FLAME RETARDANT EPOXY **834FRB-PART B**

Material Safety Data Sheet

Section 1: Product and Company Identification

Product Name: Flame Retardant Epoxy **MSDS Code:** 834FRB–Part B

Related Part #: 834FRB-375ML; 834FRB-3L; 834FRB-60L

Use: Encapsulating and potting epoxy compound

Emergency Contact: CANUTECH ☎: 1-613-996-6666, Collect 24/7

Manufacturer: MG Chemicals (Head Office), 9347–193 Street, Surrey, B.C., V4N 4E7

Technical Contacts: ☎ 1-800-201-8822 **FAX** 1-800-708-9888

E-MAIL: support@mgchemicals.com **WEB** www.mgchemicals.com

Section 2: Hazards Identification

GHS Classification

Category 1	Category 1	Category 2
		
Danger	Warning	Warning
Corrosive	Skin sensitizer, Harmful in contact with skin	Suspected human carcinogen

Note: The carcinogenic warning applies mainly to inhalation of dust with respect to grinding or cutting of the cured epoxy. It is not an expected route of entry during processing.

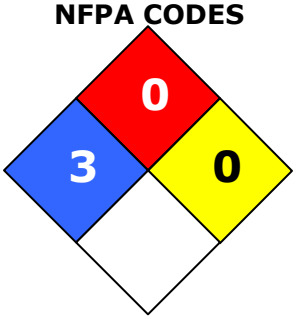
WHMIS Classification


E – Corrosive (Chemical burns); D2A – Very Toxic (Skin Sensitizer; Carcinogen IARC class 2B);

HMIS RATING

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

NFPA CODES



Physical Hazards

GHS Code: Hazard Statement
None known

Health Hazards

GHS Code: Hazard Statement
H312: Harmful in contact with skin

H314: Causes severe skin burns and eye damage

H317: May cause an allergic skin reaction

H335: May cause respiratory irritation.

H351: Suspected of causing cancer

H360: May damage fertility or unborn child.

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 skin sensitization. Triethylenetetramine can be absorbed through skin.

Inhalation Hot triethylenetetramine vapors may result in respiratory tract irritation and itching of the face with erythema and edema. May cause nose, throat and lung irritation. Inhalation of vapors, dust, or mist may cause irritation to the upper respiratory tract.

Ingestion *Not a likely route of exposure.*[a)] Single dose oral toxicity is low. It may cause severe irritation to the digestive tract.

Chronic[b)] Prolonged and repeated exposure may cause dermatitis, defatting of the skin, and skin sensitization reactions. Long term exposure to carbon black or antimony trioxide dust or mist may cause cancer.

Prolonged ingestion of the antimony trioxide component may cause gastrointestinal upset, ulcers, blood effects, liver effects, and neurological effects.

a) The volatility is low at room temperature, but heating the product may release sufficient amount of triethylenetrameine to irritate the respiratory tract. (See Section 8 for respiratory protection.)
b) Chronic inhalation danger for carbon black and antimony trioxide assume dust inhalation are mainly with respect to possible grinding and cutting of the final cured epoxy product. It is not an expected route of entry during processing.

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%	ACGIH TWA	OSHA PEL	STEL
68410-23-1	Dimer fatty acid (C18)poly amido amine resin	63-70%	N/E	N/E	N/E
84852-53-9	1,1'-(1,2-ethanediyl) bis[2,3,4,5,6-pentabromo-benzene	10-30%	N/E	N/E	N/A
112-24-3	Triethylenetetramine	10-30%	N/E [a)]	N/E	N/E
1309-64-4	Antimony trioxide	7–13%	N/E [b)]	N/E	N/A
108-65-6	2-methoxy-1-methylethyl acetate	0.5–1.5%	50 ppm[c)]	75 ppm	75 ppm
8052-41-3	Stoddard solvent; Low boiling point naphtha	0.1–1%	100 ppm	200 ppm	Not established
64741-65-7	Naphtha, petroleum, heavy distillate	0.1–1%	N/E	N/E	N/A
1333-86-4	Carbon black	0.1–1%	3.5 mg/m^3	3.5 mg/m^3	N/A

Note: Limits from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS). Data from suppliers' MSDS were also consulted.

a) Keep exposure by all routes as low as possible. The related TWA for antimony dust is 0.5 mg (Sb)/m^3.

b) Keep exposure by all routes as low as possible. The related TWA for antimony dust is 0.5 mg (Sb)/m^3.

c) No ACGIH limit was established. The United Kingdom TWA of 50 ppm (274 mg/m^3); STEL 100 ppm (skin) are given instead.

Section 4: First Aid Measures

Exposure Condition	*GHS Code: Precautionary Statement*
IF IN EYES	P305
Response	P351: Rinse cautiously with water for several minutes. P338: Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists	P332: Get medical attention.
IF ON SKIN (or hair)	P303
Response	P361+P364: Take off immediately all contaminated clothing and wash it before reuse. P353: Rinse skin with water/shower.
If skin irritation or rash persists	P332: Get medical attention.
IF INHALED	P304 *(Not a likely route of exposure under normal use)*
Response	P340: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms	P301: Immediately call a poison centre or physician. P332: Get medical attention.
If exposed or concerned	P332: Get medical advice.
IF SWALLOWED	P301 (*Not a likely route of exposure under normal use*)
Response	P301: Immediately call a poison centre or physician. P330: Rinse mouth. P331: Do NOT induce vomiting. P332: Get medical attention.

Note: GHS codes and corresponding precaution statements are used when available.

Section 5: Fire Fighting Measures

Autoignition Temperature	Not established	**Flash Point**[a)]	>122 °C [> 256 °F]	**LFL [LEL]**[b)] **UFL [UEL]**	Not established

In case of fire	P370
Response	P378: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Wear self-contained breathing apparatus and protection suit.
Combustion Products	Produces carbon oxides (CO, CO_2), hydrogen bromine (HBr), bromine oxides, nitrous oxides (NO_x), and smoke.
General Information	Liberates toxic gases at temperatures greater than 320 °C [608 °F]. Will burn if involved in a fire, but it will self extinguish when removed from external flame source.

Note: The GHS codes and the GHS precaution statements are used. The format is *GHS Codes: Statements*.

a) Flashpoint based on lowest values from component supplier safety data sheet

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.

Containment Remove all sources of ignition.

Cleaning Scoop residue into a plastic or metal container. Wipe up further residue with paper towel and place in container. Wash spill area with soap and water to remove the last traces of residue.

Disposal Dispose of spill waste according to Section 13.

Section 7: Handling and Storage

Handling P202: Do not handle until all safety precautions have been read and understood.
P280: Wear protective gloves/clothing/eye protection.
P264: Wash thoroughly after handling.
P363: Wash contaminated clothing before reuse.
P261: Avoid breathing dust/mist/vapours.

Storage P403 + P405: Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Store in dry area.

Note: The GHS codes and the GHS precaution statements are used. The format is *GHS Codes: Statements*.

Section 8: Exposure Controls/Personal Protection

Routes of Entry

Eyes, ingestion, inhalation, and skin

Engineering Controls

Ventilation Keep airborne concentrations below exposure limits.

Personal Protective Equipment

Eye protection Wear appropriate protective eyeglasses or chemical safety goggles.

Skin Protection Wear appropriate protective clothing to prevent skin contact.

Respiratory Protection If exposed to dust or particulates, 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. Ensure 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 with water and soap after use.

Section 9: Physical and Chemical Properties

Physical State	Liquid	**Odor**	Ammonical like	**Odor Threshold**[a]	Not established
Appearance	Black	**Specific Gravity**	1.14	**Freezing Point**	Not established
Boiling Point	Not established	**Vapor Pressure @ 20 °C**	Not established	**Evaporation Rate**	slow
Autoignition Temperature	Not established	**Flash Point**[a)]	>122 °C [>252 °F]	**Vapor Density**	Not applicable
Lower Flammability Limit	Not applicable	**Upper Flammability Limit**	Not applicable		
pH	Not established	**Partition Coefficient**	Not established	**Solubility in Water**	Partially soluble

a) Based on lowest reported value in raw component safety data sheets.

Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Temperatures over 346 °C [608 °F] and incompatible substances
Incompatibilities	Strong oxidizing agents, strong acids, strong bases, and amines
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5

Section 11: Toxicological Information

Sensitization (effects of repeated exposure)	May cause skin sensitization and other allergic reactions
Carcinogenicity (risk of cancer)	**ANTIMONY TRIOXIDE [1309-64-4]** (See Note A) IARC Group 2B: Possibly carcinogenic to humans. This finding is based on a long term dust inhalation study for female rats. ACGIH A2: Suspected human carcinogen causing lung cancer CA Prop 65: Listed as a carcinogen NTP: Not listed **CARBON BLACK [1333-86-4]** (See Note A) IARC Group 2B: Possibly carcinogenic to humans. This finding is based long term on dust inhalations studies on rats. ACGIH A4: Not classified as a human carcinogen CA Prop 65: Listed as a carcinogen NTP: Not listed
Reproductive Toxicity (risk to sex functions)	Not known
Teratogenicity (risk of fetus malformation)	Inhalation of antimony trioxide leads to fetal death between 82 $\mu g/m^3$ to 270 $\mu g/m^3$
Mutagenicity (risk of heritable genetic effects)	Antimony trioxide damages human DNA at 0.12 ng/L 1 y
Tumorigen (risk of tumors)	Antimony trioxide increases of lungs, thorax, or respiratory tumors in rats at inhalation doses of 45 mg/m^3 52 w (intermittent)

Note A: Neither carbon black nor antimony trioxide are considered volatile in the liquid part or in the final product; therefore, the chronic inhalation danger relative to dusts applies mainly to possible grinding and cutting of the final cured epoxy product.

Lethal Exposure Concentrations

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
Dimer fatty acid (C18)poly amido amine resin	>8000 mg/kg Rat[a)]	Not available	Not available	Not available
1,1'-(1,2-ethanediyl) bis[2,3,4,5,6-pentabromo-benzene	>5000 mg/kg Rat	>2000 mg/kg Rabbit	Not established	Not established
Antimony trioxide	>34.6 g/kg Rat	>2000 mg/kg Rabbit	Not established	Not established
2-methoxy-1-methylethyl acetate	8532 mg/kg Rat >5000 mg/kg Mouse	>5000 mg/kg Rabbit	N/E	1105 mg/m^3 4 h Rat
Triethylenetetramine	2500 mg/kg Rat 35.5 mg/kg Mouse	805 mg/kg Rabbit	N/E	N/E
carbon black	>15 g/kg Rat	>3 g/kg Rabbit	N/E	1.6 mg/m^3 7 h Rat

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

Section 12: Ecological Information

Acute Ecotoxicity

Category 2
GHS Code: Hazard Statement
H402: Harmful to aquatic life.

P273: Avoid release to the environment.

The ecotoxitcity was calculated according to the raw material MSDS data and by comparison to similar substances.

Antimony trioxide (CAS#1309-64-4) has a LC50 of 833 mg/L for flathead minnow (pimpehales promelas) 96 h. The polyamide resin supplier expects a fish toxicity between 1 mg/L to 10 mg/L. And the Triethylenetetramine supplier expects a fish toxicity of >10 mg/L but ≤ 100 mg/L.

These give a mixture LC50 of ≥1.2 mg/L for the mixture, so it is classified as Category Acute 2 by GHS aquatic environment categories.

Chronic Ecotoxicity

Unknown

Biodegradability

Not readily biodegradable

Section 13: Disposal Information

GHS Code: Precaution Statement
P501: Dispose of contents in accordance with all local, provincial, state, and federal regulations.

Section 14: Transport Information

Ground

DOT (US) and TDG (Canada)

Not regulated

Air

DOT (US) and TDG (Canada)

Not regulated

Sea

DOT (US) and TDG (Canada)

Not regulated

Section 15: Regulatory Information

Canada

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

All hazardous substances are listed except for CAS# 84652-53-9.

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 contain an "antimony compound", which is listed as hazardous air pollutants.

SARA (Superfund Amendments and Reauthorization Act of 1986, USA, 40 CFR 372.4)

Antimony trioxide (CAS# 1309-64-4) has a reportable quantity of 1000 lb.

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

This product does not contains antimony trioxide (CAS# 1309-64-4) 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, except for CAS# 84652-53-9.

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

This product contains carbon black (CAS# 1333-86-4; airborne, unbound particles of respirable size), which is listed as a carcinogen.

This product contains antimony trioxide (CAS# 1309-64-4) is listed as a carcinogen.

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 Preparation	06 October 2011
Reference	All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

Abbreviations

GHS: Globally Harmonized System of Classification of Labeling of Chemicals
LC50 Lethal Concentration 50%
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

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.

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