9460

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: 9460

Other Means of Identification: One-Part Epoxy Thermally Conductive Adhesive, High Tg

Related Part # 9460-10ML, 9460-300ML

Recommended Use and Restriction on Use

Use: Thermally conductive adhesive

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

☎ +1-800-340-0772
FAX +1-800-340-0773
E-MAIL support@mgchemicals.com
WEB www.mgchemicals.com

MG Chemicals (Head Office)
9347-193 Street
Surrey, British Columbia V4N 4E7
CANADA

☎ +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
Specific Target Organ Toxicity Germ Cell Mutagenicity	Repeated Exposure	1 2	Danger Warning	Health Health
Sensitization Eye Irritation Skin Irritation	Skin	1 2A 2	Warning Warning Warning	Exclamation Exclamation Exclamation
Hazardous to the Aquatic Environment	Chronic	2	None	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	**DANGER**
Pictograms	**Hazard Statements**
	H317: May cause an allergic skin reaction H319: Causes serious eye irritation H315: Causes skin irritation
	H372: Causes damage to organs (skin, blood, kidney, lungs) through prolonged or repeated exposure H341: Suspected of causing genetic defects
	H411: Toxic to aquatic life with long lasting effects

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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	Do not breathe fumes or vapors.
P280	Wear protective gloves, protective clothing, and eye protection.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
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 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.
P308 + P313	IF exposed or concerned: Get medical advice or attention.
P314	Get medical advice or attention if you feel unwell.
P391	Collect spillage.
Storage	**Precautionary Statements**
P405	Store locked up.
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	aluminium oxide	47%
25085-99-8	bisphenol-A-(epichlorhydrin)	24%
1314-13-2	zinc oxide	19%
26761-45-5	2,3-epoxypropyl neodecanoate	2%
9003-35-4	phenol, polymer with formaldehyde	1%
25068-38-6	bisphenol-A epoxy resin (reaction product)	1%
1333-86-4	carbon black	0.4%
68609-97-2	alkyl glycidyl ether	0.3%

Section 4: First-Aid Measures

Exposure Condition	*GHS Code/Symptoms/Precautionary Statements*
IF ON SKIN	P302 + P352, P362 + P364, P333 + P313, P308 + P313
Immediate	*redness, irritation, allergic contact dermatitis*
Response	Wash with plenty water.
	Take off contaminated clothing and wash it before reuse.
	If skin irritation or rash occurs: Get medical advice or attention.
	IF exposed or concerned: Get medical advice or attention.
IF IN EYES	P305 + P351 + P338, P337 + P313, P308 + P313
Immediate Symptoms	*redness, serious 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 exposed or concerned: Get medical advice or attention.
IF INHALED	P304 + P340, P308 + P313
Immediate Symptoms	*low toxicity: no symptoms known or expected*
Response	Remove person to fresh air and keep comfortable for breathing.
	IF exposed or concerned: Get medical advice/attention.

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IF SWALLOWED	P301 + P330 + P331, P308 + P313
Immediate Symptoms	*abdominal pain, diarrhea, nausea, vomiting*
Response	Rinse mouth. Do NOT induce vomiting. IF exposed or concerned: Get medical advice or attention.

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. Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	Produces carbon oxides (CO,CO_2), phenolics, and other 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 fumes or 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 applicable—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.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Do not breathe fumes or vapors. Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

Handling

Wear protective gloves and eye protection. Wash hands thoroughly after handling. Take off contaminated clothing and wash it before reuse.

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

Collect spillage.

Storage

Store locked up.

RECOMMENDATION: 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 or Vendor	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
fumes	Canada QC	2 mg/m^3	10 mg/m^3
dust	Canada QC	10 mg/m^3	Not established

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Chemical Name	Country or Vendor	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
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 database[2] 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.

Engineering Controls

Ventilation

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

Because the carbon black 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.

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 incidental contacts, use nitrile, latex, neoprenee or other chemically resistant gloves.

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Respiratory Protection

For over-exposures up to 10 x OEL of 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.

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	Solid	**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**	2.15
Freezing/Melting Point	Not available	**Solubility in Water**	Insoluble
Initial Boiling Point [a)]	≥150 °C [≥302 °F]	**Partition Coefficient n-octanol/water**	Not available
Flash Point	126 °C [259 °F]	**Auto-ignition Temperature**	Not available
Evaporation Rate	Not available	**Decomposition Temperature**	Not available
Flammability (solid, gas)	Not available	**Viscosity @40 °C**	>20.5 mm^2/s

a) Values based on bisphenol-A epoxy resin, which is the component with the lowest value.

Section 10: Stability and Reactivity

Reactivity	Reacts exothermically with amines.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Avoid ignition sources, open flames, and incompatible substances. Do not use in away that forms mist or aerosolizes the product.
Incompatibilities	Avoid oxidizing agents, acids, bases and peroxides.
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	May cause redness, serious irritation, or pain.
Skin	Causes skin redness, irritation, or allergic contact dermatitis.
Inhalation	Low toxicity: no symptoms known or expected.
Ingestion	May cause abdominal pain, diarrhea, nausea, and 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 established	Not established
zinc oxide	7 950 mg/kg Mouse	Not established	2 500 mg/m^3 Mouse
2,3-epoxypropyl neodecanoate	9 600 mg/kg Rat [a)]	3 800 mg/kg Rat [a)]	Not established

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Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
phenol, polymer with formaldehyde	>5 000 mg/kg Rat	>2 000 mg/kg Rat	Not established
bisphenol-A epoxy resin (reaction product)	>15 000 mg/kg Rat [a)]	23 000 mg/kg Rabbit [a)]	Not established
carbon black	>15.4 g/kg Rat	>3 g/kg Rabbit	Not established
alkyl glycidyl ether	19 200 mg/kg Rat	4 500 mg/kg Rat	Not established

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

Other Toxicological Effects

Skin corrosion/irritation

Bisphenol-A, 2,3-epoxypropyl neodecanoate, and alkyl glycidyl ether are known skin irritants.

Serious eye damage/irritation

Bisphenol-A, 2,3-epoxypropyl neodecanoate, and phenol, polymer with formaldehyde cause serious eye irritation.

Sensitization (allergic reactions)

Bisphenol-A, 2,3-epoxypropyl neodecanoate, phenol, polymer with formaldehyde, and alkyl glycidyl ether are known skin sensitizers.

Animal studies show that epoxy components may cause skin sensitization.

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

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Mutagenicity (risk of heritable genetic effects)	2,3-epoxypropyl neodecanoate is suspected of causing genetic defects.
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	2,3-epoxypropyl neodecanoate can cause damage to skin, blood, kidneys and lungs.
Aspiration hazard	There are no 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.

In Europe, similar epoxy resin mixtures with CAS# 25085-99-8 and 25068-38-6 are generally classified as chronic category 2 marine pollutant due to LC50 96 h of >1 mg/L but ≤10 mg/L.

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.

2,3-epoxypropyl neodecanoate, phenol, polymer with formaldehyde, carbon black, and alkyl glycidyl ether are not classifiable as ecotoxic hazards under GHS criteria.

Acute Ecotoxicity

See chronic ecotoxicity.

Chronic Ecotoxicity

Category 2

Toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

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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.**

Sizes under 450 kg *9460-10ML, 9460-300ML* **NOT REGULATED** in TDG per Special Provisions 99	*FOR REFERENCE ONLY* **UN number**: UN3077 **Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (zinc oxide, bisphenol-A-(epichlorhydrin), reaction product of epoxy resin) **Class:** 9 **Packing Group**: III **Marine Pollutant:** Yes
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.

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Air

Refer to ICAO-IATA regulations.	
Sizes 5 kg and under *9460-10ML, 9460-300ML* **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.

Sea

Refer to IMDG regulations.	
Sizes 5 kg and under *9460-10ML, 9460-300ML* **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.

Note: **Shipper must be appropriately <u>trained and certified</u> 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.

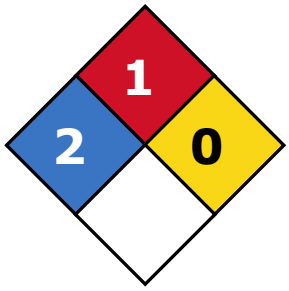
USA

Other Classifications

HMIS® RATING

HEALTH:	* 2
FLAMMABILITY:	1
PHYSICAL HAZARD:	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 contains aluminum oxide (CAS# 1344-28-1) and zinc compounds (CAS# 1314-13-2) which can be subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372 under certain conditions.

TSCA (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

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California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, June 06, 2014 revision, 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	Michel Hachey
Date of Review	04 March 2020
Supersedes	29 May 2017
Reason for Changes:	Change to emergency phone numbers.

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®)

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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

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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