

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Safety Data Sheet

Section 1: Product and Company Identification

Product Identifier and Other Means of Identification

Product Name: Optically Clear Conformal Coating Epoxy**SDS Code:** 4224-Part A**Related Part #** 4224-1, 4224-2, 4224-3

Recommended Use and Restriction on Use

Use: Epoxy resin for use with conformal coating epoxy hardener**Uses Advised Against:** Not available

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 CHEMTREC ☎: **1-800-424-9300**

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

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Section 2: Hazards Identification

Classification of Hazardous Chemical

GHS Categories

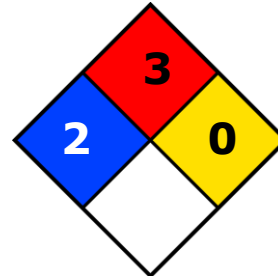
Criteria	Category	Signal Word	Pictograms
Aspiration Hazard	1	Danger	Health
Carcinogenicity	2	Warning	Health
Specific target organ toxicity Repeated exposure	2	Warning	Health
Sensitization Skin sensitizer	1	Warning	Exclamation
Skin Irritation	2	Warning	Exclamation
Specific target organ toxicity Single exposure	3	Warning	Exclamation
Flammable liquid	2	Warning	Flame
Environmental Hazard Acute Aqua. Tox.	2	—	<i>none</i>

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)

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Label Elements

Signal Word	DANGER
Pictograms	Hazard Statements
	<p>H304: May be fatal if swallowed and enters airways</p> <p>H373: May cause damage to inner ear through prolonged or repeated exposure by inhalation</p> <p>H351: Suspected of causing cancer</p>
	<p>H315: Cause skin irritation</p> <p>H317: May cause allergic skin reaction</p> <p>H336: May cause dizziness or drowsiness</p>
	<p>H226: Flammable liquid and vapor</p>
No Symbol Mandated	<p>H401: Toxic to aquatic life</p>
	Precautionary Statements
Prevention	<p>P201 + P202: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.</p> <p>P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.</p> <p>P233: Keep container tightly closed.</p> <p>P242 + P241 + P243: Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharge.</p> <p>P261 + P271: Avoid breathing mist/vapors/ spray. Use only outdoors or in well ventilated area.</p> <p>P264: Wash hands thoroughly after handling.</p> <p>P280: Wear protective gloves/eye protection/face protection.</p> <p>P273: Avoid release to the environment.</p>

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

	Precautionary Statements <i>(Continued)</i>
Response	<p>P272: Contaminated work clothing should not be allowed out of the workplace.</p> <p>P370 + P378: In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.</p> <p>P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.</p> <p>P331: Do NOT induce vomiting.</p> <p>P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P303 + P361+ P364 +P352: IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water/shower.</p> <p>P332 + P337+ P313: If eye or skin irritation occurs or persists: Get medical advice/attention.</p>
Storage	<p>P308 + P313: If exposed or concerned: Get medical advice/attention.</p> <p>P403 + P235: Store in well ventilated place. Keep cool.</p> <p>P405: Store locked up.</p>
Disposal	<p>P501: Dispose of contents/container in accordance to local/regional/international regulations.</p>

Other Hazards

Prolonged or repeated over-exposure to p-xylene and ethylbenzene components and noise can lead to hearing loss (cochlear impairment).

Prolonged or repeated over-exposure to the xylene and ethylbenzene component may lead to kidney damage (nephropathy).

Section 3: Hazardous Ingredients

CAS #	Chemical Name	Wt%
30583-72-3	cyclohexanol, 4,4'-(1-methylethylene)bis-, polymer with 2-(chloromethyl)oxirane	85-90%
1330-20-7	xylene, mixture of isomers	8-12%
100-41-4	ethylbenzene	2-4%

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF SWALLOWED	P301, P310, P331
Immediate Symptoms	<i>burning sensation, abdominal pain, nausea, headaches, dizziness, weakness, unconsciousness</i>
Response	Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTRE/doctor.
IF IN EYES	P305, P351, P338, P337, P313
Immediate Symptoms	<i>irritation, redness, pain</i>
Response	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists	Get medical advice/attention.
IF INHALED	P304, P340, P313, P308 + P312
Immediate Symptoms	<i>cough, dizziness, drowsiness, headaches, weakness, unconsciousness</i>
Response	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.
If feeling unwell	Call a POISON CENTRE/doctor.
If exposed or concerned	Get medical advice/attention.
IF ON SKIN (or hair)	P302, P353, P362, P364, P333+ P313
Immediate Symptoms	<i>dry skin, redness</i>
Response	Rinse skin with water or shower. Take off contaminated clothing and wash it before reuse.
If skin irritation or rash occurs	Get medical advice/attention.

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Section 5: Fire-Fighting Measures

Auto-ignition Temperature	Not available	Flash Point ^{a)}	24 °C [75 °F]	LFL [LEL] UFL [UEL] ^{c)}	1% 7%
In case of fire	P370 + P378				
Response	Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.				
Combustion Products	Produces carbon oxides (CO, CO ₂), aldehydes				
Fire-Fighter	Wear self-contained breathing apparatus for fire fighting				
General Information	Produces irritating and toxic fumes in fires or in contact with hot surfaces.				

a) Based on Pensky-Martens closed cup value for xylene isomer components

c) Values based on xylene isomer components.

LFL = Lower Flammability [or Explosion] Limit (in volume %);

UFL = Upper Flammability [or Explosion] Limit (in volume %)

Section 6: Accidental Release Measures

Personal Protection	See Section 8. Avoid breathing the mist/vapors.
Containment	Remove all sources of ignition. Prevent spill from entering drains and waterways. Contain with inert absorbent (such as soil, sand, vermiculite).
Cleaning	Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe up further residue with paper towel and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue. RECOMMENDATION: Use a grounded stainless steel or carbon steel container.
Disposal	Dispose of spill waste according to Section 13.

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

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.

Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharge.

Contaminated work clothing should not be allowed out of the workplace.

Keep away from heat/sparks/open flames/hot surfaces. No smoking. Do not spray on an open flame or other ignition source.

Do not pierce or burn, even after use.

Avoid breathing gas/vapors/mist/spray. Use only outdoors or in a well-ventilated area.

Handling

Wear protective gloves/clothing/eye protection.

Wash hands thoroughly after handling.

Storage

Keep container tightly closed. Store in a well-ventilated area. Keep cool.

Store locked up.

Section 8: Exposure Controls/Personal Protection

Routes of Entry

Eyes, ingestion, inhalation, and skin

Substances with Occupational Exposure Limit Values

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
xylene	ACGIH	100 ppm	150 ppm
	U.S.A. OSHA PEL	100 ppm	150 ppm
	Canada AB	100 ppm	150 ppm
	Canada BC	100 ppm	150 ppm
	Canada ON	100 ppm	150 ppm
	Canada QC	100 ppm	150 ppm

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Continued...

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
ethylbenzene	ACGIH	20 ppm	—
	U.S.A. OSHA PEL	100 ppm	125 ppm
	Canada AB	150 ppm	200 ppm
	Canada BC	20 ppm	—
	Canada ON	100 ppm	125 ppm
	Canada QC	100 ppm	125 ppm

Note: Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH¹, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database² of the Canadian Centre for Occupational Health and Safety (CCOHS) a data 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.

Engineering Controls

Ventilation Keep airborne concentrations below exposure limits.

Personal Protective Equipment

Eye protection Wear appropriate protective eyeglasses or chemical safety goggles.
RECOMMENDATION: Use safety glasses with lateral protection (side shields).

Skin Protection Use of protective gloves chemically resistant gloves.
 For incidental exposure, you may use nitrile gloves.
 For prolonged exposure, use polyvinyl alcohol (PVA) or Viton gloves and aprons.

Respiratory Protection If exposed to vapors above the exposure limit or mist, wear respirator such as a half-mask respirator.
RECOMMENDATION: Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this MSDS, and that the respirator is fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

OPTICALLY CLEAR CONFORMAL COATING EPOXY
4224-PART A
Section 9: Physical and Chemical Properties

Physical State	Liquid	Appearance	Colorless
Odor	Aromatic, sweet	Odor Threshold	Not available
pH	Not available	Specific Gravity @25 °C	1.06
Solubility in Water	insoluble	Freezing/Melting Point	Not available
Flash Point ^{a)}	24 °C [75 °F]	Vapor Pressure @ 20 °C	Not available
Boiling Point	≥140 °C [≥284 °F]	Evaporation Rate	Not available
Lower Flammability Limit ^{a)}	1%	Upper Flammability Limit ^{b)}	7%
Auto-ignition Temperature ^{c)}	Not available	Decomposition Temperature	Not available
Viscosity @40 °C	<20 mm/s	Vapor Density	>1 (Air = 1)
Partition Coefficient	Not established		

a) Flash point, boiling point, and flammability limits are based on xylene mixture components

Section 10: Stability and Reactivity

Reactivity	Reacts exothermically with amines, mercaptans, and Lewis acids.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Ignition sources. Low lying vapors may form explosive mixture with air.
Incompatibilities	Strong oxidizing agents, strong acids, strong bases, sodium hydroxide (caustic soda)
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

Section 11: Toxicological Information

Routes of Exposure

Eyes, ingestion, inhalation, and skin

Symptoms Summary

- Eyes** Causes mild eye irritation and redness.
- Skin** Causes moderate skin irritation, dry skin, and redness.
- Inhalation** May cause dizziness, drowsiness, headache, nausea. May cause irritation of nose and throat.
- Ingestion** May cause burning sensation and abdominal pain. (See also inhalation symptoms.)
- Chronic** Prolonged or repeated exposure may cause skin dryness and cracking, defat skin, and local redness, discomfort, and allergic reactions.

Long term exposure to loud noises and product vapors may lead to some hearing loss.

Prolonged and repeated exposure is possibly carcinogenic based on inhalation studies on rats.

Chronic inhalation or ingestion of large doses may cause central nervous system depression.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
Cyclohexanol, 4,4'-(1-methylethylene)bis-, polymer with 2-(chloromethyl)oxirane	Not available	Not available	Not available	Not available
xylene	4 350 mg/kg Rat	>1 700 mg/kg Rabbit	5 000 ppm 4 h Rat	200 ppm Human
ethylbenzene	3 500 mg/kg Rat	>5 000 mg/kg Rabbit	35 500 mg/m ³ 2h Mouse	100 ppm 8h Human

Note: Representative toxicity data from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS)¹ data from supplier MSDS were also consulted.

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY**4224-PART A****Other Toxicological Effects**

Skin corrosion/irritation	Causes skin irritation based on Draize tests on animals. Prolonged or repeated skin contact may cause dermatitis
Serious eye damage/irritation	Causes severe eye irritation based on Draize tests on animals.
Sensitization (allergic reactions)	Exposure to the epoxy resin may cause allergic skin reaction
Carcinogenicity (risk of cancer)	Ethylbenzene [100-414-4] IARC Group 2B: Possibly carcinogenic to humans ACGIH A3: Confirmed animal carcinogen with unknown relevance to humans CA Prop 65: Listed as a carcinogen NTP: Not listed
Mutagenicity (risk of heritable genetic effects)	No data available
Reproductive Toxicity (risk to sex functions)	No data available
Teratogenicity (risk of fetus malformation)	No data available
STOT-single exposure	Xylenes can affect the central nervous system by inhalation causing drowsiness or dizziness, and they are a respiratory system irritant.
STOT-repeated exposure	Prolonged or repeated over-exposure to p-xylene and ethylbenzene and noise can lead to hearing loss (cochlear impairment) according to rat inhalation studies. At high levels of exposures, ethylbenzene causes damage of the liver.
Aspiration hazard	Aspiration hazard because greater than 10% Cat 1 aspiration toxicants (xylene and ethylbenzene) are present and the mixture kinematic viscosity is ≤ 20.5 mm ² /s.

Section 12: Ecological Information

The ecotoxicity of the mixture was estimated by the calculation method using the summation of classified ingredients. The IMDG Code criteria and the raw-material MSDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY**4224-PART A**

Xylene isomers are an acute category 2 environmental toxicant (with minimal LC50 of 2.5 mg/L for fish; EC50 1 mg/L 48 h Daphnia magna (water flea)).

Ethylbenzene is an acute category 2 environmental toxicant (with minimal LC50 of 4.2 mg/L for Oncorhynchus mykiss (rainbow trout); EC50 2.9 mg/L 48 h Daphnia magna (water flea)).

The epoxy resin (CAS#30583-72-3) is an acute category 3 environmental toxicant (with minimal LC50 of 11.5 mg/L for Oncorhynchus mykiss (rainbow trout); EC50 28.3 mg/L 48 h Daphnia magna (water flea)).

The solvent will float in water and evaporate in the atmosphere making it an unlikely to cause ground or water pollution.

GHS Categories

Category 2

GHS Code: Hazard Statement

H401: Toxic to aquatic life

P273: Avoid release to the environment

P391: Collect spillage

Chronic Ecotoxicity

Category 3

H412: Harmful to aquatic life with long lasting effects.

Biodegradability

Biodegrades in soil and groundwater through aerobic and anaerobic denitrification conditions.

Other Effects

VOC (Regulated Volatile Organic Content) = 100% [1055 g/L]

Section 13: Disposal Information

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

OPTICALLY CLEAR CONFORMAL COATING EPOXY

4224-PART A

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 5 liter and under

Limited Quantity



Sizes greater than 5 liter

UN number: UN1263
Shipping Name: PAINT
Class: 3
Packing Group: III
Marine Pollutant: No



Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 10 liter and under

Limited Quantity



Sizes greater than 10 liters up to 60 L

UN number: UN1263
Shipping Name: PAINT
Class: 3
Packing Group: III
Marine Pollutant: No
 Packing Instr. 223



Sea

Refer to IMDG regulations.

Sizes 5 liter and under

Limited Quantity



Sizes greater than 5 liter

UN number: UN1263
Shipping Name: PAINT
Class: 3
Packing Group: III
Marine Pollutant: No



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

OPTICALLY CLEAR CONFORMAL COATING EPOXY**4224-PART A****Section 15: Regulatory Information****Canada****WHMIS Classification**

B2 – Flammable Liquid; D2A – Very Toxic Material (Possible carcinogen IARC: 2B);
D2B – Toxic Material (Skin/irritation)

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

All hazardous ingredients are listed on the DSL/NDSL.

Industry and Science Canada

MG Labels products intended for the workplace to conform to WHMIS labeling regulations. Product identification, net quantity declaration, minimum printing type size heights, and packaging of this product are in compliance.

Health Canada

Products produced by MG Chemicals intended for retail display conform to the Canadian Consumer Labeling Regulations.

USA**CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product contains ethylbenzene and xylene that are listed as hazardous air pollutants.

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

This product contains ethylbenzene (CAS # 100-41-4; reportable quantity = 1000 lb) and xylene (CAS# 1330-20-7, reportable quantity = 100 lb), which are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY**4224-PART A****TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, Sept 2, 2011 revision, USA).

This product contains ethanol, which is listed as reproductively toxic. It is also listed as a carcinogen when in an alcoholic beverage.

This product contains ethylbenzene (CAS # 100-41-4), which is listed as a carcinogen.

Europe**RoHS**

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

WEEE

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

Section 16: Other Information

MSDS Prepared by	Michel Hachey
Date of Revision	19 March 2014
Supersedes	21 November 2013
Reason for Changes:	Catalogue number change in Section 1

References

- 1) ACGIH 2013 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 (2013).
- 2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

Continued on the next page

OPTICALLY CLEAR CONFORMAL COATING EPOXY**4224-PART A****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.

Email: support@mgchemicals.com

Mailing Addresses *Manufacturing & Support*
1210 Corporate Drive
Burlington, Ontario, Canada
L7L 5R6

Head Office
9347-193rd Street
Surrey, British Columbia, Canada
V4N 4E7

Disclaimer This material 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.