842UR **SILVER CONDUCTIVE COATING**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 842UR

Other Means of Identification: Silver Conductive Coating

Related Part # 842UR-12ML, 842UR-150ML, 842UR-850ML, 842UR-3.6L

Recommended Use and Restriction on Use

Use: Polyurethane Conductive Coating

Uses Advised Against: Not applicable

Details of Manufacturer or Importer

Manufacturer

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

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Fax +1-800-340-0773
E-mail support@mgchemicals.com
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CANADA

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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
Flammable Liquid		2	Danger	Flame
Sensitization	Skin	1	Warning	Exclamation
Eye Irritation		2	Warning	Exclamation
Carcinogen		2	Warning	Health
Reproductive Toxicity		2	Warning	Health
Hazardous to the Aquatic Environment	Acute	1	Warning	Environment
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	**DANGER**
Pictograms	**Hazard Statements**
	H225: Highly Flammable liquid and vapor
	H317: May cause an allergic skin irritation H319: Causes serious eye irritation
	H351: Suspected of causing cancer H361: Suspected of damaging fertility or the unborn child

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Pictograms	**Hazard Statements**
	H410: Very toxic to aquatic life with long lasting effects

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.
P210	Keep away from heat, hot surfaces, sparks, open flames and other sources of ignition. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P243	Take action to prevent static discharges.
P261	Avoid breathing mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P273	Avoid release to the environment.

Response	**Precautionary Statements**
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, water fog, or chemical foam to extinguish.
P308 + P313	By all routes of exposure: IF exposed or concerned: Get medical advice/attention.
P303 + P361 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.

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Response	**Precautionary Statements**
P362 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.
Disposal	**Precautionary Statements**
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
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**
Defats skin	Repeated exposure may cause skin dryness or cracking.	None	None

Section 3: Composition/Information on Ingredients

CAS #	**Chemical Name**	**%(weight)**
7440-22-4	silver	30%
616-38-6	dimethyl carbonate	21%
67-64-1	acetone	16%
108-65-6	2-methoxy-1-methylethyl acetate	16%
108-10-1	isobutyl methyl ketone	5%
85940-94-9	hexamethylene diisocyanate	4%
64742-95-6	solvent naphtha (petroleum), light aromatic	1%
95-63-6	pseudocumene	1%
98-82-8	cumene	0.2%

Section 4: First-Aid Measures

Exposure Condition	*GHS Code/Symptoms/Precautionary Statements*
IF ON SKIN (or hair)	P303 + P352, P333 + P313, P362 + P364, P308 + P313
Immediate Symptoms	*dry skin, redness, pain, allergic dermatitis*
Response	Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off immediately all contaminated clothing and wash it before reuse. IF exposed or concerned: Get medical advice/attention.
IF IN EYES	P305 + P351 + P338, P337 + P313, P308 + P313
Immediate Symptoms	*redness, pain, blurred vision, possible corneal damage*
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 exposed or concerned: Get medical advice/attention.
IF INHALED	P304 + P340, P308 + P313
Immediate Symptoms	*cough, dizziness, drowsiness, headache, nausea, sore throat, vomiting, unconsciousness, weakness, loss of appetite*
Response	Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice/attention.
IF SWALLOWED	P301 + P330, P331, P308 + P313
Immediate Symptoms	*abdominal pain, cough, dizziness, drowsiness, headache, nausea, sore throat, vomiting, unconsciousness, weakness, loss of appetite*
Response	Rinse mouth. Do NOT induce vomiting. IF exposed or concerned: Get medical advice/attention.

Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
Specific Hazards	The vapors are heavier than air and may accumulate in low-lying areas. Vapors may travel long distances and ignite at an ignition source, which can cause a flashback or an explosion.
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/spray/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 nonflammable 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.
	Keep away from heat, hot surfaces, sparks, open flames and other sources of ignition. No smoking.
	Keep container tightly closed. Ground and bond container and receiving equipment. Use explosive-proof equipment. Take action to prevent static discharges.
	Avoid breathing mist/vapors/spray.
	Contaminated work clothing should not be allowed out of the workplace.
Handling	Wear protective gloves/protective clothing/eye protection/face protection.
	Wash hands thoroughly after handling.
	Take off contaminated clothing and wash it before reuse.
Storage	Store in a well-ventilated place. Keep cool.
	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)
silver	ACGIH	0.1 mg/m^3	Not established
(metal dust, mist)	U.S.A. OSHA PEL	0.01 mg/m^3	Not established
(metal)	Canada AB	0.1 mg/m^3	Not established
(Ag and its compounds)	Canada BC	0.01 mg/m^3	0.03 mg/m^3
(metal, dust, fumes)	Canada ON	0.1 mg/m^3	Not established
	Canada QC	0.1 mg/m^3	Not established

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Chemical Name	Country/Province	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
acetone	ACGIH	500 ppm	750 ppm
	U.S.A. OSHA PEL	1 000 ppm	Not established
	Canada AB	500 ppm	750 ppm
	Canada BC	250 ppm	500 ppm
	Canada ON	500 ppm	750 ppm
	Canada QC	750 ppm	1 000 ppm
2-methoxy-1-methylethyl acetate	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	50 ppm	Not established
	Canada AB	Not established	Not established
	Canada BC	50 ppm	75 ppm
	Canada ON	50 ppm	Not established
	Canada QC	Not established	Not established
isobutyl methyl ketone	ACGIH [a)]	20 ppm	75 ppm
	U.S.A. OSHA PEL	100 ppm	Not established
	Canada AB	50 ppm	75 ppm
	Canada BC [b)]	20 ppm	75 ppm
	Canada ON	50 ppm	75 ppm
	Canada QC	50 ppm	75 ppm
cumene	ACGIH	50 ppm	Not established
	U.S.A. OSHA PEL	50 ppm	Not established
	Canada AB	50 ppm	Not established
	Canada BC	75 ppm	Not established
	Canada ON	50 ppm	Not established
	Canada QC	50 ppm	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' SDSs were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) A3; URT irr; dizziness; headache

b) 2B - indicate substances designated as carcinogens under section 5.57(1) of the *OHS Regulation*.

Engineering Controls

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

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Personal Protective Equipment

Eye protection	Wear appropriate protective eyeglasses or chemical safety goggles. **RECOMMENDATION:** Ensure that glasses have side shields for lateral protection.
Skin Protection	For likely contacts, use of protective butyl rubber or other chemically resistant gloves. For incidental contacts, use nitrile or other chemically resistant gloves.
Respiratory Protection	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. **RECOMMENDATION:** Consult your local safety supply store to ensure that your respirator has a NIOSH (U.S.) approved filter cartridges appropriate for the ingredients listed in Section 3. The respirator should be fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

Section 9: Physical and Chemical Properties

Physical State	Liquid	**Lower Flammability Limit** [c]	2.4%
Appearance	Silver	**Upper Flammability Limit** [c]	12%
Odor	Aromatic	**Vapor Pressure @20 °C**	Not available
Odor Threshold	Not available	**Vapor Density**	<2.01
pH	Not available	**Relative Density @25 °C**	1.33
Freezing/Melting Point	Not available	**Solubility in Water**	Partially soluble
Initia Boiling Point [a]	≥56 °C [≥132 °F]	**Partition Coefficient n-octanol/water**	Not available
Flash Point [a]	-17 °C [1.4 °F]	**Auto-ignition Temperature** [b]	≥330 °C [≥626 °F]
Evaporation Rate	<1 (ButAc = 1)	**Decomposition Temperature**	Not available
Flammability	Highly Flammable	**Viscosity @25 °C**	4.01 cP

a) Values based on acetone.
b) Values based on 2-methoxy-1-methylethyl acetate.
c) Values based on Raoult's Law and LeChatelier's principal

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 bases, strong acids
Polymerization	Will not occur
Decomposition	Does not decompose under normal conditions, see combustion products in Section 5.

Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure

Eyes	May cause redness, pain, blurred vision, possible corneal damage.
Skin	May cause dry skin, redness, pain, allergic dermatitis.
Inhalation	May cause cough, dizziness, drowsiness, headache, nausea, sore throat, vomiting, unconsciousness, weakness, loss of appetite.
Ingestion	May cause abdominal pain, cough, dizziness, drowsiness, headache, nausea, sore throat, vomiting, unconsciousness, weakness, loss of appetite.
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
silver	>2 000 mg/kg Rat	>2 000 mg/kg Rat	5.16 mg/m^3 4 h Rat (dust)
dimethyl carbonate	>6.4 g/kg Rat & Mouse	>5 000 mg/kg Rabbit	Not available
acetone	5 800 mg/kg Rat	20 mL/kg Rabbit [a)]	16 000 ppm 4 h Rat [a)]
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not available
isobutyl methyl ketone	2.08 g/kg Rat	>2 000 mg/kg Rat	>2 000 ppm 4 h Rat
hexamethylene diisocyanate	959 mg/kg Rat	>7 000 mg/kg Rat	124 mg/m^3 4 h Rat
solvent naphtha (petroleum), light aromatic	>5 000 mg/kg Rat	>2 000 mg/kg Rabbit	Not available
pseudocumene	6 000 mg/kg Rat	>3 440 mg/kg Rat	10 200 mg/L 4 h Rat

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Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
cumene	1 400 mg/kg Rat	10 627 mg/kg Rabbit	10 g/m^3 7 h Mouse

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

Other Toxicological Effects

Skin Corrosion/Irritation
Hexamethylene diisocynate, solvent naphtha (petroleum), light aromatic and pseudocumene can cause skin irritation.

Serious Eye Damage/Irritation
Acetone, isobutyl methyl ketone and pseudocumene can cause serious eye irritation.

Sensitization
(allergic reactions)
Hexamethylene diisocynate may cause skin sensitization.

Carcinogenicity
(risk of cancer)

Isobutyl methyl ketone [CAS# 108-10-1]

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: Animal studies through inhalation show evidence of carcinogenic effects.

Cumene [CAS# 98-82-8]

IARC Group 2B: Possibly carcinogenic to humans

ACGIH A3: Not listed

CA Prop 65: Listed as a carcinogen

NTP: Animal studies through inhalation show evidence of carcinogenic effects.

Mutagenicity
(risk of heritable genetic effects)
Based on available data, the classification criteria are not met.

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Reproductive Toxicity (risk to sex functions)	4-methylpentan-2-one is known to have reproductive effect in rats.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-Single Exposure	Acetone, 2-butanone, propan-2-ol, n-butyl acetate and ethyl acetate can affect the central nervous system by inhalation causing drowsiness or dizziness. 4-methylpentan-2-one can cause respiratory irritation.
STOT-Repeated Exposure	Hexamethylene diisocyanate may cause damage to lungs through prolonged or repeated exposure.
Aspiration Hazard	Based on available data, the classification criteria are not met. The mixture contains <10% category 1 substances.

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 silver particles less than a 1 mm in size but >100 nm (larger than nanoparticles), which are very toxic to the environment in their ionic form. While both are insoluble in water, classification is being harmonized to EU classification.

Solvent naptha (petroleum), light aromatic, pseudocumene and cumene are classified as a aquatic chronic category 2 according to the GHS classification.

Acetone, dimethyl carbonate, 2-methoxy-1-methylethyl acetate, isobutyl methyl ketone, and hexamethylene diisocyanate do not meet classification criteria for aquatic environmental toxicants with LC50 and EC50 of >100 mg/L.

- Acetone has a minimal LC50 96 h of 5 540 mg/L for Oncorhynchus mykiss (rainbow trout) and an EC50 48 h of 13 500 mg/L for Daphnia magna (water flea).
- Dimethyl carbonate does not meet classification criteria for aquatic environmental toxicants with LC50 and EC50 of >100 mg/L.

Acute Ecotoxicity

Very toxic to the aquatic life.

Section continued on the next page

Chronic Ecotoxicity

Very toxic to the aquatic life with long lasting effects.

Avoid release to the environment. Collect spillage.

Biodegradability

Not available

Other Effects

VOC *(*Regulated Volatile Organic Content) = 27% [911 g/L]

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 1 L and under	Sizes greater than 1 L
Cat # 842UR-12ML, 842UR-150ML, 842UR-850ML **Limited Quantity** 	*Cat # 842UR-3.6L* **UN number**: UN1993 **Shipping Name:** FLAMMABLE LIQUID, N.O.S. (dimethyl carbonate, acetone) **Class:** 3 **Packing Group**: II Marine Pollutant: Yes 

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Air

Refer to ICAO-IATA Dangerous Goods Regulations.	
Sizes 0.5 L and under [a)] *Cat # 842UR-12ML, 842UR-150ML* **Limited Quantity** Max Net Qty/Pkg = 1 L 	Sizes greater than 0.5 L up to 5 L (passenger), 60 L (cargo) *Cat # 842UR-850ML, 842UR-3.6L* **UN number**: UN1993 **Shipping Name:** FLAMMABLE LIQUID, N.O.S. (dimethyl carbonate, acetone) **Class:** 3 **Packing Group**: II **Marine Pollutant:** Yes 

a) net quantity per inner packaging

Sea

Refer to IMDG regulations.	
Sizes 1 L and under *Cat # 842UR-12ML, 842UR-150ML, 842UR-850ML* **Limited Quantity** 	Sizes greater than 1 L *Cat # 842UR-3.6L* **UN number**: UN1993 **Shipping Name**: FLAMMABLE LIQUID, N.O.S. (dimethyl carbonate, acetone) **Class**: 3 **Packing Group**: II Marine Pollutant: Yes 

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.

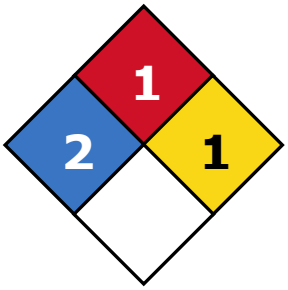
USA

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 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 contains silver (CAS# 7440-22-4; reportable quantity = 1 000 lb) isobutyl methyl ketone (CAS# 108-10-1; reportable quantity = 1 000 lb), pseudocumene (CAS# 95-63-6) and cumene (CAS# 98-82-8; reportable quantity = 5 000 lb), which are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

This product contains acetone (CAS# 67-64-1), which is subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

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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 cumene (CAS# 98-28-8), which is listed as carcinogen in California.

This product contains isobutyl methyl ketone (CAS# 108-10-1), which is listed as carcinogen and reproductive toxicant in California.

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	03 March 2020
Supersedes	11 September 2018

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

Reference

1) ACGIH *2017 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices*, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2017).

2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

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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
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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