

EPOXY HARDENER

8320-PART B

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Epoxy Hardener**SDS Code:** 8320-Part B**Related Part #:** 8320-125ML, 8320-1L, 8320-20L (See also products with SDS Codes: 832B-Part B, 832C-Part B, 832HT-Part B)

Recommended Use and Restriction on Use

Use: Epoxy hardener for use with resins to pot devices or encapsulate components**Uses Advised Against:** Not for use as a spray coating

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.comWEB www.mgchemicals.com

☎ 1-905-331-1396

FAX 1-905-331-2682

E-MAIL: info@mgchemicals.comE-MAIL (Competent Person): 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

EPOXY HARDENER

8320-PART B

Section 2: Hazards Identification



Classification of Hazardous Chemical

WHMIS Classification



E – Corrosive; D1B Immediately Toxic (Skin Absorption); D2B – Toxic Material (Skin Sensitization in Humans)

GHS Categories

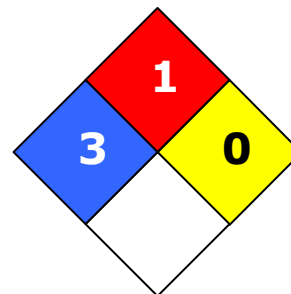
Criteria		Category	Signal Word	Pictograms
Serious Eye Damage		1B	Danger	
Skin Corrosion		1	Danger	
Sensitization	Skin sensitizer	1	Warning	
Acute Toxicity	Dermal	4	Warning	
Environmental Hazard	Acute Aqua. Tox.	2	—	No Symbol Mandated
Environmental Hazard	Chronic Aqua. Tox.	3	—	

Other Classifications

HMIS® RATING

HEALTH:	3
FLAMMABILITY:	1
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

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

EPOXY HARDENER

8320-PART B

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	H314: Causes severe skin burns and eye damage
	H312: Harmful in contact with skin H317: May cause allergic skin reaction
No Symbol Mandated	H401: Toxic to aquatic life H412: Harmful to aquatic life with long lasting effects
	Precautionary Statements
Prevention	P102: Keep out of reach of children. P280: Wear protective gloves/protective clothing/eye protection. P260: Do not breathe vapors. P264: Wash hands thoroughly after handling. P272: Contaminated clothing should not be allowed out of the workplace. P273: Avoid release to the environment.
Response	P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P310: Immediately call a POISON CENTER or doctor. P363: Wash contaminated clothing before reuse.
Storage	P405: Store locked up.
Disposal	P501: Dispose of contents/container in accordance to local/regional/national/international regulations.

Continued on the next page

EPOXY HARDENER

8320-PART B

Other Hazards

Not applicable

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
68410-23-1	fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines	85-95%
112-24-3	triethylenetetramine	7-13%

Section 4: First Aid Measures

<i>Exposure Condition</i>	<i>GHS Code: Precautionary Statement</i>
IF IN EYES	P305
Symptoms	Immediate: <i>burns, severe irritation, redness, pain</i>
Response	P351: Rinse cautiously with water for several minutes. P338: Remove contact lenses, if present and easy to do. Continue rinsing. P310 : Immediately call a POISON CENTRE/doctor
IF ON SKIN (or hair)	P303
Symptoms	Immediate: <i>burns, blistering, tears, redness, pain</i>
Response	P353: Rinse skin with water/shower. P361: Take off immediately all contaminated clothing. P363: Wash contaminated clothing before reuse. P310 : Immediately call a POISON CENTRE/doctor
IF INHALED	P304 (<i>Not a likely route of exposure under normal use</i>)
Symptoms	Immediate: <i>burning sensation, irritation, cough</i>
Response	P340: Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. P310 : Immediately call a POISON CENTRE/doctor
IF SWALLOWED	P301 (<i>Not a likely route of exposure under normal use</i>)
Symptoms	Immediate: <i>Abdominal pain, irritation, nausea, vomiting, diarrhea</i>
Response	P330: Rinse mouth. P331: Do NOT induce vomiting. P310 : Immediately call a POISON CENTRE/doctor

EPOXY HARDENER

8320-PART B

Section 5: Fire Fighting Measures

Auto-ignition Temperature	Not Established	Flash Point ^{a)}	>122 °C [>252 °F]	LFL [LEL] ^{b)} UFL [UEL]	Not Established
----------------------------------	-----------------	----------------------------------	----------------------	--	-----------------

In case of fire	P370
Response	P378: Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.
Combustion Products	Produces CO, CO ₂ , and nitrogen oxides.
Fire-Fighter	Wear self-contained breathing apparatus for fire fighting
General Information	Prevent fire-fighting wash from entering waterway or sewer system.

a) Supplier value for the component with the lowest know flash point

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

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

Section 6: Accidental Release Measures

Personal Protection: See Section 8. Avoid breathing the mist/vapors.

Containment Remove all sources of ignition.

Cleaning Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe up further residue with 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.

Disposal Dispose of spill waste according to Section 13.

EPOXY HARDENER

8320-PART B

Section 7: Handling and Storage

Prevention P260: Do not breathe vapors.

P272: Contaminated work clothing should not be allowed out of the workplace.

P270: Do not eat, drink, or smoke when using this product.

P272: Contaminated clothing should not be allowed out of the workplace.

RECOMMENDATION: Protect from high heat. Do NOT process in a fashion that causes mist or fumes.

Handling P280: Wear protective gloves/clothing/eye protection.

RECOMMENDATION: Wear neoprene, butyl rubber, nitrile or other impervious gloves with breakthrough time greater than intended use period.

P264: Wash hands thoroughly after handling.

Storage P405: Store locked up.

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

Section 8: Exposure Controls/Personal Protection

Routes of Entry

Eyes, ingestion, inhalation, and skin

Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
Triethylenetetramine	ACGIH	—	—
	U.S.A. OSHA PEL	—	—
	U.S.A. (WEEL)	1 ppm	—
	Canada ON ^{a)}	0.5 ppm	—

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH², OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database¹ of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.
a) Skin—can be absorbed through the skin.

Continued on the next page

EPOXY HARDENER**8320-PART B****Engineering Controls****Ventilation**

Keep airborne concentrations below exposure limits.

RECOMMENDATION: If the product is heated at high temperatures or worker is allergic, consider using a full mask with organic vapor cartridges.

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 of protective gloves in butyl rubber, latex, neoprene, or other chemically resistant gloves.

Respiratory Protection

If exposed to vapors, wear respirator such as a half-mask respirator.

RECOMMENDATION: Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this MSDS, 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.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

EPOXY HARDENER

8320-PART B

Section 9: Physical and Chemical Properties

Physical State	Liquid	Appearance	Clear, amber
Odor	Musty	Odor Threshold	Not established
pH	Not available	Specific Gravity	0.963
Solubility in Water	Insoluble	Freezing/Melting Point	Not available
Flash Point ^{a)}	>122 °C [>252 °F]	Vapor Pressure ^{b)} @ 20 °C	<0.001 kPa [<lt;0.01 mmhg]<="" td=""> </lt;0.01>
Boiling Point	Not available	Evaporation Rate	Not available
Lower Flammability Limit	Not available	Upper Flammability Limit	Not available
Auto-ignition Temperature	Not available	Decomposition Temperature	Not available
Viscosity @24 °C	8 400 cSt	Vapor Density	5 (Air = 1)
Partition Coefficient	Not established		

a) The closed cup flash point for component with the lowest reported value.

b) Literature value for triethylenetetramine

Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Excessive heat, and incompatible substances. Do not use in a way that forms a mist or aerosolize the product
Incompatibilities	Strong oxidizing agents, strong acids
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5

EPOXY HARDENER

8320-PART B

Section 11: Toxicological Information

Routes of Exposure

Eyes, ingestion, inhalation, and skin

Symptoms Summary

- Eyes** Causes severe eye irritation and may cause chemical burns. Also cause eye redness or pain.
- Skin** May cause chemical burns and serious skin irritation. May cause allergic skin reactions. Triethylenetetramine can be absorbed through skin leading to toxic effects.
- Inhalation** *Not a likely route of exposure due to low volatility.* Inhalation of vapors or mist may cause irritation to the nose, throat and lung (upper respiratory tract).

When heated, hot triethylenetetramine vapors may also result in itching of the face with skin redness (erythema) and swelling (edema).
- Ingestion** *Not a likely route of exposure.* May cause severe irritation or corrosive burns to the mouth, throat, esophagus, and stomach. May cause allergic reactions.
- Chronic** Prolonged or repeated exposure to the uncured epoxy hardener may cause sensitization (allergies).

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
Fatty acids, C18-unsatd., dimers,... (CAS# 68410-23-1)	>5,000 mg/kg a)	>5,000 mg/kg a)	Not established	Not established
Triethylenetetramine	2,500 mg/kg Rat	805 g/kg Rabbit	Not established	Not established

Note: Representative toxicity data from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS)¹ data from supplier MSDS were also consulted.
a) Supplier MSDS

Continued on the next page

EPOXY HARDENER**8320-PART B**

Skin corrosion/irritation	Triethylenetetramine (CAS# 112-24-3) can cause skin burns.
Serious eye damage/irritation	Triethylenetetramine (CAS# 112-24-3) can cause severe eye damage.
Sensitization (allergic reactions)	The epoxy hardener components (CAS# 68082-29-1, and 112-24-3) may cause skin sensitization in humans
Carcinogenicity (risk of cancer)	Not classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP
Mutagenicity (risk of heritable genetic effects)	No data available
Reproductive Toxicity (risk to sex functions)	No data available
Teratogenicity (risk of fetus malformation)	No data available
STOT-single exposure	No data available
STOT-repeated exposure	No data available
Aspiration hazard	Viscosity at 40 °C is $>>20.5 \text{ mm}^2/\text{s}$, thus not classified as aspiration hazard.

EPOXY HARDENER**8320-PART B****Section 12: Ecological Information**

The ecotoxicity of the mixture was estimated by the calculation method using the summation of classified ingredients. The IMDG Code criteria and the raw-material MSDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

The fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (CAS# 68410-23-1) was classified as an acute category 2 environmental toxicant due to supplier reported LC50 range of 1–10 mg/L for fish.

Literature for the Triethylenetetramine (CAS # 112-24-3) suggest low aquatic toxicity (LC50, IC50, and EC50 values of >100 mg/L for fish and between 10 and 100 for algae).

Acute Ecotoxicity

Category 2

GHS Code: Hazard Statement

H401: Toxic to aquatic life

P273: Avoid release to the environment

P391: Collect spillage

Chronic Ecotoxicity

Category 3

GHS Code: Hazard Statement

H412: Harmful to aquatic life with long lasting effects

P273: Avoid release to the environment

P391: Collect spillage

Biodegradability

The content is not readily biodegradable.

Section 13: Disposal Information

P501: Dispose of contents in accordance with all local, regional, national, and international regulations.

EPOXY HARDENER**8320-PART B****Section 14: Transport Information****Ground**

Refer to TDG regulations (Canadian Transportation of Dangerous Goods regulations); **USA CFR 49 Regulations** (Parts 100 to 185). **ADR** (European Agreement Concerning the International Carriage of Dangerous Goods by Road, and **ADN** (Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways).

All sizes less than 1 liter

Limited Quantity

Note: The 8320-125ML and 8320-1L are composed of separate containers which meet this inner packaging limit.

Sizes greater than 1 liter

UN number: UN2259;

Shipping Name: TRIETHYLENETETRAMINE

Class: 8

Packing Group: II,
Marine Pollutant: No

**Air**

Refer to IATA Dangerous Goods Regulations.

UN number: UN2259;

Shipping Name: TRIETHYLENETETRAMINE

Class: 8

Packing Group: II,
Marine Pollutant: No

**Sea**

Refer to IMDG regulations.

All sizes less than 1 liter

Limited Quantity

Note: The 8320-125ML and 8320-1L are composed of separate containers which meet this inner packaging limit.



Continued on the next page

EPOXY HARDENER**8320-PART B**

Sizes greater than 1 liter

UN number: UN2259;

Shipping Name: TRIETHYLENETETRAMINE

Class: 8

Packing Group: II,

Marine Pollutant: No



Note: Component supplier SDS transportation sections and labeling were consulted. All involved staff of shipper must be appropriately trained before involvement with the transport of this product, or work under direct supervision of a trained person.

Section 15: Regulatory Information**Canada****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.

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 does not contain substance 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 of the listed substances.

Continued on the next page

EPOXY HARDENER**8320-PART B****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

MSDS Prepared by Michel Hachey
Date of Issue 14 August 2013
Supersedes Not applicable
Reason for Changes: Change to GHS format

Reference

- 1) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)
- 2) ACGIH 2011 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 (2011).

Abbreviations

ACGIH American Conference of Governmental Industrial Hygienists
GHS: Globally Harmonized System of Classification of Labeling of Chemicals
LC50 Lethal Concentration 50%
LCLo Lowest published lethal concentration
LD50 Lethal Dose 50%
N/A Not Applicable
N/E Not Estimated
PEL Permissible Exposure Limit
STEL Short-Term Exposure Limit
TCLo Lowest published toxic concentration
TWA Time Weighted Average
VOC Volatile Organic Content
WEEL Workplace Environmental Exposure Levels

Continued on the next page



Quality System Certified to ISO 9001:2008

SAI Global File #004008
Burlington, Ontario, Canada

EPOXY HARDENER

8320-PART B

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.

Email: 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.