

833FRB-PART B

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Flame Retardant Epoxy Encapsulating and Potting Compound
MSDS Code: 833FRB-Part B
Related Part #: 833FRB-375ML; 833FRB-3L; 833FRB-60L

Recommended Use and Restriction on Use

Use: Hardeners for use with epoxy resin to pot devices or encapsulate components **Uses Advised Against:** Not for use as a spray coating

Details of Manufacturer or Importer

Manufacturer

MG Chemicals 1220 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: <u>support@mgchemicals.com</u>
 WEB <u>www.mgchemicals.com</u>

1-905-331-1396
 Fax 1-905-331-2682
 E-MAIL: info@mgchemicals.com

E-маіL (Competent Person): <u>sds@mgchemicals.com</u>

Emergency Phone Number

Emergency Contact

USA or CANADA: Call CHEMTREC **2**: 1-800-424-9300 (For hazardous material incidents ONLY—leaks, spills, fires, exposures or accidents)

CANADA: Call CANUTEC **2**: 1-613-996-6666 or *666 on cellular phones, Collect 24/7 (**For emergencies involving dangerous goods**)



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Section 2: Hazards Identification

Classification of Hazardous Chemical

WHMIS Classification



E – Corrosive; D1B Immediately Toxic (Skin Absorption); D2A – Very Toxic Material (Carcinogen IARC Class 2B); D2B – Toxic Material (Skin Sensitization in Humans)

Note: The possible carcinogenicity warning applies to inhalable dust. Aerosolization and misting should be avoided and are not expected to occur for normal uses.

GHS Pictograms



GHS Categories

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

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SAI Global File #004008 Burlington, Ontario, Canada

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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)

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 an allergic skin reaction
	H351: Suspected of causing cancer
	H412: Harmful to aquatic life with long lasting effects
	Precautionary Statements
	 P102: Keep out of reach of children. P260 + P271: Do not breathe fume/gas/vapors/spray. Use only outdoors or in well ventilated area. P280: Wear protective gloves/eye protection P305 + P351 + P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P302 + P352 + P361 + P353: IF ON SKIN: Wash with plenty of water. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. P310: Immediately call a POISON CENTER or doctor



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Other Hazards

Not applicable

Exposure Routes and Symptoms Summary

- **Eyes** Causes severe eye damage or irritation. Also cause eye redness or pain.
- **Skin** Cause serious severe skin irritation or burns. May cause allergic skin reactions. Triethylenetetramine can be absorbed through skin leading to toxic effects.
- **Inhalation** Inhalation of vapors or mist may cause irritation to the nose, throat and lungs (upper respiratory tract).

When heated, hot triethylenetetramine vapors may cause itching of the face, skin redness (erythema) and swelling (edema).

- **Ingestion** 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).

Long term inhalation exposure to carbon black or antimony trioxide dust may cause cancer.

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
68410-23-1	dimer fatty acid (C18)poly amido amine resin	63-70%
84852-53-9	1,1'-(1,2-ethanediyl) bis[2,3,4,5,6-pentabromo- benzene	16-18%
112-24-3	triethylenetetramine	10-12%
1309-64-4	antimony trioxide	6-7%
108-65-6	2-methoxy-1-methylethyl acetate	0.5-1.5%
8052-41-3	stoddard solvent; Low boiling point naphtha	0.1-1%
64741-65-7	naphtha, petroleum, heavy distillate	0.1-1%
1333-86-4	carbon black	0.1-1%



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Section 4: First Aid Mea	isures
Exposure Condition	GHS Code: Precautionary Statement
IF IN EYES	P305
Symptoms	Immediate: burns, severe irritation, redness, pain
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	P302
Symptoms	Immediate: burns, blistering, tears, redness, pain
Response	P352: Wash with plenty of water. P361: Take off immediately all contaminated clothing. P353 + P362: Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. P310 : Immediately call a POISON CENTRE/doctor
IF INHALED	P304 (Not a likely route of exposure under normal use)
Symptoms	Immediate: burning sensation, irritation, cough
Response If feeling unwell	P340: Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing. P312: Call a POISON CENTRE/doctor
TE SWALLOWED	P301 (Not a likely route of experience under normal use)
	rsoit (Not a likely route of exposure under normal use)
Symptoms	Immediate: <i>burns, abdominal pain, irritation, nausea, vomiting,</i> <i>diarrhea</i>
Response If feeling unwell	P330: Rinse mouth. P331: Do NOT induce vomiting. P312: Call a POISON CENTRE/doctor



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Section 5: Fire Fighting Measures					
Autoignition Temperature	Not Establishe	Flash Point ^{a)} ed	>122 °C [>252 °F]	LFL [LEL] ^{b)} UFL [UEL]	Not Established
In case of fire	F	9370			
Response	F	2378: Use dry chemi extinguish. Use wate	cal, carbon dio r spray to coo	oxide, or chemic l containers.	cal foam to
Combustion Proc	ducts F	Produces carbon oxid promines, and toxic f	les (CO, CO ₂), ⁻ umes.	hydrogen brom	nide (HBr),
Fire-Fighter	١	Near self-contained l	breathing app	aratus for fire fi	ghting
General Informa	tion [[\ \	iberates toxic gases 608 °F]. Will burn if when removed from wash from entering w	at temperatu involved in a external flame vaterway or se	re greater than fire, but it will s e sources. Preve ewer system.	320 °C self extinguish ent fire-fighting

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

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. Prevent spill from entering drains and waterways.

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.



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Section 7: Handling and Storage

Prevention P262: Do not get in eye, on skin, or on clothing.

P261 + P271 + P284: Avoid breathing fume/vapors. Use only outdoors or in well ventilated area. In cases of inadequate ventilation wear respiratory protection.

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

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

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

P264: Wash hands thoroughly after handling.

Storage P403 + P233+ P235: Keep Container tightly closed. Store in a well-ventilated area. Keep cool.

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



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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)
carbon black ^{a)}	ACGIH	3.5 mg/m ³	-
	U.S.A. OSHA PEL	3.5 mg/m^{3}	—
	Canada AB	3.5 mg/m ³	—
	Canada BC	3 mg/m^3	—
	Canada ON	3.5 mg/m^{3}	—
	Canada QC	3.5 mg/m ³	_
triethylenetetramine	ACGIH	—	—
	U.S.A. OSHA PEL	—	—
	U.S.A. (WEEL)	1 ppm	—
	Canada ON ^{a)}	0.5 ppm	—
2-methoxy-1-	ACGIH	50 ppm	—
methylethyl acetate	U.S.A. OSHA PEL	50 ppm	75 ppm
	Canada BC	50 ppm	75 ppm
	Canada ON	50 ppm	_
antimony trioxide ^{a)}	Vendor	b)	_
	recommendation		

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 usually for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) Respirable airborne particles.

b) Keep airborne concentration as low as possible.

Engineering Controls

Ventilation

Keep airborne concentrations below exposure limits. Because carbon black is bound to the liquid mixture; the airborne hazard is present only if the conditions of use result in aerosolization or misting.

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

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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 mist, 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.

Section 9: Physical and Chemical Properties					
Physical State	Liquid	Odor	Amonia like	Odor Threshold	Not established
Appearance	Black	Specific Gravity	1.18	Freezing Point	Not established
Boiling Point	Not established	Vapor Pressure @ 20 °C	< 1 mmHg	Evapora- tion Rate	Not established
Auto-ignition Temperature	Not established	Flash Point ^{a)}	>142°C [>288 °F]	Vapor Density	5 (Air = 1)
Lower Flammability Limit	Not established	Upper Flammability Limit	Not established	Decompos- ition Temp.	Not available
Viscosity @25 °C	7900 cSt	Partition Coefficient	Not established	Solubility in Water	Negligible
рН	Not available				

a) The closed cup flash point values are based on the alkyl glycidyl ether resin component.



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Section 10: Stability and Reactivity

Stabilities	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, excessive heat (above 320 °C [608 °F]), and incompatible substances. Do not use in a way that forms a mist or aerosolize the product.
Incompatibilities	Strong oxidizing agents, strong acids, strong bases.
	Note: React with 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

Routes of Exposure

Eyes, ingestion, inhalation, and skin

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	ANTIMONY TRIOXIDE [1309-64-4] (See Note A)
(risk of cancer)	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
<u>Note A</u> : Carbon black and an in the final product; therefore	timony trioxide are not considered volatile in the liquid part or , the inhalation hazard applies to intentional aerosolization,

misting, or to possible dust from grinding and cutting of the final cured epoxy product.

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Mutagenicity (risk of heritable genetic effects)	Data does not give rise to classification. Antimony trioxide damages human DNA at 0.12 ng/L 1 y
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.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50	LD50	LC50	TCLo
	oral	dermal	inhalation	inhalation
fatty acids, C18-unsatd., dimers, (CAS# 68410-23-1)	>5 000 mg/kg ª)	>5 000 mg/kg ª)	Not established	Not established
1,1'-(1,2-ethanediyl) bis[2,3,4,5,6- pentabromo-benzene	>5 000 mg/kg Rat ^{a)}	>2 000 mg/kg Rabbit ^{a)}	Not available	Not available
triethylenetetramine	2 500 mg/kg	805 g/kg	Not	Not
	Rat	Rabbit	established	established
antimony trioxide	>34 600	>2 000 mg/kg	Not	Not
	mg/kg Rat	Rabbit	available	available
2-methoxy-1-	8 532 mg/kg	>5 g/kg	Not	1 105 mg/m ³
methylethyl acetate	Rat	Rabbit	available	4 h Rat
naphtha, petroleum,	34 600 mg/kg	15 400 mg/kg	>3 684 ppm	Not
heavy alkylate	Rat ^{a)}	Rabbit ^{a)}	4h Rat ^{a)}	available
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)¹ data from supplier MSDS were also consulted. a) Data from supplier MSDS



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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 (<u>http://echa.europa.eu</u>) 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).

Antimony trioxide (CAS#1309-64-4) has a LC50 of 833 mg/L for flathead minnow (pimpehales promelas) 96 h.

Acute Ecotoxicity

Category 2

GHS Code: Hazard Statement

H401: Toxic to aquatic life

Chronic Ecotoxicity

Category 2

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 biodegradable.

Section 13: Disposal Information

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



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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 1 liter and under

Limited Quantity

Note: The 833FRB-375ML and 833FRB-3L 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.

All sizes

UN number: UN2259; Shipping Name: TRIETHYLENETETRAMINE Class: 8 Packing Group: II, Marine Pollutant: No

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Sea

Refer to IMDG regulations.

Sizes 1 liter and under

Limited Quantity

Note: The 833FRB-375ML and 833FRB-3L 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





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.

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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.

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

This product contains antimony trioxide (CAS# 1309-64-4) which has a 1,000 lb reporting quantity requirements in 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 contains carbon black (airborne, unbound particles of respirable size), which 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 Issue	16 December 2013	
Supersedes	28 March 2013	
Reason for Changes: Correct kit size list for limited quantity transport		
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References

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

Technical Queries Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at <u>www.mgchemicals.com</u>.

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

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