3	65.0 - 80.0	not hazardous. Substances for which there are Community workplace exposure limits.
Reaction product: bisphenol-A-(epichlorohydrin)	25068-38-6	500-033-5	20.0 - 30.0	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317 Aquatic Chronic 2; H411
n-Butyl glycidyl ether	2426-08-6	219-376-4	1.0 - 3.0	Flam. Liq. 3; H226 *Acute Tox. 4; H302 *Acute Tox. 4; H332 Skin Sens. 1; H317 Muta. 2; H341 Carc. 2; H351 STOT SE 3; H335 Aquatic Chronic 3; H412
[3-(2,3-epoxypropoxy)propyl]tri methoxysilane	2530-83-8	219-784-2	0.1 - 0.5	Eye Irrit. 2; H319 Aquatic Chronic 3; H412 (self classified)

*The above CLP Acute toxicity Classifications for the following chemicals are 'Minimum Classifications': n-Butyl glycidyl ether.

For the full text of the H phrases not mentioned in this Section or in Section 2, see Section 16.

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures

- Ingestion* : Do not induce vomiting. Never give anything by mouth to a person who is unconscious or is having convulsions. If exposed or concerned: Get medical attention/advice.
- Inhalation* : If breathed in, move person into fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stops, provide artificial respiration. If exposed or concerned: Get medical attention/advice.
- Skin contact* : If on skin: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
- Eye contact* : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed

- : Causes skin irritation. Contact may cause redness, swelling and a painful sensation.
- : Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
- : May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
- : Suspected of causing genetic defects.
- : Suspected of causing cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.
- : Mild respiratory irritant. Symptoms may include upper respiratory irritation, coughing and breathing difficulties.
- : Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.
- : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).
- : Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights.
- : Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

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4.3 Indication of any immediate medical attention and special treatment needed

: Provide general supportive measures and treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

: Carbon dioxide (CO₂); Dry chemical; Alcohol resistant foam.

Unsuitable extinguishing media

: May react with water. Do not use water if possible.

5.2 Special hazards arising from the substance or mixture

: Flammable liquid and vapour. May be ignited by open flame. May react with water, generating heat. May hydrolyze in the presence of water to Methanol. Upon completion of the curing process, these hydrolysis products are no longer released. After prolonged storage, may release explosive peroxides in the presence of air. Rate of peroxide formation is not known. The pressure in sealed containers can increase under the influence of heat. Burning produces obnoxious and toxic fumes. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Phenol; Aldehydes; Other unidentified organic compounds.

5.3 Advice for firefighters

Protective equipment for fire-fighters

: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not get water inside containers. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

: Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Wear appropriate protective equipment.

6.2 Environmental precautions

: Avoid release to the environment. Prevent product from entering drains, sewers, waterways and soil.

6.3 Methods and material for containment and cleaning up

: Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. Use only non-sparking tools. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Do not use combustible absorbents, such as sawdust. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product. Contact the proper local authorities.

6.4 Reference to other sections

: Refer to protective measures listed in sections 7 and 8. Refer to Section 13 for disposal of contaminated material.



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SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
Persons with recurrent skin eczema or sensitization problems should be excluded from working with this product. Once a person is sensitized, no further exposure to the material that caused the sensitization should be permitted.
Ensure adequate ventilation. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Do not breathe dust or mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and open flame. - No smoking. Ground/Bond container and receiving equipment. Use explosion-proof electrical and ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

7.2 Conditions for safe storage, including any incompatibilities

- : Store in cool/well-ventilated place. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. Do not store near any incompatible materials (see Section 10). Keep containers dry and tightly closed to avoid moisture absorption and contamination.

7.3 Specific end use(s)

- : Bonding agent; Electronics industry

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

<u>Exposure Limits:</u>			
<u>Chemical Name</u>	<u>Exposure Limits</u>	<u>Type</u>	<u>Notes</u>
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	None known.	European Union (OEL)	None.
n-Butyl glycidyl ether	25 ppm (135 mg/m ³) (TWA)	France (OEL)	None.
	25 ppm (135 mg/m ³) (TWA)	Ireland (OEL)	None.
	30 mg/m ³ (TWA)	Poland (OEL)	None.
	60 mg/m ³ (STEL)		
	25 ppm (133 mg/m ³) (TWA)	Spain (OEL)	None.
Reaction product: bisphenol-A(epichlorohydrin)	1.0 mg/m ³ (TWA)	Bulgaria (OEL)	(as epichlorohydrin)
Silver	0.1 mg/m ³ (TWA)	European Union (OEL)	None.
	0.1 mg/m ³ (TWA)	Finland (OEL)	None.
	0.1 mg/m ³ (TWA)	France (OEL)	None.
	0.1 mg/m ³ (inhalable) (TWA)	Germany (OEL)	(exposure factor 8)
	0.1 mg/m ³ (TWA) 0.4 mg/m ³ (STEL)	Hungary (OEL)	None.

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	0.1 mg/m ³ (TWA)	Italy (OEL)	None.
	0.05 mg/m ³ (TWA)	Poland (OEL)	None.
	0.1 mg/m ³ (TWA)	Spain (OEL)	None.
	0.1 mg/m ³ (TWA)	The United Kingdom (The United Kingdom (WELs))	None.

Biological Exposure Indices:

No biological exposure limits noted for the ingredient(s).

Derived No Effect Level (DNEL): No information available.

Predicted No Effect Concentration (PNEC): No information available.

8.2 Exposure controls

Ventilation and engineering measures

- : Use only outdoors or in a well-ventilated area. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection

- : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used. Advice should be sought from respiratory protection specialists.

Skin protection

- : Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it. Wear resistant clothing and boots.

Eye / face protection

- : Wear eye/face protection. Chemical splash goggles are recommended. A full face shield may also be necessary. See also EN 166.

Other protective equipment

- : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations

- : Do not breathe dust or mist. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice. Contaminated work clothing must not be allowed out of the workplace.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- Appearance** : Silver paste.
- Odour** : Irritating odour.
- Odour threshold** : No information available.
- pH** : No information available.
- Flash point** : 54.4°C (based on ingredients)
- Flashpoint (Method)** : closed cup
- Lower flammable limit (% by vol.)** : No information available.
- Upper flammable limit (% by vol.)** : No information available.
- Flammability (solid, gas)** : Not applicable.

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Auto-ignition temperature

: No information available.

Decomposition temperature

: No information available.

Oxidizing properties

: None known.

Explosive properties

: Not explosive

Initial boiling point and boiling range

: > 110°C (based on ingredients)

Melting/Freezing point

: No information available.

Relative density

: > 1

Solubility in water

: Negligible.. May react with water.

Other solubility(ies)

: No information available.

Vapour pressure

: No information available.

Vapour density

: No information available.

Partition coefficient: n-octanol/water

: No information available.

Viscosity

: No information available.

Evaporation rate (BuAe = 1)

: No information available.

9.2 Other Information

Volatiles (% by weight)

: No information available.

Volatile organic Compounds (VOC's)

: 32 g/L

Other physical/chemical comments

: No additional information.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

: May react with water. May hydrolyze in the presence of water to Methanol. Upon completion of the curing process, these hydrolysis products are no longer released.

10.2 Chemical stability

: Stable under normal conditions. After prolonged storage, may release explosive peroxides in the presence of air. Rate of peroxide formation is not known.

10.3 Possibility of hazardous reactions

: Hazardous polymerization does not occur.

10.4 Conditions to avoid

: Direct sources of heat. Do not use in areas without adequate ventilation. Avoid contact with incompatible materials. Avoid excessive moisture.

10.5 Incompatible materials

: Strong oxidizing agents; Strong acids; Strong bases; Water; Amines.

10.6 Hazardous decomposition products

: Peroxides
Burning produces obnoxious and toxic fumes. In the event of fire the following can be released: Carbon oxides; Metal oxides; formaldehyde; Phenol; Aldehydes; Other unidentified organic compounds.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological effects:

Acute toxicity

: According to the classification criteria of the European Union, this product is not considered as being an acutely toxic chemical.

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Skin corrosion/Irritation : This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008.
Classification:
Skin corrosion/irritation - Category 2. Causes skin irritation.

Serious eye damage/irritation

: This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008.
Classification:
Eye damage/irritation - Category 2. Causes serious eye irritation.

Respiratory or skin sensitisation

: This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008.
Classification:
Skin sensitization - Category 1. May cause an allergic skin reaction.
May cause severe skin sensitization with allergic contact dermatitis symptoms such as swelling, rash and eczema.
Not expected to be a respiratory sensitizer.

Germ cell mutagenicity : This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008.
Classification:
Germ cell mutagenicity - Category 2. Suspected of causing genetic defects.
Contains: n-Butyl glycidyl ether. n-Butyl glycidyl ether has been tested in a range of short-term genotoxicity tests with positive results in several assays. In vivo, it induced chromosomal aberrations and micronucleus formation in mice, and induced dominant lethal mutations in mice. n-Butyl glycidyl ether also tested positive in a number of in vitro genotoxicity assays. Reverse mutations were observed in several, but not all, strains of Salmonella typhimurium, with and without activation. n-butyl glycidyl ether induced mutations in mouse lymphoma cells, Chinese hamster cells and human peripheral blood lymphocytes.

Carcinogenicity : This mixture is classified as hazardous in accordance with Regulation (EC) No 1272/2008.
Classification:
Carcinogenicity - Category 2. Suspected of causing cancer. Contains: n-Butyl glycidyl ether. The potential of the epoxy ring contained in the glycidyl group to interact with DNA suggests a genotoxic mechanism of carcinogenicity. The possibility that n-butyl glycidyl ether could act as a direct carcinogen is supported by the available genotoxicity data for its analogues (allyl glycidyl ether, glycidol, phenyl glycidyl ether). There is equivocal evidence of carcinogenicity in male rats, some evidence in male mice and equivocal evidence in female mice for allyl glycidyl ether. There is stronger evidence for carcinogenicity for glycidol, as it induced tumours in a wide range of tissues in multiple species exposed via oral administration. Exposure-related nasal tumours were observed at the higher concentration only of phenyl glycidyl ether.

Reproductive toxicity : Contains no ingredient listed as toxic to reproduction.

STOT-single exposure : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through repeated doses.

STOT-repeated exposure : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through repeated exposures.

Aspiration hazard : According to the classification criteria of the European Union, this product is not considered as being an aspiration hazard to humans.

Toxicological data : No data is available on the product itself. The calculated ATE values for this mixture are:
ATE oral = 25 974 mg/kg
ATE inhalation (vapours) = 810 mg/L/4H

See below for individual ingredient acute toxicity data.

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<u>Chemical name</u>	<u>LC₅₀(4hr)</u>	<u>LD₅₀</u>	
	<u>inh, rat</u>	<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Silver	> 5.16 mg/L (dust) (No mortality)	> 2000 mg/kg (No mortality)	> 2000 mg/kg (No mortality)
Reaction product: bisphenol-A-(epichlorohydrin)	No information available.	11 400 mg/kg	> 2000 mg/kg (No mortality)
n-Butyl glycidyl ether	2590 ppm (13.77 mg/L) (vapour)	1660 mg/kg	> 2150 mg/kg
[3-(2,3-epoxypropoxy)propyl]tri methoxysilane	> 5.3 mg/L (aerosol)	7010 - 16 900 mg/kg	4280 mg/kg

- Routes of exposure** : Eye contact; Skin contact; Skin Absorption; Inhalation; Ingestion
- Effects of acute exposure** : *Inhalation*: Mild respiratory irritant. May cause coughing and breathing difficulties. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.
- Skin contact*: Causes skin irritation. Contact may cause redness, swelling and a painful sensation.
- Eye contact*: Causes serious eye irritation. Symptoms may include stinging, tearing, redness, swelling and blurred vision.
- Ingestion*: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Potential Chronic Health Effects

- : Prolonged overexposure may cause slight liver and kidney effects, such as increased organ weights.
Silver in the form of a finely divided dust may cause discoloration in contact with skin, and argyrosis in case of inhalation.

- Other important hazards** : May hydrolyze in the presence of water to Methanol. Methanol is considered to be dangerous.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

- : Toxic to aquatic life with long lasting effects. The product contains the following substances which are hazardous for the environment: Reaction product: bisphenol-A-(epichlorohydrin); n-Butyl glycidyl ether; [3-(2,3-epoxypropoxy)propyl]trimethoxysilane. No data is available on the product itself. Should not be released into the environment. Contains: Silver The acute toxicity of silver to aquatic species varies drastically by the chemical form and correlates with the availability of free ionic silver. Aquatic toxicity is highly variable not only by organism but with physical and chemical characteristics of the water itself.

See the following tables for individual ingredient ecotoxicity data.

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Ecotoxicity data:

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Silver	7440-22-4	No information available.	No information available.	None.
Reaction product: bisphenol-A-(epichlorohydrin)	25068-38-6	3.4 mg/L (Rainbow trout)	No information available.	None.
n-Butyl glycidyl ether	2426-08-6	65 mg/L (Rainbow trout)	No information available.	None.
[3-(2,3-epoxypropoxy)propyl]trimet hoxysilane	2530-83-8	55 mg/L (common carp)	No information available.	None.

<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Silver	7440-22-4	No information available.	No information available.	None.
Reaction product: bisphenol-A-(epichlorohydrin)	25068-38-6	1.1 - 2.8 mg/L (Daphnia magna)	0.3 mg/L (Read-across)	None.
n-Butyl glycidyl ether	2426-08-6	3.9 mg/L (Daphnia magna)	No information available.	None.
[3-(2,3-epoxypropoxy)propyl]trimet hoxysilane	2530-83-8	710 mg/L (Daphnia magna)	≥ 100 mg/L	None.

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Silver	7440-22-4	No information available.	No information available.	None.
Reaction product: bisphenol-A-(epichlorohydrin)	25068-38-6	9.4 mg/L/72hr (Green algae) (Read-across)	2.8 mg/L/72hr (Read-across)	None.
n-Butyl glycidyl ether	2426-08-6	35 mg/L/96hr (Green algae)	No information available.	None.
[3-(2,3-epoxypropoxy)propyl]trimet hoxysilane	2530-83-8	350 mg/L/96hr (Green algae)	130 mg/L/96hr	None.

12.2 Persistence and degradability

- : The product itself has not been tested.
The following ingredients are considered to be readily biodegradable: n-Butyl glycidyl ether.
Contains the following chemicals which are not readily biodegradable: silver; Reaction product: bisphenol-A-(epichlorohydrin); [3(2,3-epoxypropoxy)propyl]trimethoxysilane.

12.3 Bioaccumulation potential

- : The product itself has not been tested. See the following data for ingredient information.

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Components	Partition coefficient n-octanol/water (log Kow)	Bioconcentration factor (BCF)
Reaction product: bisphenol-A-(epichlorohydrin) (CAS 25068-38-6)	> 2.915	31
n-Butyl glycidyl ether (CAS 2426-08-6)	0.63	1.173 - 3.162 (calculated)
[3-(2,3-epoxypropoxy)propyl]trimet hoxysilane (CAS 2530-83-8)	- 0.9	No information available.

12.4 Mobility in soil : The product itself has not been tested.

12.5 Results of PBT and vPvB assessment

: This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

12.6 Other Adverse Environmental effects



: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

- Handling for Disposal** : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way.
- Methods of Disposal** : Empty containers retain residue (liquid and/or vapour) and can be dangerous. Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.
Dispose of in accordance with the European Directives on waste and hazardous waste. Waste must be classified and labelled prior to recycling or disposal. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	14.1 UN Number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing Group	Label
ADR/RID	UN1993	FLAMMABLE LIQUID, N.O.S. [n-Butyl glycidyl ether; Reaction product: bisphenol-A-(epichlorohydrin)]	3	III	 
EU ADR/RID Classification Code	F1 - Flammable liquids having a flash-point of or below 60 °C				
EU ADR / RID Hazard Identification Number	30 - flammable liquid (flash-point between 23 °C and 60 °C, inclusive) or flammable liquid or solid in the molten state with a flash-point above 60 °C, heated to a temperature equal to or above its flash-point, or self-heating liquid.				
ADR/RID Additional information	May be shipped as Limited Quantity when transported in containers no larger than 5.0 Litres; in packages not exceeding 30 kg gross mass. The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material.				

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ICAO/IATA	UN1993	Flammable liquid, n.o.s. [n-Butyl glycidyl ether; Reaction product: bisphenol-A-(epichlorohydrin)]	3	III		
ICAO/IATA Additional information	Refer to the appropriate Packing Instruction, prior to shipping this material. Review all State and Operator Variations, prior to shipping this material. The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material.					
IMDG	UN1993	FLAMMABLE LIQUID, N.O.S. [n-Butyl glycidyl ether; Reaction product: bisphenol-A-(epichlorohydrin)]	3	III		
IMDG Additional information	May be shipped as Limited Quantity when transported in containers no larger than 5.0 Litres; in packages not exceeding 30 kg gross mass. The environmentally hazardous substance mark must appear on packagings holding more than 5 litres of the material.					

14.5 Environmental hazards : This product meets the criteria for an environmentally hazardous material according to the IMDG Code. See Section 12 for more environmental information.

14.6 Special precautions for user

: Appropriate advice on safety must accompany the package. Keep away from heat, sparks and open flame. - No smoking.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not applicable.

SECTION 15. REGULATORY INFORMATION

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

: Classification according to Regulation (EC) No. 1272/2008 on the classification of hazardous mixtures.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:

None of the components are specifically listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended

None of the components are specifically listed.

Directive 96/82/EC (Seveso II) on the control of major-accident hazards involving dangerous substances:

None.

Directive 98/24/EC on the protection of the health and safety of workers from risks related to chemical agents at work:

Reaction product: bisphenol-A-(epichlorohydrin) (CAS # 25068-38-6)

n-Butyl glycidyl ether (CAS # 2426-08-6)

[3(2,3-epoxypropoxy)propyl]trimethoxysilane (CAS # 2530-83-8)

Directive 94/33/EC on the protection of young people at work:

Reaction product: bisphenol-A-(epichlorohydrin) (CAS # 25068-38-6)

n-Butyl glycidyl ether (CAS # 2426-08-6)



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Follow national regulation for work with chemical agents.

German legislation on water endangering substances VwVwS - Water contaminating class (Germany): 2 (self classified)

15.2 Chemical safety assessment

: A chemical safety assessment has not been carried out by the Manufacturer of this product.

SECTION 16. OTHER INFORMATION

Legend

: ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE: Acute Toxicity Estimate
CAS: Chemical Abstract Services
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
EC: European Community
EC50: Effective Concentration 50%.
EEC: European Economic Community
EN: European Standard
ERG: Emergency Response Guidebook
EU: European Union
HSDB: Hazardous Substances Data Bank
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
IMDG: International Maritime Dangerous Goods
LC: Lethal Concentration
LD: Lethal Dose
NOEC: No observable effect concentration
OEL: National occupational exposure limits
PEL: Permissible exposure limit
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
RTECS: Registry of Toxic Effects of Chemical Substances
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TWA: Time Weighted Average
WEL: Workplace Exposure Limit

Information Source

- : 1. Material Safety Data Sheet from manufacturer.
2. Canadian Centre for Occupational Health and Safety, CCIInfoWeb Databases, 2015 (Chempendium, RTECs, HSDB, INCHEM).
3. European Chemicals Agency, Classification Legislation, 2015.
4. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2015

Preparation Date (dd/mm/yyyy)

: 04/09/2015



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H-Phrases (Full text)

- : H226 - Flammable liquid and vapour.
- H302 - Harmful if swallowed.
- H315 - Causes skin irritation.
- H317 - May cause an allergic skin reaction.
- H319 - Causes serious eye irritation.
- H332 - Harmful if inhaled.
- H335 - May cause respiratory irritation.
- H341 - Suspected of causing genetic defects <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
- H351 - Suspected of causing cancer <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
- H411 - Toxic to aquatic life with long lasting effects.
- H412 - Harmful to aquatic life with long lasting effects.

Other special considerations for handling

- : Provide adequate information, instruction and training for operators.

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