



Kit Revision Date: 15 September 2020

8840 FLAME RETARDANT URETHANE KIT

MG Chemicals Multipart Product Kit

This product is a kit made up of multiple parts. Each part is an independently packaged chemical component and has independent hazard assessments.

Kit Content

| <i>Part</i> | <i>Product Name</i> | <i>Product Use</i> |
|-------------|---------------------|---------------------------------------|
| A | 8840-A | Urethane resin for use with hardeners |
| B | 8840-B | Urethane hardener for use with resins |

Safety Data Sheets for each part listed above follow this cover sheet.

Transportation Instruction

Before offering this product kit for transport, read Section 14 for all parts listed above.

8840-A

(PART A)

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: 8840-A**Other Means of Identification:** Flame Retardant Urethane**Related Part #** 8840-500ML, 8840-2L, 8840-4.5L

Recommended Use and Restriction on Use

Use: Urethane resin for use with hardeners**Uses Advised Against:** Industrial Use Only

Details of Manufacturer or Importer

ManufacturerMG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADAMG 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 service
CANADA—Call CANUTEC collect at **+1-613-996-6666** or ***666** on cellular phones

8840-A
(PART A)
Section 2: Hazard(s) Identification
Classification of Hazardous Chemical
GHS Categories

| Criteria | | Category | Signal Word | Pictograms |
|--------------------------------------|-------|----------|-------------|-------------|
| Sensitization | Skin | 1 | Warning | Exclamation |
| Reproductive Toxicity | | 2 | Warning | Health |
| Hazardous to the Aquatic Environment | Acute | 1 | none | none |

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 irritation |
|  | H361: Suspected of damaging fertility or the unborn child if swallowed |
| <i>none mandated</i> | H412: Harmful to aquatic life with long lasting effects |

Section continued on the next page

8840-A
(PART A)
Continued...

| Prevention | Precautionary Statements |
|-------------------|--|
| P102 | Keep out of reach of children. |
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have read and understood. |
| P261 | Avoid breathing mist or vapors. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P280 | Wear protective gloves, protective clothing, and eye protection. |
| P273 | Avoid release to the environment. |
| Response | Precautionary Statements |
| P308 + P313 | IF exposed or concerned: 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. |
| Storage | Precautionary Statements |
| P405 | Store locked up. |
| Disposal | Precautionary Statements |
| P501 | Dispose of contents in accordance to local, regional, national, and international regulations. |

Other Hazards

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

8840-A
(PART A)
Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | % (weight) |
|-------------|--|------------|
| 21645-51-2 | aluminum trihydrate | 44% |
| 138265-88-0 | zinc borate | 18% |
| 1318-02-1 | zeolite | 10% |
| 64742-95-6 | solvent naphtha (petroleum), light aromatic | 2% |
| 25068-38-6 | reaction product: bisphenol-A-(epichlorhydrin) | 1% |
| 1333-86-4 | carbon black | 0.4% |
| 68609-97-2 | alkyl glycidyl ether | 0.1% |

Section 4: First-Aid Measures

| <i>Exposure Condition</i> | <i>GHS Code/Symptoms/Precautionary Statements</i> |
|---------------------------|--|
| IF ON SKIN | P302 + P352, P333 + P313, P362 + P364, P308 + P313 |
| Immediate Symptoms | <i>redness, dry skin, allergic dermatitis</i> |
| 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 exposed or concerned: Get medical advice or attention. |
| IF SWALLOWED | P301 + P330, P331, P308 + P313 |
| Immediate Symptoms | <i>low toxicity</i> |
| Response | Rinse mouth. Do NOT induce vomiting. IF exposed or concerned: Get medical advice or attention. |
| IF IN EYES | P305 + P351 + P338 |
| Immediate Symptoms | <i>low toxicity—redness, pain, blurred vision</i> |
| Response | Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| IF INHALED | P304 + P340, P308 + P313 |
| Immediate Symptoms | <i>without known symptoms</i> |
| Response | Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice or attention. |

8840-A

(PART A)

Section 5: Fire-Fighting Measures

| | |
|----------------------------|--|
| Extinguishing Media | 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. Prevent fire-fighting wash from entering waterway or sewer system. |
| Combustion Products | Produces carbon oxides (CO, CO ₂) 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 the mist or vapors. Remove or keep away all sources of ignition or extreme heat. |
| Environmental Precautions | Avoid releasing to the environment. Prevent spill from entering drains and waterways. |
| Containment Methods | Contain with inert and non-flammable absorbent (such as soil, sand, vermiculite). |
| Cleaning Methods | Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash spill area with 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. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist or vapors. Avoid release to the environment. |
| Handling | Wear protective gloves, protective clothing, and eye protection. Contaminated work clothing should not be allowed out of the workplace. |
| Storage | Store locked up. |

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 metal and insoluble compounds ^{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 |
| zinc oxide (dust/mist) | ACGIH | 2 mg/m ³ | Not established |
| | U.S.A. OSHA PEL | 2 mg/m ³ | 10 mg/m ³ |
| | Canada AB | 2 mg/m ³ | 10 mg/m ³ |
| | Canada BC | 2 mg/m ³ | 10 mg/m ³ |
| | Canada ON | 2 mg/m ³ | 10 mg/m ³ |
| | Canada QC | 2 mg/m ³ | 10 mg/m ³ |
| fumes dust | Canada QC | 2 mg/m ³ | 10 mg/m ³ |
| | Canada QC | 10 mg/m ³ | Not established |
| zeolite ^{a)} | ACGIH | 10 mg/m ³ | 3 mg/m ³ |
| | U.S.A. OSHA PEL | 15 mg/m ³ | 5 mg/m ³ |
| | Canada AB | Not established | Not established |
| | Canada BC | Not established | Not established |
| | Canada ON | Not established | Not established |
| | Canada QC | Not established | Not established |
| carbon black ^{b)} | 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 ACGIH¹, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database² and from suppliers' SDSs were also consulted. Short term exposure limits (STEL) are for 15 min and long-term permissible exposure limits (PEL) for 8 h.

a) Supplier SDS

b) Respirable airborne particles.

Section continued on the next page

8840-A**(PART A)****Engineering Controls****Ventilation**

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

Because inorganic and carbon black powders are bound to the liquid mixture, they do not present an airborne hazard under normal use.

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

For over-exposures up to 10 x OEL of mist or vapors, 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.

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.

8840-A
(PART A)
Section 9: Physical and Chemical Properties

| | | | |
|------------------------------------|----------------------|--|-------------------------|
| Physical State | Liquid | Lower Flammability Limit | Not available |
| Appearance | Black | Upper Flammability Limit | Not available |
| Odor | Mild | Vapor Pressure @20 °C | Not available |
| Odor Threshold | Not available | Vapor Density | Not available |
| pH | Not available | Relative Density @25 °C | 1.67 |
| Freezing/Melting Point | Not available | Solubility in Water | Insoluble |
| Boiling Point ^{a)} | ≥288 °C [≥550 °F] | Partition Coefficient n-octanol/water | Not available |
| Flash Point ^{a)} | 230 °C [446 °F] | Auto-ignition Temperature ^{a)} | ≥305 °C [≥581 °F] |
| Evaporation Rate | <1 (ButAc = 1) | Decomposition Temperature | Not available |
| Flammability | Non flammable | Viscosity @25 °C | >600 mm ² /s |

a) Values based on the principal component.

Section 10: Stability and Reactivity

| | |
|----------------------------|--|
| Reactivity | Not available |
| Chemical Stability | Chemically stable at normal temperatures and pressures. |
| Conditions to Avoid | Direct sunlight, high temperatures, open flames, sparks and incompatible substances. |
| Incompatibilities | Strong oxidizing agents, strong acids, alkali |
| Polymerization | Will not occur |
| Decomposition | Product decomposes at 270 °C without melting. For thermal decomposition, see combustion products in Section 5. |

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

| | |
|-------------------|---|
| Eyes | Low toxicity: May cause redness, pain, and blurred vision. |
| Skin | May cause redness, dry skin and allergic dermatitis. |
| Inhalation | Low toxicity—without known symptoms or adverse effects. |
| Ingestion | Low toxicity |
| Chronic | Prolonged or repeated exposure may cause skin may cause skin allergies. |

Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|--|------------------------------------|-----------------------------------|------------------------|
| aluminum trihydrate | Not available | Not available | Not available |
| zinc borate | >10 000 mg/kg Rat ^{a)} | 10 000 mg/kg Rat ^{a)} | Not available |
| zeolite | Not Available | Not Available | Not Available |
| solvent naphtha (petroleum), light aromatic | >5 000 mg/kg Rat | >2 000 mg/kg Rat | Not Available |
| reaction product: bisphenol-A-(epichlorhydrin) | 2 000 mg/kg Rat | 2 000 mg/kg Rat | Not Available |
| carbon black | 15 400 mg/kg Rat | 3 000 mg/kg Rabbit | Not Available |
| alkyl glycidyl ether | 19 200 mg/kg Rat | 4 000 mg/kg Rabbit | Not Available |

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

a) Supplier SDS

Section continued on the next page

8840-A**(PART A)****Other Toxicological Effects****Skin Corrosion/Irritation**

Based on available data, the classification criteria are not met.

Serious Eye Damage/Irritation

Based on available data, the classification criteria are not met.

Sensitization
(allergic reactions)

Reaction product: bisphenol-A-(epichlorhydrin) and alkyl glycidyl ether may cause skin sensitization.

Carcinogenicity
(risk of cancer)

Carbon black are possibly carcinogenic by airborne routes of exposures.

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 A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans

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)

Animal ingestion studies show that high doses of zinc borate cause reproductive and developmental effects.

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 are no cat 1 substances, and the kinematic viscosity is $>20.5 \text{ mm}^2/\text{s}$ at $40 \text{ }^\circ\text{C}$.

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.

Zinc borate is a category 1 acute aquatic toxicant and category 2 (M=1) chronic aquatic pollutant with a LC50 96 h 2.4 mg/L for oncorhynchus mykiss (rainbow trout); 76 mg/L 48 h Daphnia magna (water flea).

The reaction product: bisphenol-A-(epichlorhydrin) and solvent naphtha (petroleum), light aromatic ingredients are an acute category 2 environmental toxicant.

The aluminum trihydrate, zeolite, carbon black, alkyl glycidyl ether ingredient is not classified as an environmental hazard according to GHS criteria.

Acute Ecotoxicity

Category 2

Toxic to aquatic life

Avoid release to the environment.

Chronic Ecotoxicity

Category 3

Harmful to aquatic life with long lasting effects

Avoid release to the environment.

Biodegradability

Not available.

Other Effects

Not available

Section 13: Disposal Information

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

8840-A**(PART A)****Section 14: Transport Information****Ground****Refer to TDG** (Canadian Transportation of Dangerous Goods regulations) and **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Not Regulated

Air**Refer to ICAO-IATA Dangerous Goods Regulations.**

Not Regulated

Sea**Refer to IMDG regulations.**

Not Regulated

Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.

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.

Section continued on the next page

8840-A

(PART A)

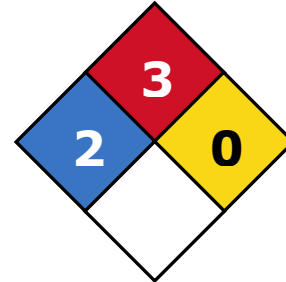
USA

Other Classifications

HMIS® RATING

| | | |
|-----------------------------|----------|----------|
| HEALTH: | * | 2 |
| FLAMMABILITY: | | 3 |
| 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 contains methyl methacrylate, which is listed as hazardous air pollutants.

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

This product does not contain ingredients that 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** MG Chemicals' Regulatory Department**Date of Creation** 19 August 2020**Supersedes** Not applicable**Reason for Changes:** First release.**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 |
| Wt | Weight |

Section continued on the next page

8840-A**(PART A)****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

Phone: +1-905-331-1396

Mailing Addresses

| | |
|-----------------------------|----------------------------------|
| Manufacturing & Support | Head Office |
| 1210 Corporate Drive | 9347-193rd Street |
| Burlington, Ontario, Canada | Surrey, British Columbia, Canada |
| L7L 5R6 | V4N 4E7 |

Disclaimer

This 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.

8840-B

(PART B)

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: 8840-B**Other Means of Identification:** Flame Retardant Urethane**Related Part #** 8840-500ML, 8840-2L, 8840-4.5L

Recommended Use and Restriction on Use

Use: Urethane hardener for use with resins**Uses Advised Against:** Industrial Use Only

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 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 | Respiratory | 1 | Danger | Health |
| Specific Target Organ Toxicity | Repeated Exposure | 2 | Warning | Health |
| Sensitization | Skin | 1 | Warning | Exclamation |
| Skin Irritation | | 2 | Warning | Exclamation |
| Eye Irritation | | 2 | Warning | Exclamation |
| Specific Target Organ Toxicity | Single Exposure | 3 | Warning | Exclamation |
| Acute Toxicity | Inhalation | 4 | 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 | DANGER |
|---|---|
| Pictograms | Hazard Statements |
|  | H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled H373: May cause damage to respiratory system through prolonged or repeated exposure by inhalation H351: Suspected of causing cancer |
|  | H317: May cause an allergic skin irritation H315: Causes skin irritation H319: Causes serious eye irritation H335: May cause respiratory irritation H332: Harmful if inhaled |

Section continued on the next page

8840-B
(PART B)
Continued...

| Prevention | Precautionary Statements |
|--------------------|---|
| P102 | Keep out of reach of children. |
| P201, P202 | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. |
| P260, P271 | Do not breathe mist or vapors. Use only outdoors or in a well-ventilated area. |
| P284 | In case of inadequate ventilation, wear respiratory protection. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |
| P280 | Wear protective gloves, eye protection or face protection. |
| P264 | Wash hand thoroughly after handling. |
| Response | Precautionary Statements |
| P304 + P340, P312 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. |
| P342 + P311 | If experiencing respiratory symptoms: Call a POISON CENTER or doctor. |
| P308 + P313 | IF exposed or concerned: Get medical advice or attention. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses. If present and easy to do. Continued 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. |
| Storage | Precautionary Statements |
| P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |
| P405 | Store locked up. |
| Disposal | Precautionary Statements |
| P501 | Dispose of contents in accordance to local, regional, national, and international regulations. |

Other Hazards

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

8840-B
(PART B)
Section 3: Composition/Information on Ingredients

| CAS # | Chemical Name | % (weight) |
|------------|--|------------|
| 9016-87-9 | polymethylene polyphenylene isocyanate | 30%-60% |
| 26447-40-5 | methylenediphenyl diisocyanate | 30%-60% |
| 101-68-8 | 4,4'-methylenediphenyl diisocyanate | 10%-30% |

Section 4: First-Aid Measures

| <i>Exposure Condition</i> | <i>GHS Code/Symptoms/Precautionary Statements</i> |
|---------------------------|--|
| IF INHALED | P304 + P340, P342 + P311, P312 |
| Immediate Symptoms | <i>respiratory irritation, headache, nausea, shortness of breath, sore throat, difficulty breathing</i> |
| Response | Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms or if you feel unwell: Call a POISON CENTER or doctor. |
| IF ON SKIN | P302 + P352, P362 + P364, P333 + P313 |
| Immediate Symptoms | <i>dry skin, redness, irritation, allergic dermatitis</i> |
| Response | Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. Take off all contaminated clothing and wash it before reuse. |
| IF IN EYES | P305 + P351 + P338, P337 + P313 |
| Immediate Symptoms | <i>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 or attention. |
| IF SWALLOWED | P301 + P330, P331 |
| Immediate Symptoms | <i>low toxicity</i> |
| Response | Rinse mouth. Do NOT induce vomiting. |

Advise to Physician: The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.

8840-B

(PART B)

Section 5: Fire-Fighting Measures

| | |
|----------------------------|---|
| Extinguishing Media | 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. Prevent fire-fighting wash from entering waterway or sewer system. |
| Combustion Products | Produces carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), cyanates 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 | Do not breathe mist or vapors. Remove or keep away all sources of ignition or extreme heat. |
| Environmental Precautions | Avoid releasing to the environment. Prevent spill from entering drains and waterways. |
| Containment Methods | Contain with inert and non-flammable absorbent (such as soil, sand, vermiculite). |
| Cleaning Methods | Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wash spill area with 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. Do not breathe mist or vapors. Use only outdoors or in a well-ventilated area. The employer should implement a medical surveillance program due to possible exposure to isocyanates. |
|-------------------|---|

Section continued on the next page

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(PART B)

- Handling** Wear protective gloves, eye protection or face protection.
 Wash hand thoroughly after handling.
 Contaminated work clothing should not be allowed out of the workplace.
- Storage** Store in a well-ventilated place. Keep container tightly closed.
 Store locked up.

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) |
|--|-------------------------|--|--|
| polymethylene polyphenylene isocyanate | ACGIH | Not established | Not established |
| | U.S.A. OSHA PEL | Not established | Not established |
| | Canada AB | 0.005 ppm | Not established |
| | Canada BC | Not established | Not established |
| | Canada ON | Not established | Not established |
| 4,4'-methylenediphenyl diisocyanate | Canada QC | Not established | Not established |
| | ACGIH ^{a)} | 0.005 ppm | Not established |
| | U.S.A. OSHA PEL | Not established | 0.02 ppm |
| | Canada AB | 0.005 ppm | Not established |
| | Canada BC | Not established | Not established |
| Canada ON | Not established | Not established | |
| Canada QC | 0.005 ppm | Not established | |

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH¹, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database² and from suppliers' SDSs were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) Respiratory sensitization

Engineering Controls

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

Section continued on the next page

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.

For extended contacts, use polyvinyl alcohol (PVA) or viton gloves and aprons.

Respiratory Protection

For over-exposures up to 10 x OEL of mist, vapors, and 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.

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. A respiratory protection program that meets OSHA's 29CFR 1910.134 and ANSI Z88.2 requirements or Canadian Standards Association (CSAQ) Standard Z94.4 must be followed whenever workplace conditions warrant a respirator's use. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

NIOSH RECOMMENDATIONS FOR MDI CONCENTRATIONS IN AIR³:

Up to 0.5 mg/m³:

(APF = 10) Any supplied-air respirator

Up to 1.25 mg/m³:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 2.5 mg/m³:

(APF = 50) Any self-contained breathing apparatus with a full facepiece

(APF = 50) Any supplied-air respirator with a full facepiece

Up to 75 mg/m³:

(APF = 2 000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Section continued on the next page

8840-B**(PART B)****Respiratory Protection
(con't)**

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10 000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10 000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.

Any appropriate escape-type, self-contained breathing apparatus

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

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(PART B)
Section 9: Physical and Chemical Properties

| | | | |
|--|----------------------|--|-----------------------------|
| Physical State | Liquid | Lower Flammability Limit | Not available |
| Appearance | Dark brown | Upper Flammability Limit | Not available |
| Odor | Musty | Vapor Pressure @40 °C | <0.001 hPa [<0.001 mmHg] |
| Odor Threshold | Not available | Vapor Density | Not available |
| pH | Not available | Relative Density @25 °C | 1.24 |
| Freezing/Melting Point | Not available | Solubility in Water | Insoluble |
| Initial Boiling Point ^{a)} | ≥200 °C [≥392 °F] | Partition Coefficient n-octanol/water | Not available |
| Flash Point ^{a)} | >113 °C [235 °F] | Auto-ignition Temperature ^{a)} | >601 °C [1 114 °F] |
| Evaporation Rate | <1 (ButAc = 1) | Decomposition Temperature | Not available |
| Flammability | Non flammable | Viscosity @25 °C | 216 cP |

a) Values based on component 4,4'-methylenediphenyl diisocyanate.

Section 10: Stability and Reactivity

| | |
|----------------------------|---|
| Reactivity | Not available |
| Chemical Stability | Chemically stable at normal temperatures and pressures. |
| Conditions to Avoid | Direct sunlight, high temperatures, open flames, sparks and incompatible substances. |
| Incompatibilities | Amines, strong bases, alcohols, water |
| Polymerization | May undergo uncontrolled exothermic polymerization upon contact with incompatible substances or if heated above 175 °C. |
| Decomposition | For thermal decomposition, see combustion products in Section 5. |

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

| | |
|-------------------|---|
| Eyes | May cause irritation, pain. |
| Skin | May cause dry skin, redness, irritation, allergic dermatitis. |
| Inhalation | May cause respiratory irritation, headache, nausea, shortness of breath, sore throat, and difficulty breathing. |
| Ingestion | Low toxicity. |
| Chronic | Prolonged or repeated exposure may cause skin may cause skin allergies. |

Acute Toxicity (Lethal Exposure Concentrations)

| Chemical Name | LD50 oral | LD50 dermal | LC50 inhalation |
|--|---------------------|------------------------|-----------------------------------|
| polymethylene polyphenylene isocyanate | 49 000 mg/kg Rat | >9 400 mg/kg Rabbit | 1.5 mg/L 4 h Rat ^{a)} |
| methylenediphenyl diisocyanate | >2 000 mg/kg Rat | >9 400 mg/kg Rabbit | 2 mg/L 4 h Rat ^{a)} |
| 4,4'-methylenediphenyl diisocyanate | 9 200 mg/kg Rat | >9 400 mg/kg Rabbit | 1.5 mg/L 4 h Rat ^{a)} |

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

a) According to ECHA tests conducted for MDI were not indicative of normal conditions and therefore results are artificial.

Other Toxicological Effects

| | |
|--|-------------------------------|
| Skin Corrosion/Irritation | May cause skin irritation. |
| Serious Eye Damage/Irritation | May cause eye irritation. |
| Sensitization (allergic reactions) | May cause skin sensitization. |

Section continued on the next page

8840-B**(PART B)****Carcinogenicity**
(risk of cancer)

None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.

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

Polymethylene polyphenylene isocyanate and 4,4'-methylenediphenyl diisocyanate may cause respiratory irritation.

STOT-Repeated Exposure

Polymethylene polyphenylene isocyanate and 4,4'-methylenediphenyl diisocyanate may cause effects on the lungs, resulting in impaired function.

Aspiration Hazard

Based on available data, the classification criteria are not met. There are no cat 1 substances, and the kinematic viscosity is $>20.5 \text{ mm}^2/\text{s}$ at $40 \text{ }^\circ\text{C}$.

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.

Polymethylene polyphenylene isocyanate and 4,4'-methylenediphenyl diisocyanate ingredients are not classified as an environmental hazard according to GHS criteria.

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds.

Section continued on the next page

8840-B**(PART B)****Chronic Ecotoxicity**

Available toxicity data does not meet classification thresholds.

Biodegradability

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** (Canadian Transportation of Dangerous Goods regulations) and **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Not Regulated

Air**Refer to ICAO-IATA Dangerous Goods Regulations.**

Not Regulated

Sea**Refer to IMDG regulations.**

Not Regulated

Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.

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.

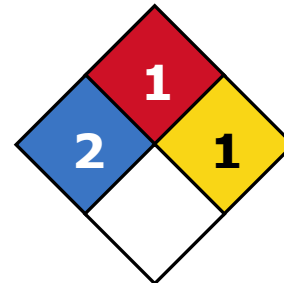
USA

Other Classifications

HMIS® RATING

| | |
|-----------------------------|-----|
| HEALTH: | * 2 |
| FLAMMABILITY: | 1 |
| PHYSICAL HAZARD: | 1 |
| 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 contains methyl methacrylate, which is listed as hazardous air pollutants.

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

This product does not contain ingredients that 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.

Section continued on the next page

8840-B**(PART B)**

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

This product does not contain any substances on the California Proposition 65 list.

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 MG Chemicals' Regulatory Department

Date of Creation 20 August 2020

Supersedes Not applicable

Reason for Changes: First release.

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®)
- 3) NIOSH Pocket Guide to Chemical Hazards: Methylene bisphenyl isocyanate. (October 30, 2019). Retrieved from <https://www.cdc.gov/niosh/npg/npgd0413.html>

Section continued on the next page

8840-B**(PART B)****Abbreviations**

| | |
|-------|--|
| ACGIH | American Conference of Governmental Industrial Hygienists (USA) |
| APF | Assigned Protection Factor means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section. |
| 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 |
| Wt | Weight |

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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Disclaimer

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