

8329TCS-B

(PART B)

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 8329TCS-B**Other Means of Identification:** Thermally Conductive Epoxy Adhesive**Related Part #** 8329TCS-6ML, 8329TCS-50ML, 8329TCS-200ML

Recommended Use and Restriction on Use

Use: Thermally conductive adhesive hardener**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.com**WEB** www.mgchemicals.com**☎** +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 serviceCANADA—Call CANUTEC collect at **+1-613-996-6666** or ***666** on cellular phones

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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 |
| Hazardous to the Aquatic Environment | Chronic | 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.

Label Elements

| | |
|---|--|
| Signal Word | WARNING |
| Pictograms | Hazard Statements |
|  | H317: May cause an allergic skin reaction H319: Causes serious eye irritation H315: Causes skin irritation |
|  | H410: Very toxic to aquatic life with long lasting effects |
| Prevention | Precautionary Statements |
| P102 | Keep out of reach of children. |
| P261 | Avoid breathing fumes/vapors. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P264 | Wash hands thoroughly after handling. |
| P280 | Wear protective gloves/eye protection. |
| P273 | Avoid release to the environment. |

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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/attention. |
| P302 + P352 | IF ON SKIN: Wash with plenty water. |
| P333 + P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P362 + P364 | Take off contaminated clothing and wash it before reuse. |
| P391 | Collect spillage. |
| Disposal | Precautionary Statements |
| P501 | Dispose of contents/container in accordance to local/regional/international regulations. |

Hazards Not Otherwise Classified

| Other Criteria | Hazard Statements/Precautionary Statement | Signal Word | Pictograms |
|-----------------------|---|--------------------|-------------------|
| Metal fume fever | When the product is exposed to very high heat such as welding or when mechanically aerosolized, this may cause harmful zinc oxide and aluminum oxide fumes. | None | None |

Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | %(weight) |
|--------------|---|------------------|
| 1344-28-1 | aluminium oxide | 37% |
| 1314-13-2 | zinc oxide | 34% |
| 68541-13-9 | fatty acids, c18-unsat, dimer, polymers, w/3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine | 13% |
| 68082-29-1 | fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine | 8% |
| 4246-51-9 | 3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine | 2% |
| 108-65-6 | 1-methoxy-2-propanol acetate | 1% |
| 112-24-3 | triethylenetetramine | 0.7% |
| 1333-86-4 | carbon black | 0.5% |

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Section 4: First-Aid Measures

| <i>Exposure Condition</i> | <i>GHS Code/Symptoms/Precautionary Statements</i> |
|---------------------------|---|
| IF IN EYES | P305 + P351 + P338, P337 + P313 |
| Immediate Symptoms | <i>redness, serious irritation, pain</i> |
| 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/attention. |
| IF ON SKIN | P302 + P352, P333 + P313, P362 + P364 |
| Immediate Response | <i>dry skin, redness, irritation, allergic contact dermatitis</i> |
| Response | Wash with plenty water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. |
| IF INHALED | P304 + P340 |
| Immediate Symptoms | <i>cough, sore throat, headache, respiratory system irritation</i> |
| Response | Remove person to fresh air and keep comfortable for breathing. |
| IF SWALLOWED | P301 + P330 + P331 |
| Immediate Symptoms | <i>abdominal pain, diarrhea, nausea, vomiting</i> |
| Response | Rinse mouth. Do NOT induce vomiting. |

Section 5: Fire-Fighting Measures

| | |
|---------------------|---|
| Extinguishing Media | In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. |
| Specific Hazards | Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires. Inhalation of zinc oxide and aluminum oxide fumes may cause metal fever and irritate the respiratory tract. The flu-like symptoms of metal fever may be delayed, occurring 4 to 12 hours after exposure. Prevent fire-fighting wash from entering waterway or sewer system. |
| Combustion Products | Produces carbon oxides (CO, CO ₂), nitrogen oxides, boron oxides, and toxic metal fumes. |
| Fire-Fighter | Wear self-contained breathing apparatus and full fire-fighting turn-out gear. |

8329TCS-B**(PART B)****Section 6: Accidental Release Measures**

| | |
|----------------------------------|---|
| Personal Protection | See personal protection recommendations in Section 8. |
| Precautions for Response | Avoid breathing the fumes/vapors. Remove or keep away all sources of extreme heat or open flames. |
| Environmental Precautions | Avoid releasing to the environment. Prevent spill from entering drains and waterways. |
| Containment Methods | Not required—this product is not readily flowable. |
| Cleaning Methods | Collect liquid in a sealable, chemical-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash residue with a paper towel wetted with alcohol, ethyl lactate, or another suitable organic solvent; 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/vapors. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. |
| Handling | Wear protective gloves/eye protection. Take off contaminated clothing and wash it before reuse. Wash hands thoroughly after handling. Collect spillage. |
| Storage | Keep in a dry and clean area, away from incompatible substances. |

Section 8: Exposure Controls/Personal Protection
Substances with Occupational Exposure Limit Values

| Chemical Name | Country | Long Term Exposure Limits (PEL) | Short Term Exposure Limits (STEL) |
|--|--|--|---|
| aluminum metal and insoluble compounds ^{a)} | ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC | 1 mg/m ³ 15 mg/m ³ 10 mg/m ³ 1 mg/m ³ 1 mg/m ³ 10 mg/m ³ | Not established Not established Not established Not established Not established Not established |
| zinc oxide (dust/mist) | ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC | 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ | Not established 10 mg/m ³ 10 mg/m ³ 10 mg/m ³ 10 mg/m ³ 10 mg/m ³ |
| fumes dust | Canada QC Canada QC | 2 mg/m ³ 10 mg/m ³ | 10 mg/m ³ Not established |
| 1-methoxy-2-propanol acetate | ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC | Not established Not established Not established 50 ppm 50 ppm Not established | Not established Not established Not established 75 ppm Not established Not established |
| triethylenetetramine | ACGIH U.S.A. OSHA PEL U.S.A (WEEL) Canada AB Canada BC Canada ON Canada QC | Not established Not established 1 ppm Not established Not established 0.5 mg/m ³ (Skin) ^{b)} Not established | Not established Not established Not established Not established Not established Not established Not established |
| carbon black ^{b)} | ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC | 3.5 mg/m ³ 3.5 mg/m ³ 3.5 mg/m ³ 3 mg/m ³ 3.5 mg/m ³ 3.5 mg/m ³ | Not established Not established Not established Not established Not established Not established |

Note: The ACGIH¹, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database² and 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) Skin—can be absorbed through the skin.

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8329TCS-B**(PART B)****Engineering Controls****Ventilation**

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

Because the zinc oxide, aluminum oxide, and carbon black are inextricably bound to the adhesive mixture, they are not available as airborne hazards under normal use. Ensure adequate ventilation if the product is mechanically misted or aerosolized.

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, latex, neoprene, or other chemically resistant gloves.

For incidental contacts, use latex, neoprene or other chemically resistant gloves.

Respiratory Protection

For over-exposures up to 10 x OEL of mist/vapors/spray, wear respirator such as a half-mask respirator with organic vapor cartridges.

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.

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Section 9: Physical and Chemical Properties

| | | | |
|--|----------------------|--|--------------------------|
| Physical State | Solid | Lower Flammability Limit | Not available |
| Appearance | Medium grey | Upper Flammability Limit | Not available |
| Odor | Slight | Vapor Pressure @20 °C | Not available |
| Odor Threshold | Not available | Vapor Density | Not available |
| pH | Not available | Relative Density @25 °C | 2.3 |
| Freezing/Melting Point | Not available | Solubility in Water | Insoluble |
| Initial Boiling Point ^{a)} | >210 °C [>410 °F] | Partition Coefficient n-octanol/water | Not available |
| Flash Point ^{a)} | 148 °C [298 °F] | Auto-ignition Temperature | Not available |
| Evaporation Rate | Not available | Decomposition Temperature | Not available |
| Flammability | Non Flammable | Viscosity @40 °C | >20.5 mm ² /s |

a) The closed cup flash point and boiling point values are for the component with the lowest reported value.

Section 10: Stability and Reactivity

| | |
|----------------------------|---|
| Reactivity | Reacts exothermically with epoxides. |
| Chemical Stability | Chemically stable at normal temperatures and pressures. |
| Conditions to Avoid | Avoid ignition sources, open flames, and incompatible substances. Do not use in a way that forms mist or aerosolizes the product. |
| Incompatibilities | Avoid strong oxidizing agents, strong acids, strong bases, ammonia, ethylene oxide, flax oils, and halogenated compounds. |
| Polymerization | Will not occur |
| Decomposition | Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5. |

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Section 11: Toxicological Information
Summary of Effects and Symptoms by Routes of Exposure

| | |
|-------------------|--|
| Eyes | May cause redness, serious irritation, or pain. |
| Skin | Causes skin redness, irritation, dry skin, or allergic contact dermatitis. |
| Inhalation | May cause cough, sore throat, headache, and respiratory irritation. |
| Ingestion | May cause abdominal pain, diarrhea, nausea, or vomiting. |
| Chronic | Prolonged and repeated exposure may lead to skin sensitization. |

Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|---|-----------------------------------|--------------------|----------------------------------|
| aluminum oxide | >5 000 mg/kg Rat ^{a)} | Not available | Not available |
| zinc oxide | 7 950 mg/kg Mouse | Not available | 2 500 mg/m ³ Mouse |
| fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine | >2 000 mg/kg Rat | 2 000 mg/kg Rat | Not available |
| 3,3'-(oxybis(2,1-ethanediyloxy))bis-1-propanamine | 4 310 mg/kg Rat ^{a)} | 2 510 mg/kg Rat | Not available |
| 1-methoxy-2-propanol acetate | 8 532 mg/kg Rat | >5 g/kg Rabbit | Not available |

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| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|----------------------|--------------------|---------------------|------------------------|
| triethylenetetramine | 2 500 mg/kg Rat | 805 mg/kg Rabbit | Not available |
| carbon black | >15.4 g/kg Rat | >3 g/kg Rabbit | Not available |

Note: Toxicity data from the RTECS² and ECHA databases were consulted. The data from supplier SDS were also consulted.

a) Supplier SDS

Other Toxicological Effects

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/irritation Causes serious eye irritation. Contains mechanically abrasive particles

Sensitization
(allergic reactions) Skin sensitizer based on animal studies on the epoxy components

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 and emergency conditions.

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.

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| | |
|-------------------------------|--|
| STOT-single exposure | Acetone can affect the central nervous system by inhalation causing drowsiness or dizziness. |
| 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. |

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.

Contains zinc oxide which is an acute and chronic category 1 solid (non-biodegradable, minimal LC50 of 0.042 mg/L) that is very toxic to aquatic life.

Based on available data, aluminum oxide, fatty acids, c18-unsat, dimer, polymers, w/3,3'-(oxybis(2,1-ethane-diyloxy))bis-1-propanamine, fatty acids, C18-unsatd., dimers, polymers with tall-oil fatty acids and triethylenetetramine, boron nitride, 1-methoxy-2-propanol acetate, triethylenetetramine, and carbon black are not classified as environmental hazard according to GHS criteria.

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds.

Chronic Ecotoxicity

Category 1

Very toxic to aquatic life with long lasting effects

Avoid spillage to the environment. Collect spillage.

Biodegradability

The content is not biodegradable.

Section 13: Disposal Information

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

8329TCS-B**(PART B)****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 under 450 kg

NOT REGULATED in TDG
per Special Provisions 99

Sizes 5 kg and under

NOT REGULATED in 49 CFR
per exception 171.4 (c)(2)

Special Provision 99 (2): These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of less than 450 kg of UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., or less than 450 L of UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., on a road vehicle or a railway vehicle. The dangerous goods must be contained in one or more small means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety.

Air

Refer to ICAO-IATA regulations.

Sizes 5 kg and under: *Cat. No. 8329TCS-6ML, 8329TCS-50ML, 8329TCS-200ML*

NOT REGULATED

On air waybill, write:
"Not Restricted, as per Special
Provisions A197"

Special Provision A197: These substances when transported in single or combination packagings containing net quantity per single or inner packaging of less than 5 L or less for liquids or having a net mass of 5 kg or less for solids, are not subject to any other provisions of these Regulations provided the packagings meet the general provisions 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

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Sea
Refer to IMDG regulations.

Sizes 5 kg and under: Cat. No. 8329TCS-6ML, 8329TCS-50ML, 8329TCS-200ML

NOT REGULATED
 per 2.10.2.7

2.10.2.7: Marine pollutants packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 kg or less for solids are not subject to any other provision of this Code relevant to marine pollutants provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. In the case of marine pollutants also meeting the criteria for inclusion in another hazard class, all provisions of this Code relevant to any additional hazards continue to apply.

Section 15: Regulatory Information
Canada
Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)

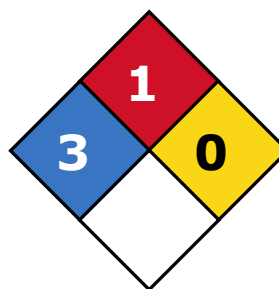
All hazardous ingredients are listed on the DSL/NDSL.

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.

USA
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)

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8329TCS-B**(PART B)****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 aluminum oxide (CAS# 1344-28-1), 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, 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

| | |
|----------------------------|---|
| MSDS Prepared by | MG Chemical's Regulatory Department |
| Date of Issue | 09 March 2020 |
| Supersedes | 22 May 2018 |
| Reason for Changes: | Update to the emergency phone number information. |

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8329TCS-B**(PART B)****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 |
| 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.

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