

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A**

# Safety Data Sheet

**Section 1: Identification****Product Identifier and Other Means of Identification**

**Product Name:** Silver Conductive Epoxy Adhesive: Moderate Cure / Extreme Conductivity

**SDS Code:** 8330-Part A

**Related Part #** 8330-19G, 8330-50ML, 8330-200ML

**Recommended Use and Restriction on Use**

**Use:** Silver filled electrically conductive adhesive for cold soldering or circuit continuity repairs

**Uses Advised Against:** Not available

**Details of Manufacturer or Importer****Manufacturer**

MG Chemicals  
1210 Corporate Drive  
Burlington, Ontario L7L 5R6  
CANADA

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
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**E-MAIL** [info@mgchemicals.com](mailto:info@mgchemicals.com)

**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

**Emergency Phone Number**

**For hazardous material incidents ONLY**—leaks, spills, fires, exposures or accidents  
USA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300**

**For emergencies involving dangerous goods:** Collect 24/7  
CANADA: Call CANUTEC ☎: **+1-613-996-6666** or **\*666** on cellular phones

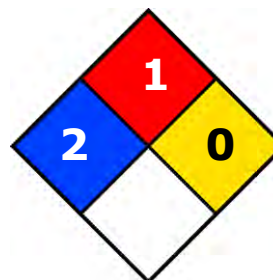
**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART A**
**Section 2: Hazard(s) Identification**
**Classification of the Chemical Material**
**GHS Categories**

Criteria		Category	Signal Word	Pictograms
Germ Cell Mutagenicity		2	Warning	Health
Sensitization	Skin sensitizer	1	Warning	Exclamation
Environmental Hazard	Acute Aqua. Tox.	1	Warning	Environmental
Environmental Hazard	Chronic Aqua. Tox.	1	Warning	Environment

**Note:** The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

**Other Classifications**
**HMIS® RATING**

<b>HEALTH:</b>	<b>* 2</b>
<b>FLAMMABILITY:</b>	<b>1</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	




**NFPA® 704 CODES**


*Approximate HMIS and NFPA Risk Ratings Legend:*

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

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**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART A**
**Label Elements**

<b>Signal Word</b>	<b>WARNING</b>
<b>Pictograms</b>	<b>Hazard Statements</b>
	H317: May cause an allergic skin reaction
	H341: Suspected of causing genetic defects
	H411: Toxic to aquatic life with long lasting effects
<b>Prevention</b>	<b>Precautionary Statements</b>
P201 + P202	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing fumes/vapors/mist
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing.
P273	Avoid release to the environment.
<b>Response</b>	<b>Precautionary Statements</b>
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	IF skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P391	Collect spillage.

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Storage	Precautionary Statements
P405	Store locked up.
Disposal	Precautionary Statements
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Hazards Not Otherwise Classified**

**Argyria Warning:** Long term exposure to silver containing compounds may lead to Argyria, which is an irreversible blue-grey discoloration of the skin.

Prolonged and repeated exposure to uncured epoxy resins may cause dermatitis or eczemas.

**Section 3: Composition/Information on Ingredients**

CAS #	Chemical Name	% Weight
7440-22-4	silver (flakes < 1 mm)	60-100%
28768-32-3	4,4'-methylenebis [N,N-bis(2-oxiranylmethyl) aniline]	10-30%
17557-23-2	neopentyl glycol diglycidyl ether	1-5%

**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
<b>IF ON SKIN</b>	P302 + P352, P362 + P364, P333 + P313
<b>Immediate Symptoms</b>	<i>mild irritation, redness, rash</i>
<b>Response</b>	Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P330 + P331, P308 + P313
<b>Immediate Symptoms</b>	<i>Irritation</i>
<b>Response</b>	Rinse mouth. Do not induce vomiting. IF exposed or concerned: Get medical advice/attention.

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Continued...

<b>IF IN EYES</b>	P305 + P351 + P338, P333 + P313
<b>Immediate Symptoms</b>	<i>Redness, mild irritation</i>
<b>Response</b>	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  If eye irritation persists: Get medical attention.
<b>IF INHALED</b>	P304 + P340, P308 + P313 (unlikely route of exposure due to low volatility)
<b>Immediate Symptoms</b>	<i>cough, irritation of the respiratory track, sore throat, asthma</i>
<b>Response</b>	Remove person to fresh air and keep comfortable for breathing.  IF exposed or concerned: Get medical advice/attention.

**Section 5: Fire-Fighting Measures**

<b>Auto-ignition Temperature</b>	Not established	<b>Flash Point</b>	>127 °C [>261 °F]	<b>LFL [LEL]</b>	Not available
			<sup>a)</sup>	<b>UFL [UEL]</b>	<sup>b)</sup>
<b>In case of fire</b>	P370 + P378				
<b>Extinguishing Media</b>	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.				
<b>Specific Hazards</b>	Not flammable or combustible, but will burn if involved in a fire. Produces irritating smoke and toxic fumes in fires.				
<b>Combustion Products</b>	Produces carbon oxides (CO, CO <sub>2</sub> ), toxic fumes, smoke				
<b>Fire-Fighter</b>	Wear self-contained breathing apparatus for fire fighting				

a) The closed cup flash point values are based on the neopentyl glycol diglycidyl ether component.

b) LFL = Lower Flammability [or Explosion] Limit (in volume %);  
UFL = Upper Flammability [or Explosion] Limit (in volume %)

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****Section 6: Accidental Release Measures**

<b>Personal Protection</b>	Use personal protection recommended in Section 8.
<b>Precautions for Response</b>	Avoid breathing the fumes/vapors. Keep away from extreme heat or open flames.
<b>Environmental Precautions</b>	Avoid releasing to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.
<b>Containment Methods</b>	None required—this product is not readily flowable
<b>Cleaning Methods</b>	Collect spill in a sealable container. Wipe residue with a paper towel wetted with alcohol (or other suitable organic solvent) and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue.
<b>Disposal Methods</b>	Dispose of spill waste according to Section 13.

**Section 7: Handling and Storage**

<b>Prevention</b>	Keep out of reach of children.  Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.  Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash it before reuse.  Avoid breathing dust/fumes/mist/vapors.
<b>Handling</b>	Wear protective gloves/eye protection. Wash hands thoroughly after handling. Collect spillage.
<b>Storage</b>	Store locked up.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART A**
**Section 8: Exposure Controls/Personal Protection**
**Routes of Entry**

Eyes and skin

**Substances with Occupational Exposure Limit Values**

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
silver (metal dust, mist) (metal) (Ag and its compounds) (metal, dust, fumes)	ACGIH	0.1 mg/m <sup>3</sup>	Not established
	U.S.A. OSHA PEL	0.01 mg/m <sup>3</sup>	Not established
	Canada AB	0.1 mg/m <sup>3</sup>	Not established
	Canada BC	0.01 mg/m <sup>3</sup>	0.03 mg/m <sup>3</sup>
	Canada ON	0.1 mg/m <sup>3</sup>	Not established
	Canada QC	3 mg/m <sup>3</sup>	Not established

**Note:** The ACGIH<sup>1</sup>, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>2</sup> of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted.

**Engineering Controls**
**Ventilation**

General ventilation is adequate for normal use; keep airborne exposure as low as possible.

**RECOMMENDATION:** If the product is heated, use of local exhaust or full mask with organic vapor cartridge/independent air supply.

**Personal Protective Equipment**
**Eye protection**

Wear appropriate protective eyeglasses or chemical safety goggles.

**RECOMMENDATION:** Use safety glasses with lateral protection (side shields).

**Skin Protection**

Wear appropriate protective clothing to prevent skin contact.

**RECOMMENDATION:** Use butyl rubber, neoprene, or other chemically resistant gloves.

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**Respiratory Protection** If exposed to high levels of fumes/dust/mist/vapors, wear respirator such as a half-mask respirator with organic vapor cartridge.

If exposed to the product in extreme heat or combustion conditions, wear a NIOSH approved self-contained breathing apparatus (SCBA) or supplied air respirator.

**RECOMMENDATION:** Consult your local safety supply store to ensure your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in section 3 of this SDS. Ensure that the respirator is fitted to the employee by a professional.

### General Hygiene Considerations

Wash hands with water and soap after use.

### Section 9: Physical and Chemical Properties

<b>Physical State</b>	Solid, paste	<b>Lower Flammability Limit</b>	Not available
<b>Appearance</b>	Silver grey	<b>Upper Flammability Limit</b>	Not available
<b>Odor</b>	Not available	<b>Vapor Pressure @25 °C</b>	Not available
<b>Odor Threshold</b>	Not available	<b>Vapor Density</b>	Not available
<b>pH</b>	Not available	<b>Specific Gravity @20 °C</b>	3.56
<b>Freezing/Melting Point</b>	Not available	<b>Solubility in Water</b>	Insoluble
<b>Boiling Point</b>	Not available	<b>Partition Coefficient</b>	Not applicable
<b>Flash Point</b> <sup>a)</sup>	≥127 °C [>261 °F]	<b>Auto-ignition Temperature</b>	Not available
<b>Evaporation Rate</b>	Not available	<b>Decomposition Temperature</b>	Not available
<b>Flammability (solid, gas)</b>	Not available	<b>Viscosity @40 °C</b>	>>20.5 mm <sup>2</sup> /s

a) The closed cup flash point values are based on the neopentyl glycol diglycidyl ether component.



**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****Section 10: Stability and Reactivity**

<b>Reactivity</b>	Reacts with amines.
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
<b>Conditions to Avoid</b>	Incompatible substances
<b>Incompatibilities</b>	Strong oxidizing agents, strong acids, strong bases, acetylene, ammonia, strong hydrogen peroxides
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	For thermal decomposition, see combustion products in Section 5

**Section 11: Toxicological Information****Routes of Exposure**

Eyes, ingestion, and skin

**Symptoms Summary**

<b>Eyes</b>	May cause redness, mild eye irritation.
<b>Skin</b>	May cause mild skin irritation, redness, or rash.
<b>Inhalation</b>	May cause cough, irritation of the respiratory track, sore throat, or asthma.
<b>Ingestion</b>	It may cause irritation. (Also see inhalation symptoms.)
<b>Chronic</b>	Prolonged and repeated exposure may lead to skin sensitization.

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**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART A**
**Lethal Exposure Concentrations**

<b>Chemical Name</b>	<b>LD50 oral</b>	<b>LD50 dermal</b>	<b>LC50 inhalation</b>	<b>TCLo inhalation</b>
silver	>5 g/kg Guinea Pig	Not Established	Not Established	Not Established
4,4'-methylenebis [N,N-bis(2-oxiranylmethyl) aniline]	Not Established	Not Established	Not Established	Not Established
neopentyl glycol diglycidyl ether	2 000 mg/kg Rat <sup>a)</sup>	2 150 mg/kg Rabbit <sup>a)</sup>	Not established	Not established

**Note:** Toxicity data from the RTECS database accessed through the Canadian Centre for Occupational Health and Safety (CCOHS)<sup>2</sup> were consulted. The data from supplier (M)SDS were also consulted.

a) Estimate provided by supplier

**Other Toxicological Effects**
**Skin corrosion/irritation**

Moderate skin irritant.

**Serious eye damage/irritation**

Serious to moderate eye irritant

**Respiratory and skin sensitization**

(allergic reactions)

The epoxy resin components (CAS# 28768-32-3-6 and 17556-232) may cause skin sensitization in humans

**Carcinogenicity**

(risk of cancer)

None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP

**Mutagenicity**

(risk of heritable genetic effects)

In vitro and in vivo studies for 4,4'-methylenebis [N,N-bis(2-oxiranylmethyl) aniline] show positive results for mutagenicity.

**Reproductive Toxicity**

(risk to sex functions)

Classification criteria are not met.

**Teratogenicity**

(risk of fetus malformation)

Classification criteria are not met.

**STOT-single exposure**

Classification criteria are not met.

**STOT-repeated exposure**

Classification criteria are not met.

**Aspiration hazard**

Classification criteria are not met: the mixture does not contain Class 1 aspiration toxicant and its viscosity is >20.5 mm<sup>2</sup>/s at 40 °C

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****Section 12: Ecological Information**

The IMDG Code criteria and the raw-material (M)SDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

In Europe, similar epoxy resin mixtures with CAS# 25068-38-6 and average molecular weight of less than 700 are generally classified as chronic category 2 marine pollutant due to LC50 96 h of >1 mg/L but ≤10 mg/L.

Contains silver particles less than a 1 mm in size but >100 nm (larger than nanoparticles), which are category 1 marine pollutant in ionic form. While very sparingly soluble in water in its massive form, weight of evidence suggests that small particles are more readily dissolved yielding to classifiable toxic levels.

**Acute Ecotoxicity**

Category 1

*GHS Code: Hazard Statement*

H400: Very toxic to aquatic life

**Chronic Ecotoxicity**

Category 1

*GHS Code: Hazard Statement*

H410: Very toxic to aquatic life with long lasting effect

Avoid release to the environment. Collect spillage.

**Persistence and Biodegradability**

The content is not readily biodegradable.

**Bioaccumulative Potential**

Not available

**Mobility in Soil**

Not available

**Other Effects**

Not available

**Section 13: Disposal Considerations**

Dispose of contents in accordance with all local, provincial, state, and federal regulations.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART A**
**Section 14: Transport Information**
**Ground**

**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations);  
**USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes 5 kg and under

**Limited Quantity**

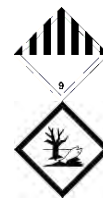

Sizes greater than 5 kg

**UN number:** UN3077

**Shipping Name:** ENVIRONMENTALLY  
 HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
 (silver particles <1 mm; 4,4'-methylenebis  
 [N,N-bis(2-oxiranylmethyl) aniline])

**Class:** 9

**Packing Group:** III

**Marine Pollutant:** Yes

**Air**

**Refer to ICAO-IATA Dangerous Goods Regulations.**

Sizes 30 g and under

**Excepted Quantity**

Document as class

**E1**

Refer to Package

 Mark 2.6.7.1 in **IATA**  
 for further instruction


Sizes greater than 30 g up to 30 kg

**Limited Quantity**
**UN number:** UN3077

**Shipping Name:** ENVIRONMENTALLY  
 HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
 (silver particles <1 mm; 4,4'-methylenebis  
 [N,N-bis(2-oxiranylmethyl) aniline])

**Class:** 9

**Packing Group:** III

**Marine Pollutant:** Yes

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**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****Sea****Refer to IMDG regulations.**

Sizes 5 kg and under

**Limited Quantity**

Sizes greater than 5 kg

**UN number:** UN3077**Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (silver particles <1 mm; 4,4'-methylenebis [N,N-bis(2-oxiranylmethyl) aniline])**Class:** 9**Packing Group:** III**Marine Pollutant:** Yes

**Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.**

**Section 15: Regulatory Information****Canada****WHMIS Classification**

D2B – Toxic (Skin Irritant, Skin Sensitizer)

**Domestic Substance List (DSL)/Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**Industry and Science Canada**

MG Labels products intended for the workplace to conform to WHMIS labeling regulations. Product identification, net quantity declaration, minimum printing type size heights, and packaging of this product are in compliance.

**Health Canada**

Products produced by MG Chemicals intended for retail display conform to the Canadian Consumer Labeling Regulations.

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**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****USA****CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

**EPCRA** (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains silver (CAS# 7440-22-4; reportable quantity = 1000 lb), which is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, Sept 2, 2011 revision, USA).

This product does not contain any listed substances in California.

**Europe****RoHS**

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

**WEEE**

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

**Section 16: Other Information**

**SDS Prepared by** Michel Hachey

**Date of Revision** 23 September 2014

**Supersedes** 16 January 2013

**Reason for Changes:** Changes to formulation and and reevaluation in accordance to HCS 2012 criteria.

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART A****Reference**

- 1) ACGIH *2013 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2013).
- 2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
NOELR	No observable effect loading ratio
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
PEL	Permissible Exposure Limit
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

**Technical Queries** Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at [www.mgchemicals.com](http://www.mgchemicals.com).

Email: [support@mgchemicals.com](mailto:support@mgchemicals.com)

**Mailing Addresses** *Manufacturing & Support*  
1210 Corporate Drive  
Burlington, Ontario, Canada  
L7L 5R6

*Head Office*  
9347-193rd Street  
Surrey, British Columbia, Canada  
V4N 4E7

**Disclaimer** This material safety data sheet is provided as an information resource only. *M.G. Chemicals, Ltd.* believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to query and verify any information seeming suspect where doubt on the validity may exist. The buyer assumes all responsibility of using and handling the product in accordance with local, regional, national, and international regulations.

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B**

# Safety Data Sheet

**Section 1: Identification****Product Identifier and Other Means of Identification**

**Product Name:** Silver Conductive Epoxy Adhesive: Moderate Cure / Extreme Conductivity

**SDS Code:** 8330-Part B

**Related Part #** 8330-19G, 8330-50ML, 8330-200ML

**Recommended Use and Restriction on Use**

**Use:** Silver filled electrically conductive adhesive for cold soldering and circuit repair

**Uses Advised Against:** Not available

**Details of Manufacturer or Importer****Manufacturer**

MG Chemicals  
1210 Corporate Drive  
Burlington, Ontario L7L 5R6  
CANADA

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
CANADA

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**FAX** +1-905-331-2682

**E-MAIL** [info@mgchemicals.com](mailto:info@mgchemicals.com)

**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

**Emergency Phone Number**

**For hazardous material incidents ONLY**—leaks, spills, fires, exposures or accidents

USA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300**

**For emergencies involving dangerous goods:** Collect 24/7

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



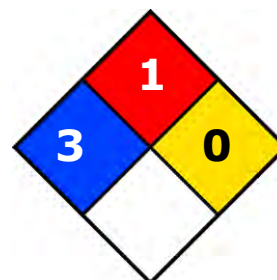
**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 2: Hazard(s) Identification**
**Classification of the Chemical Material**
**GHS Categories**

Criteria		Category	Signal Word	Pictograms
Serious Eye Damage		1	Danger	Corrosion
Skin Corrosion		1B	Danger	Corrosion
Sensitization	Skin sensitizer	1	Warning	Exclamation
Reproductive toxicity		2	Warning	Health
Environmental Hazard	Acute Aqua. Tox.	1	Warning	Exclamation
Environmental Hazard	Chronic Aqua. Tox.	1	Warning	Exclamation

**Note:** The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

**Other Classifications**
**HMIS® RATING**

<b>HEALTH:</b>	<b>* 3</b>
<b>FLAMMABILITY:</b>	<b>1</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	





**NFPA® 704 CODES**


*Approximate HMIS and NFPA Risk Ratings Legend:*

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Label Elements**

Signal Word	<b>DANGER</b>
Pictograms	Hazard Statements
	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: Toxic to aquatic life with long lasting effects
Prevention	Precautionary Statements
P102	Keep out of reach of children.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe fumes/vapors.
P280	Wear protective gloves/eye protection/face protection.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.

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**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**

Continued...

<b>Response</b>	<b>Precautionary Statements</b>
P305 + P351 + P338, P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
P301+ P330 + P331, P310	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
P304 + P340, P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P308 + P313	If exposed or concerned: Get medical advice.
P303 + P361 + P353, P310	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
<b>Storage</b>	<b>Precautionary Statements</b>
P405	Store locked up.
<b>Disposal</b>	<b>Precautionary Statements</b>
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Hazards Not Otherwise Classified**

**Argyria Warning:** Long term exposure to silver containing compounds may lead to Argyria, which is an irreversible blue-grey discoloration of the skin.

**Section 3: Composition/Information on Ingredients**

<b>CAS #</b>	<b>Chemical Name</b>	<b>% Weight</b>
7440-22-4	silver	70-80%
84852-15-3	4-nonyl phenol, branched	15-30%
140-31-8	1-piperazineethanamine	3-6%
111-40-0	diethylene triamine	0.1-1%
80-05-7	4,4'-isopropylidenediphenol	0.1-0.5%

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
<b>IF IN EYES</b>	P305 + P351 + P338, P310
<b>Immediate Symptoms</b>	<i>redness, severe irritation, pain, burns</i>
<b>Response</b>	Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  Immediately call a POISON CENTER/doctor.
<b>IF ON SKIN</b>	P303 + P361+ P353, P310, P313 +P313
<b>Immediate Symptoms</b>	<i>redness, rash, severe irritation, pain, burns, blistering</i>
<b>Response</b>	Wash with plenty of water/shower. Take off immediately all contaminated clothing. Immediately call a POISON CENTRE/doctor.  If skin irritation or rash occurs: Get medical advice/attention.
<b>IF INHALED</b>	P304 + P340, P310, P308 + P313
<b>Immediate Symptoms</b>	<i>cough, severe irritation or burns of the respiratory track</i>
<b>Response</b>	Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTRE/doctor.  IF exposed or concerned: Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P330 + P331, P310, P308 + P313
<b>Immediate Symptoms</b>	<i>severe irritation, burns to mouth, throat, stomach</i>
<b>Response</b>	Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTRE/doctor.  IF exposed or concerned: Get medical advice/attention.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 5: Fire-Fighting Measures**

<b>Auto-ignition Temperature</b>	Not established	<b>Flash Point</b> <sup>a)</sup>	>93 °C [>200 °F]	<b>LFL [LEL]</b> <sup>b)</sup>	Not available
				<b>UFL [UEL]</b>	

**In case of fire** P370 + P378

**Extinguishing Media** Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.

**COUNTER INDICATION:** Avoid use of water jet as extinguishing media. Material can form a very toxic aqueous solution with water. If possible, prevent run-off from entering drains and waterways.

**Specific Hazards** Not flammable or combustible, but will burn if involved in a fire. Produces irritating smoke and toxic smoke in fires.

**Combustion Products** Produces carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), amines, toxic fumes, and smoke.

**Fire-Fighter** Wear self-contained breathing apparatus for fire fighting

a) Setaflashed closed cup for hardener components

b) LFL = Lower Flammability [or Explosion] Limit (in volume %);

UFL = Upper Flammability [or Explosion] Limit (in volume %)

**Section 6: Accidental Release Measures**

**Personal Protection** Use personal protection recommended in Section 8.

**Precautions for Response** Do not breathe fumes/vapors. Keep away from extreme heat or open flames.

**Environmental Precautions** Avoid releasing to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.

**Containment Methods** None required—this product is not readily flowable

**Cleaning Methods** Collect liquid in a sealable container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe remaining residue with a paper towel wetted with alcohol (or other suitable organic solvent) and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue.

**RECOMMENDATION:** Use a plastic, stainless steel, or carbon steel container. Avoid containers with copper, aluminum, zinc, or galvanized surfaces since the waste mater can slowly oxidize them.

**Disposal Methods** Dispose spill waste according to Section 13.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 7: Handling and Storage**
**Prevention**

Keep out of reach of children.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash it before reuse.

Protect from heat. Do not process in a way that causes mist or fumes.

Do not breathe fumes/vapors.

Do not eat, drink, or smoke when using this product.

**Handling**

Wear protective gloves/eye protection.

Wash hands thoroughly after handling.

Collect spillage.

**Storage**

Keep container tightly closed.

Store locked up.

**Section 8: Exposure Controls/Personal Protection**
**Routes of Entry**

Eyes, skin, ingestion, inhalation

**Substances with Occupational Exposure Limit Values**

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
silver (metal dust, mist) (metal) (Ag and its compounds) (metal, dust, fumes)	ACGIH	0.1 mg/m <sup>3</sup>	Not established
	U.S.A. OSHA PEL	0.01 mg/m <sup>3</sup>	Not established
	Canada AB	0.1 mg/m <sup>3</sup>	Not established
	Canada BC	0.01 mg/m <sup>3</sup>	0.03 mg/m <sup>3</sup>
	Canada ON	0.1 mg/m <sup>3</sup>	Not established
	Canada QC	3 mg/m <sup>3</sup>	Not established

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**

Continued...

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
diethylene triamine	ACGIH	1 ppm <sup>a)</sup>	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada AB	1 ppm <sup>a)</sup>	Not established
	Canada BC	1 ppm <sup>a), b)</sup>	Not established
	Canada ON	1 ppm <sup>a)</sup>	Not established
	Canada QC	1 ppm <sup>a)</sup>	Not established

**Note:** The ACGIH<sup>1</sup>, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>2</sup> of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted.

a) Danger of cutaneous absorption

b) Skin sensitizer

### Engineering Controls

#### Ventilation

General ventilation is adequate for normal use; keep airborne exposure as low as possible.

**Recommendation:** If the product is heated, use of local exhaust or full mask with organic vapor cartridge/independent air supply.

### Personal Protective Equipment

#### Eye protection

Wear appropriate protective eyeglasses or chemical safety goggles.

**RECOMMENDATION:** Use safety glasses with lateral protection (side shields).

#### Skin Protection

Wear appropriate protective clothing to prevent skin contact.

**RECOMMENDATION:** Use butyl rubber, neoprene, or other chemically resistant gloves.

#### Respiratory Protection

If exposed to the product in extreme heat or combustion conditions, wear a NIOSH approved self-contained breathing apparatus (SCBA) or supplied air respirator.

**RECOMMENDATION:** Consult your local safety supply store to ensure your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in section 3 of this SDS, and that the respirator is fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

Continued on the next page

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B**

# Safety Data Sheet

**Section 1: Identification****Product Identifier and Other Means of Identification**

**Product Name:** Silver Conductive Epoxy Adhesive: Moderate Cure / Extreme Conductivity

**SDS Code:** 8330-Part B

**Related Part #** 8330-19G, 8330-50ML, 8330-200ML

**Recommended Use and Restriction on Use**

**Use:** Silver filled electrically conductive adhesive for cold soldering and circuit repair

**Uses Advised Against:** Not available

**Details of Manufacturer or Importer****Manufacturer**

MG Chemicals  
1210 Corporate Drive  
Burlington, Ontario L7L 5R6  
CANADA

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
CANADA

**☎** +1-800-340-0772

**FAX** +1-800-340-0773

**E-MAIL** [support@mgchemicals.com](mailto:support@mgchemicals.com)

**WEB** [www.mgchemicals.com](http://www.mgchemicals.com)

**☎** +1-905-331-1396

**FAX** +1-905-331-2682

**E-MAIL** [info@mgchemicals.com](mailto:info@mgchemicals.com)

**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

**Emergency Phone Number**

**For hazardous material incidents ONLY**—leaks, spills, fires, exposures or accidents

USA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300**

**For emergencies involving dangerous goods:** Collect 24/7

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



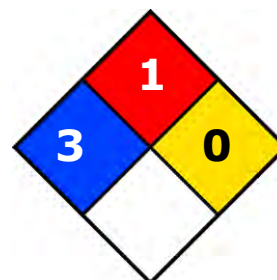
**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 2: Hazard(s) Identification**
**Classification of the Chemical Material**
**GHS Categories**

Criteria		Category	Signal Word	Pictograms
Serious Eye Damage		1	Danger	Corrosion
Skin Corrosion		1B	Danger	Corrosion
Sensitization	Skin sensitizer	1	Warning	Exclamation
Reproductive toxicity		2	Warning	Health
Environmental Hazard	Acute Aqua. Tox.	1	Warning	Exclamation
Environmental Hazard	Chronic Aqua. Tox.	1	Warning	Exclamation

**Note:** The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

**Other Classifications**
**HMIS® RATING**

<b>HEALTH:</b>	<b>* 3</b>
<b>FLAMMABILITY:</b>	<b>1</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	





**NFPA® 704 CODES**


*Approximate HMIS and NFPA Risk Ratings Legend:*

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Label Elements**

Signal Word	DANGER
Pictograms	Hazard Statements
	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: Toxic to aquatic life with long lasting effects
Prevention	Precautionary Statements
P102	Keep out of reach of children.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe fumes/vapors.
P280	Wear protective gloves/eye protection/face protection.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**

Continued...

<b>Response</b>	<b>Precautionary Statements</b>
P305 + P351 + P338, P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
P301+ P330 + P331, P310	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
P304 + P340, P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P308 + P313	If exposed or concerned: Get medical advice.
P303 + P361 + P353, P310	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
<b>Storage</b>	<b>Precautionary Statements</b>
P405	Store locked up.
<b>Disposal</b>	<b>Precautionary Statements</b>
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Hazards Not Otherwise Classified**

**Argyria Warning:** Long term exposure to silver containing compounds may lead to Argyria, which is an irreversible blue-grey discoloration of the skin.

**Section 3: Composition/Information on Ingredients**

<b>CAS #</b>	<b>Chemical Name</b>	<b>% Weight</b>
7440-22-4	silver	70-80%
84852-15-3	4-nonyl phenol, branched	15-30%
140-31-8	1-piperazineethanamine	3-6%
111-40-0	diethylene triamine	0.1-1%
80-05-7	4,4'-isopropylidenediphenol	0.1-0.5%

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
<b>IF IN EYES</b>	P305 + P351 + P338, P310
<b>Immediate Symptoms</b>	<i>redness, severe irritation, pain, burns</i>
<b>Response</b>	Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  Immediately call a POISON CENTER/doctor.
<b>IF ON SKIN</b>	P303 + P361+ P353, P310, P313 +P313
<b>Immediate Symptoms</b>	<i>redness, rash, severe irritation, pain, burns, blistering</i>
<b>Response</b>	Wash with plenty of water/shower. Take off immediately all contaminated clothing. Immediately call a POISON CENTRE/doctor.  If skin irritation or rash occurs: Get medical advice/attention.
<b>IF INHALED</b>	P304 + P340, P310, P308 + P313
<b>Immediate Symptoms</b>	<i>cough, severe irritation or burns of the respiratory track</i>
<b>Response</b>	Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTRE/doctor.  IF exposed or concerned: Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P330 + P331, P310, P308 + P313
<b>Immediate Symptoms</b>	<i>severe irritation, burns to mouth, throat, stomach</i>
<b>Response</b>	Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTRE/doctor.  IF exposed or concerned: Get medical advice/attention.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 5: Fire-Fighting Measures**

<b>Auto-ignition Temperature</b>	Not established	<b>Flash Point</b> <sup>a)</sup>	>93 °C [>200 °F]	<b>LFL [LEL]</b> <sup>b)</sup>	Not available
				<b>UFL [UEL]</b>	

**In case of fire** P370 + P378

**Extinguishing Media** Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.

**COUNTER INDICATION:** Avoid use of water jet as extinguishing media. Material can form a very toxic aqueous solution with water. If possible, prevent run-off from entering drains and waterways.

**Specific Hazards** Not flammable or combustible, but will burn if involved in a fire. Produces irritating smoke and toxic smoke in fires.

**Combustion Products** Produces carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), amines, toxic fumes, and smoke.

**Fire-Fighter** Wear self-contained breathing apparatus for fire fighting

a) Setaflashed closed cup for hardener components

b) LFL = Lower Flammability [or Explosion] Limit (in volume %);

UFL = Upper Flammability [or Explosion] Limit (in volume %)

**Section 6: Accidental Release Measures**

**Personal Protection** Use personal protection recommended in Section 8.

**Precautions for Response** Do not breathe fumes/vapors. Keep away from extreme heat or open flames.

**Environmental Precautions** Avoid releasing to the environment. Prevent spill from entering drains and waterways. Do not flush to sewer.

**Containment Methods** None required—this product is not readily flowable

**Cleaning Methods** Collect liquid in a sealable container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe remaining residue with a paper towel wetted with alcohol (or other suitable organic solvent) and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue.

**RECOMMENDATION:** Use a plastic, stainless steel, or carbon steel container. Avoid containers with copper, aluminum, zinc, or galvanized surfaces since the waste mater can slowly oxidize them.

**Disposal Methods** Dispose spill waste according to Section 13.

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Section 7: Handling and Storage**
**Prevention**

Keep out of reach of children.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash it before reuse.

Protect from heat. Do not process in a way that causes mist or fumes.

Do not breathe fumes/vapors.

Do not eat, drink, or smoke when using this product.

**Handling**

Wear protective gloves/eye protection.

Wash hands thoroughly after handling.

Collect spillage.

**Storage**

Keep container tightly closed.

Store locked up.

**Section 8: Exposure Controls/Personal Protection**
**Routes of Entry**

Eyes, skin, ingestion, inhalation

**Substances with Occupational Exposure Limit Values**

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
silver (metal dust, mist) (metal) (Ag and its compounds) (metal, dust, fumes)	ACGIH	0.1 mg/m <sup>3</sup>	Not established
	U.S.A. OSHA PEL	0.01 mg/m <sup>3</sup>	Not established
	Canada AB	0.1 mg/m <sup>3</sup>	Not established
	Canada BC	0.01 mg/m <sup>3</sup>	0.03 mg/m <sup>3</sup>
	Canada ON	0.1 mg/m <sup>3</sup>	Not established
	Canada QC	3 mg/m <sup>3</sup>	Not established

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**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**

Continued...

Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
diethylene triamine	ACGIH	1 ppm <sup>a)</sup>	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada AB	1 ppm <sup>a)</sup>	Not established
	Canada BC	1 ppm <sup>a), b)</sup>	Not established
	Canada ON	1 ppm <sup>a)</sup>	Not established
	Canada QC	1 ppm <sup>a)</sup>	Not established

**Note:** The ACGIH<sup>1</sup>, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>2</sup> of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted.

a) Danger of cutaneous absorption

b) Skin sensitizer

### Engineering Controls

#### Ventilation

General ventilation is adequate for normal use; keep airborne exposure as low as possible.

**Recommendation:** If the product is heated, use of local exhaust or full mask with organic vapor cartridge/independent air supply.

### Personal Protective Equipment

#### Eye protection

Wear appropriate protective eyeglasses or chemical safety goggles.

**RECOMMENDATION:** Use safety glasses with lateral protection (side shields).

#### Skin Protection

Wear appropriate protective clothing to prevent skin contact.

**RECOMMENDATION:** Use butyl rubber, neoprene, or other chemically resistant gloves.

#### Respiratory Protection

If exposed to the product in extreme heat or combustion conditions, wear a NIOSH approved self-contained breathing apparatus (SCBA) or supplied air respirator.

**RECOMMENDATION:** Consult your local safety supply store to ensure your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in section 3 of this SDS, and that the respirator is fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

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**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**General Hygiene Considerations**

Wash hands with water and soap after use.

**Section 9: Physical and Chemical Properties**

<b>Physical State</b>	Solid, paste	<b>Lower Flammability Limit</b>	Not available
<b>Appearance</b>	Silver grey	<b>Upper Flammability Limit</b>	Not available
<b>Odor</b>	Amine-like	<b>Vapor Pressure @25 °C<sup>a)</sup></b>	Not available
<b>Odor Threshold</b>	Not available	<b>Vapor Density</b>	Not available
<b>pH</b>	Not available	<b>Specific Gravity @25 °C</b>	2.92
<b>Freezing/Melting Point</b>	Not available	<b>Solubility in Water</b>	Practically insoluble
<b>Boiling Point</b>	Not available	<b>Partition Coefficient</b>	Not available
<b>Flash Point</b>	>93.3 °C [>200 °F]	<b>Auto-ignition Temperature</b>	Not available
<b>Evaporation Rate</b>	Not available	<b>Decomposition Temperature</b>	Not available
<b>Flammability (solid, gas)</b>	Not available	<b>Viscosity @40 °C</b>	>>20.5 mm <sup>2</sup> /s

a) Setaflashed closed cup for hardener components



**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B****Section 10: Stability and Reactivity**

<b>Reactivity</b>	Not available
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
<b>Conditions to Avoid</b>	Incompatible substances and excessive heat
<b>Incompatibilities</b>	Strong oxidizing agents, acids, acetylene, hydrogen peroxides.
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	For thermal decomposition, see combustion products in Section 5

**Section 11: Toxicological Information****Routes of Exposure**

Eyes, ingestion, and skin

**Symptoms Summary**

<b>Eyes</b>	Causes severe eye damage. Contains mechanically abrasive particles.
<b>Skin</b>	Causes skin burns.
<b>Inhalation</b>	Severe respiratory irritant. May be destructive to tissue of the mucous membranes, upper respiratory tract (nose, throat, lungs).
<b>Ingestion</b>	Severe irritant. May cause burns to mouth, throat, and stomach. (See inhalation symptoms.)
<b>Chronic</b>	Prolonged and repeated exposure may lead to skin sensitization.

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Lethal Exposure Concentrations**

<b>Chemical Name</b>	<b>LD50 oral</b>	<b>LD50 dermal</b>	<b>LC50 inhalation</b>
silver	>5 g/kg Guinea Pig	>2 000 mg/kg Rabbit	>5 000 mg/m <sup>3</sup> Rat
4-nonyl phenol, branched	1 300 mg/kg Rat	>3 160 mg/kg	Not established
1-piperazineethanamine	2 140 µl/kg Rat	866 mg/kg Rabbit	Not established
diethylene triamine	1 080 mg/kg Rat	1 090 mg/kg Rabbit	Not established
4,4'-isopropylidenediphenol	2 400 mg/kg Rat	3 mL/kg Rabbit	>170 mg/m <sup>3</sup> Rat 6 h

**Note:** Toxicity data from the RTECS database accessed through the Canadian Centre for Occupational Health and Safety (CCOHS)<sup>2</sup> were consulted. The data from supplier (M)SDS were also consulted.

**Other Toxicological Effects**

<b>Skin corrosion/irritation</b>	Causes skin burns.
<b>Serious eye damage/irritation</b>	Serious to moderate eye irritant
<b>Respiratory and skin sensitization</b> (allergic reactions)	Diethylene triamine, 1-piperazineethanamine, and 4,4'-isopropylidenediphenol may cause skin sensitization.
<b>Carcinogenicity</b> (risk of cancer)	None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP
<b>Mutagenicity</b> (risk of heritable genetic effects)	No known effects
<b>Reproductive Toxicity</b> (risk to sex functions)	No known effects.
<b>Teratogenicity</b> (risk of fetus malformation)	The 4-nonyl-phenol, branched (CAS#84852-15-13) and 4,4'-isopropylidenediphenol (CAS# 80-05-7) are suspected of being a reproductive toxicants.
<b>STOT-single exposure</b>	Does not meet classification criteria. Diethylene triamine (CAS# 111-40-0) is a Cat 3 respiratory irritants but it is present at only 1%.
<b>STOT-repeated exposure</b>	No known classifiable effects. See hazards not otherwise specified Arguria warning in Section 2.
<b>Aspiration hazard</b>	Mixture does not contain components classified as aspiration hazards; therefore, the mixture is not an aspiration hazard.

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B****Section 12: Ecological Information**

The IMDG Code criteria and the raw-material (M)SDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

Contains silver particles less than a 1 mm in size but >100 nm (larger than nanoparticles), which are category 1 marine pollutant in ionic form. While very sparingly soluble in water in its massive form, weight of evidence suggests that small particles are more readily dissolved yielding to classifiable toxic levels.

The 4 nonyl phenol, branched, ingredient is a Cat 1 marine pollutant according to available data (with a minimal 96 h LC50 of 0.135 mg/L *Lepomis macrochiru*).

The 4,4'-isopropylidenediphenol ingredient is a Cat 2 marine pollutant according to available data (with minimal 96 h LC50 of 4.6 mg/L for *Pimephales promelas* (fathead minnow); 48 h EC50 of 10.2 mg/L *Daphnia Magna* (water flea); and 96 h EC50 of 2.73 for *Pseudokirchneriella subcapitata* (green algae)).

The 1-piperazineethanamine (CAS# 140-31-8) is a Cat 4 marine pollutant according to available data (with minimal 96 h LC50 of 2190 mg/L for *Pimephales promelas* (fathead minnow); 48 h EC50 of 58 mg/L *Daphnia Magna* (water flea); 72 EC50 of 465 mg/L for *Pseudokirchneriella subcapitata* (*Selenastrum capricornutum*)).

Diethylene triamine (CAS# 90-72-2) is not classified as marine pollutant according to available data.

**Acute Ecotoxicity**

Category 1

*GHS Code: Hazard Statement*

H400: Very toxic to aquatic life

**Chronic Ecotoxicity**

Category 1

*GHS Code: Hazard Statement*

H410: Very toxic to aquatic life with long lasting effect

Avoid release to the environment. Collect spillage.

**Persistence and Biodegradability**

Not available

**Bioaccumulative Potential**

Not available

**Mobility in Soil**

Not available

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Other Effects**

Not available

**Section 13: Disposal Considerations**

Dispose of contents in accordance with all local, provincial, state, and federal regulations.

**Section 14: Transport Information**
**Ground**
**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations);  
**USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes 5 kg and under

**Limited Quantity**


Sizes greater than 5 kg

**UN number:** UN3263

**Shipping Name:**

 CORROSIVE SOLID, BASIC, ORGANIC  
 N.O.S. (4-nonyl phenol, branched;  
 aminoethylpiperazine)

**Class:** 8

**Packing Group:** II

**Marine Pollutant:** Yes

**Air**
**Refer to ICAO-IATA Dangerous Goods Regulations.**

Sizes 5 kg and under

**Limited Quantity**


Sizes greater than 5 kg up to 15 kg

**UN number:** UN3263

**Shipping Name:**

 CORROSIVE SOLID, BASIC, ORGANIC  
 N.O.S. (4-nonyl phenol, branched;  
 aminoethylpiperazine)

**Class:** 8

**Packing Group:** II

**Marine Pollutant:** Yes

**Excepted Quantity E2 ≤30 g**
*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE**
**8330-PART B**
**Sea**
**Refer to IMDG regulations.**

Sizes 1 liter and under

**Limited Quantity**


Sizes greater than 1 liter

**UN number:** UN3263

**Shipping Name:**

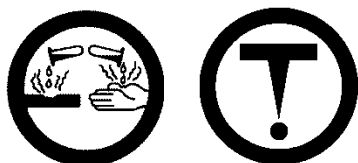
 CORROSIVE SOLID, BASIC, ORGANIC  
 N.O.S. (4-nonyl phenol, branched;  
 aminoethylpiperazine)

**Class:** 8

**Packing Group:** II

**Marine Pollutant:** Yes


**Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.**

**Section 15: Regulatory Information**
**Canada**
**WHMIS Classification**


E – Corrosive Material;

D2A – Very Toxic Material (Reproductive Toxicity, Respiratory Sensitization)

D2B – Toxic Material (Skin Sensitization in Humans)

**Domestic Substance List (DSL)/Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**Industry and Science Canada**

MG Labels products intended for the workplace to conform to WHMIS labeling regulations. Product identification, net quantity declaration, minimum printing type size heights, and packaging of this product are in compliance.

**Health Canada**

Products produced by MG Chemicals intended for retail display conform to the Canadian Consumer Labeling Regulations.

*Continued on the next page*

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B****USA****CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

**EPCRA** (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains silver (CAS# 7440-22-4; reportable quantity = 1000 lb), which is subject to the reporting requirements of CERCLA and section 313 of SARA Title III.

This product contains 4,4'-isopropylidenediphenol (CAS# 80-05-7), which is subject to the reporting requirements of section 313 of the SARA Title III.

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, Sept 2, 2011 revision, USA).

This product does not contain any listed substances in California.

**Europe****RoHS**

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

**WEEE**

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

**Section 16: Other Information**

**SDS Prepared by** Michel Hachey

**Date of Revision** 23 September 2014

**Supersedes** 15 January 2014

**Reason for Changes:** Formulation change and reevaluation in accordance to HCS 2012 criteria.

**Reference**

1) ACGIH *2013 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2013).

2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

**SILVER CONDUCTIVE EPOXY ADHESIVE****8330-PART B***Continued on the next page***Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
NOELR	No observable effect loading ratio
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
PEL	Permissible Exposure Limit
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

**Technical Queries** Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at [www.mgchemicals.com](http://www.mgchemicals.com).

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