832TC-B **(PART B)**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 832TC–B

Other Means of Identification: Thermally Conductive Epoxy: Encapsulating and Potting Compound (Part B)

Related Part # 832TC-450ML, 832TC-450MLCA, 832TC-2L, 832TC-8L, 832TC-40L

Recommended Use and Restriction on Use

Use: Hardeners for use with thermally conductive epoxy resin

Uses Advised Against: Not applicable

Details of Manufacturer or Importer

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

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FAX +1-800-340-0773
E-MAIL support@mgchemicals.com
WEB www.mgchemicals.com

MG Chemicals (Head Office)
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Surrey, British Columbia V4N 4E7
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☎ +1-905-331-1396
FAX +1-905-331-2682
E-MAIL info@mgchemicals.com

E-MAIL (Competent Person): sds@mgchemicals.com

Emergency Phone Number

For hazardous material incidents ONLY (leaks, spills, fires, exposures or accidents)
USA or CANADA—Call Verisk 3E at ***+1-866-519-4752*** or ***+1-760-476-3962***
(Service access code: 335388)

For emergencies involving the transport of dangerous goods; 24/7 service
CANADA—Call CANUTEC collect at ***+1-613-996-6666*** or ****666*** on cellular phones

Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria		Category	Signal Word	Pictograms
Sensitization	Skin	1	Warning	Exclamation
Eye Irritation		2	Warning	Exclamation
Skin Irritation		2	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.

Label Elements

Signal Word	**WARNING**
Pictograms	**Hazard Statements**
	H319: Causes serious eye irritation H315: Causes skin irritation H317: May cause an allergic skin reaction
Prevention	**Precautionary Statements**
P102	Keep out of reach of children.
P261	Avoid breathing fumes or vapors.
P280	Wear protective gloves and eye protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P264	Wash hands thoroughly after handling.

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Response	Precautionary Statements
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313	If eye irritation persists: Get medical advice or attention.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
Disposal	**Precautionary Statements**
P501	Dispose of contents in accordance to local, regional, national and international regulations.

Hazards Not Otherwise Classified

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
None	None	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
1344-28-1	aluminum oxide	52%
68071-65-8	modified polyamide polymer	30%
100-51-6	benzyl alcohol	11%
112-24-3	triethylenetetramine	2%
64741-65-7	naphtha, petroleum, heavy alkylate	1%
108-65-6	2-methoxy-1-methylethyl acetate	1%
1333-86-4	carbon black	1%

Section 4: First-Aid Measures

Exposure Condition	*GHS Code/Symptoms/Precautionary Statements*
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	*redness, irritation, pain*
Response	Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
IF ON SKIN	P302 + P352, P333 + P313, P362 + P364
Immediate Symptoms	*redness, irritation, dry skin, allergic contact dermatitis*
Response	Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
IF INHALED	P304 + P340
Immediate Symptoms	*cough, irritation of the respiratory track*
Response	Remove person to fresh air and keep comfortable for breathing
IF SWALLOWED	P301 + P330, P331
Immediate Symptoms	*irritation*
Response	Rinse mouth. Do not induce vomiting.

Advice to Physicians

In case of overexposure to nitrogen oxides (NOx) combustion products or triethylenetetramine vapors during a fire, the symptoms may be delayed. For significant exposures, the exposed person should be kept under medical surveillance for 48 hours.

Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use extinguishing media suitable for surrounding materials.
Specific Hazards	Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires. Inhalation of toxic smoke during fire may have delayed effects. Exposed person may need to be put under surveillance for 48 h. Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	Produces carbon oxides (CO,CO_2), nitrogen oxides (NO_x), and toxic fumes.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing fumes or vapors. Remove or keep away all sources of extreme heat or open flames.
Environmental Precautions	Avoid releasing to the environment.
Containment Methods	Contain with inert and non-flammable absorbent (such as soil, sand, vermiculite).
Cleaning Methods	Collect liquid in a sealable, chemical-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe the residues with a paper towel wetted and place dirty towels in container. Use soap and water to remove the last traces of residue.
Disposal Methods	Dispose of spill waste according to Section 13.

Section 7: Handling and Storage

Prevention	Keep out of reach of children.
	Avoid breathing fumes or vapors.
Handling	Wear protective gloves and eye protection.
	Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.
	Wash hands thoroughly after handling.
Storage	DO NOT FREEZE. Store in a clean and dry area between 5 to 35 °C.

Section 8: Exposure Controls/Personal Protection

Substances with Occupational Exposure Limit Values

Chemical Name	Country/Province	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
aluminum oxide [a)]	ACGIH	1 mg/m^3	Not established
	U.S.A. OSHA PEL	15 mg/m^3	Not established
	Canada AB	10 mg/m^3	Not established
	Canada BC	1 mg/m^3	Not established
	Canada ON	1 mg/m^3	Not established
	Canada QC	10 mg/m^3	Not established
triethylenetetramine	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	U.S.A (WEEL)	1 ppm	Not established
	Canada AB	Not established	Not established
	Canada BC	Not established	Not established
	Canada ON	0.5 mg/m^3 (Skin)	Not established
	Canada QC	Not established	Not established
naphtha, petroleum, heavy distillate	ACGIH	100 ppm (525 mg/m^3)	Not established
	U.S.A. OSHA PEL	500 ppm (2 900 mg/m^3)	Not established
	Canada AB	572 mg/m^3	Not established
	Canada BC	290 mg/m^3	580 mg/m^3
	Canada ON	100 ppm	Not established
	Canada QC	525 mg/m^3	Not established

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Chemical Name	Country/Province	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
2-methoxy-1-methylethyl acetate	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	50 ppm	Not established
	Canada AB	Not established	Not established
	Canada BC	50 ppm	75 ppm
	Canada ON	50 ppm	Not established
	Canada QC	Not established	Not established
carbon black [a)]	ACGIH	3.5 mg/m^3	Not established
	U.S.A. OSHA PEL	3.5 mg/m^3	Not established
	Canada AB	3.5 mg/m^3	Not established
	Canada BC	3 mg/m^3	Not established
	Canada ON	3.5 mg/m^3	Not established
	Canada QC	3.5 mg/m^3	Not established

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS[2] database and 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.

Skin—can be absorbed through the skin.

a) Respirable airborne particles

Engineering Controls

Ventilation

Keep airborne concentrations below the occupational exposure limits (OEL).

Because the carbon black and aluminum oxide is bound to the liquid mixture, it does not present an airborne hazard under normal use. Ensure adequate ventilation if the product is mechanically misted or aerosolized.

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Personal Protective Equipment

Eye protection	Wear appropriate protective eyeglasses or chemical safety goggles. **RECOMMENDATION:** Ensure that glasses have side shields for lateral protection.
Skin Protection	For likely contacts, use of protective butyl rubber or other chemically resistant gloves. For incidental contacts, use nitrile or other chemically resistant gloves.
Respiratory Protection	Not normally required, but if exposed to high levels of mist, vapors, or fumes, wear respirator such as a half-mask respirator with organic vapor cartridge. Above 10 x OEL, use a positive-pressure, air-supplied respirator or a self-contained breathing apparatus. If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply. **RECOMMENDATION:** Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be 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	**Lower Flammability Limit**	Not available
Appearance	Black	**Upper Flammability Limit**	Not available
Odor	Slight aromatic	**Vapor Pressure** [b] **@20 °C**	<0.1 kPa [<1 mmHg]
Odor Threshold	Not available	**Vapor Density**	>1 (Air = 1)
pH	Not available	**Relative Density @25 °C**	1.61
Freezing/Melting Point	Not available	**Solubility in Water**	Insoluble
Initial Boiling Point	Not available	**Partition Coefficient n-octanol/water**	Not available
Flash Point [a]	96 °C [205 °F]	**Auto-ignition Temperature**	Not available
Evaporation Rate	Not available	**Decomposition Temperature**	Not available
Flammability	Non Flammable	**Viscosity @25 °C**	14 000 cP

a) The closed cup flash point for component with the lowest reported value
b) Based on supplier value of main hardener system

Section 10: Stability and Reactivity

Reactivity	Reacts exothermically with epoxides.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	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 bases, strong acids, halogenated hydrocarbons
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure

Eyes	Causes serious eye irritation, redness, or pain.
Skin	Causes skin redness, irritation, dry skin, or allergic contact dermatitis.
Inhalation	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	Low toxicity: may cause an irritation. (Also see inhalations symptoms).
Chronic	Prolonged or repeated exposure to the uncured epoxy resins used may cause dermatitis and sensitization.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
aluminum oxide	>2 000 mg/kg Rat	Not available	Not available
modified polyamide polymer	Not available	Not available	Not available
benzyl alcohol	1 620 mg/kg Rat	2 000 mg/kg Rabbit	>4.18 mg/L 4 h Rat
triethylenetetramine	2 500 mg/kg Rat	805 mg/kg Rabbit	Not available
naphtha, petroleum, heavy alkylate	>7 600 mg/kg Rat	>3 040 mg/kg Rabbit	>5.9 mg/L 4 h Rat
2-methoxy-1-methylethyl acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not available
carbon black	>15 g/kg Rat	>3 g/kg Rabbit	Not available

Note: Toxicity data from the RTECS[2] and ECHA were consulted. The data from supplier SDS were also consulted.

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Other Toxicological Effects

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Causes severe eye irritation.
Sensitization (allergic reactions)	The triethylenetetramine may cause skin sensitization in humans
Carcinogenicity (risk of cancer)	The carbon black [1333-86-4] is possibly carcinogenic by airborne routes of exposures under WHMIS. Because the carbon black is bound in the epoxy liquid mixture, it is not available as an airborne hazard (dust, mist, or spray) under normal use. **Carbon Black [1333-86-4]** IARC Group 2B: Possibly carcinogenic to humans ACGIH A4: Not classified as a human carcinogen CA Prop 65: Listed as a carcinogen (airborne, as unbound particles of respirable size) NTP: Not listed
Mutagenicity (risk of heritable genetic effects)	Based on available data, the classification criteria are not met.
Reproductive Toxicity (risk to sex functions)	Based on available data, the classification criteria are not met.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met. There is less than 1% of category 1 components, and the kinematic viscosity is >20.5 mm^2/s at 40 °C.

Section 12: Ecological Information

Ecological classifications are based on the IMDG/GHS criteria in conjunction with ecotoxicological data from our suppliers, the European Chemical Agency database (http://echa.europa.eu), and other reliable sources.

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).

Naptha, petroleum, heavy alkylate is classified as category 2 chronic environmental toxicant.

Based on available data, aluminum oxide, modified polyamide polymer, benzyl alcohol, 2-methoxy-1-methylethyl acetate, and carbon black not classified as environmental hazard according to GHS criteria.

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds.

Chronic Ecotoxicity

Available toxicity data does not meet classification thresholds.

Biodegradability

Not readily biodegradable.

Bioaccumulation

Not available

Other Effects

Not available

Section 13: Disposal Information

Dispose of contents in accordance with all local, regional, national, and international 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.**
Non Regulated

Temperature sensitive—Keep between 5 °C and 35 °C.

Air

Refer to ICAO-IATA Dangerous Goods Regulations.
Non Regulated

Temperature sensitive—Keep between 5 °C and 35 °C.

Sea

Refer to IMDG regulations.
Non Regulated

Temperature sensitive—Keep between 5 °C and 35 °C.

Section 15: Regulatory Information

Canada

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

All hazardous ingredients are listed on the DSL.

Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

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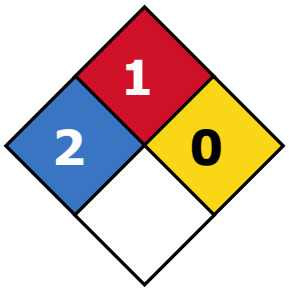
USA

Other Classifications

HMIS® RATING

HEALTH:	* 2
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)

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 substances which are 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, USA).

This product contains carbon black, but it is bound and exposures during normal conditions of uses are below the Safe Harbor Threshold.

Europe

RoHS (Restriction of Hazardous Substances Directive)

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

WEEE (Waste Electrical and Electronic Equipment Directive)

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 the Regulatory Affairs Department

Date of Review 02 March 2020

Supersedes 20 November 2019

Reason for Changes: Update to the emergency phone number information.

Reference

1) ACGIH *2017 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 (2017).

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
IARC	International Agency for Research on Cancer
NOELR	No observable effect loading ratio
NTP	National Toxicology Program
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
SDS	Safety Data Sheet
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

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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

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