

SUPER SHIELD SILVER EPOXY CONDUCTIVE PAINT Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 842ER-A

Other Means of Identification: Super Shield Silver Epoxy Conductive Paint **Related Part #** 842ER-60ML, 842ER-250ML, 842ER-900ML, 842ER-4.25L

Recommended Use and Restriction on Use

Use: Silver conductive epoxy resin

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

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E-маіL (Competent Person): <u>sds@mgchemicals.com</u>

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

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Section 2: Hazard(s) Identification

Classification of Hazardous Chemical

GHS Categories

Criteria		Category	Signal Word	Pictograms
Flammable liquid		2	Danger	Flame
Serious Eye Damage		1	Danger	Corrosion
Sensitization	Skin	1	Warning	Exclamation
Skin Irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	Exclamation
Hazardous to the Aquatic Environment	Chronic	1	Warning	Environment

Note: The degree of severity is ranked within each hazard class from

1 (Highest Severity) to up to 5 (Lowest Severity), which is opposite to HMIS and NFPA conventions. Severity category rankings do not allow comparisons between classes.

Label Elements Signal Word DANGER Pictograms Hazard Statements Image: Ward of the second seco

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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.	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.	
P233	Keep container tightly closed.	
P240	Ground and bond container and receiving equipment.	
P241	Use explosion-proof equipment.	
P243	Take action to prevent static discharges.	
P261	Avoid breathing mist, vapors, and spray.	
P264	Wash hands thoroughly after handling.	
P280	Wear protective gloves and eye protection.	
P272	Contaminated work clothing should not be allowed out of the workplace.	
P271	Use only outdoors or in a well-ventilated area.	
P273	Avoid release to the environment.	
Response	Precautionary Statements	
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.	
P303 + P361 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing Wash with plenty of water or shower.	
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.	
P363	Wash contaminated clothing before reuse.	
P305 + P351 + P338, P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.	
P304 + P340, P319	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell.	
P391	Collect spillage.	

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Storage	Precautionary Statements		
P403 + P235	Store in a well-ventilated place. Keep cool.		
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
Defats skin	Repeated exposure may cause skin dryness or cracking.	None	None
Argyria	Long term exposure to silver powder or compounds can lead to an irreversible blue-grey discoloration of the skin.	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
7440-22-4	silver	46%
110-19-0	isobutyl acetate	33%
25085-99-8	bisphenol-A-(epichlorhydrin)	8%
71-36-3	butan-1-ol	8%
14807-96-6	talc (non-asbestos fiber)	2%
123-86-4	n-butyl acetate	0.3%



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Section 4: First-Aid Measures			
Exposure Condition	GHS Code/Symptoms/Precautionary Statements		
IF IN EYES	P305 + P351 + P338, P310		
Immediate Symptoms	irritation, redness, pain, burn, eye damage		
Response	Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.		
	Immediately call a POISON CENTER or doctor.		
IF ON SKIN (or hair)	P303 + P361 + P352, P333 + P317, P363		
Immediate Symptoms	redness, irritation, rash, dry skin		
Response Take off immediately all contaminated clothing. Wasplenty of water or shower.			
	If skin irritation or rash occurs: Get medical help.		
	Wash contaminated clothing before reuse.		
IF INHALED	P304 + P340, P319		
Immediate Symptoms	cough, shortness of breath, dizziness, drowsiness, headaches		
Response	Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell.		
IF SWALLOWED	P301 + P330, P331		
Immediate Symptoms	abdominal pain, nausea, headaches, dizziness, drowsiness, vomiting		
Response	Rinse mouth. Do NOT induce vomiting.		

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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.
	Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	Produces carbon oxides (CO, CO ₂) and silver oxides fumes.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turnout gear.

Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing mist, spray 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	Contain with inert 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.

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Section 7: Handling and Storage

Prevention	Keep out of reach of children.
	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	Ground and bond container and receiving equipment. Use explosion-proof equipment. Take action to prevent static discharges.
	Keep container tightly closed. Avoid breathing mist, vapors or spray.
	Contaminated work clothing should not be allowed out of the workplace.
	Avoid release to the environment.
Handling	Wear protective gloves and eye protection.
	Take off contaminated clothing and was it before reuse.
	Use only outdoors or in a well-ventilated area.
	Wash hands thoroughly after handling.
	Collect spillage.
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/ Provinces	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
isobutyl acetate	ACGIH	150 ppm	Not established
	U.S.A. OSHA PEL	150 ppm	Not established
	Canada AB	150 ppm	Not established
	Canada BC	150 ppm	Not established
	Canada ON	150 ppm	187 ppm
	Canada QC	150 ppm	Not established

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Continued			
Chemical Name	Country/ Provinces	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
butan-1-ol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	20 ppm 100 ppm 20 ppm 15 ppm 20 ppm 50 ppm (Ceiling)	Not established Not established Not established 30 ppm (Ceiling) Not established Not established
talc (without asbestos fibers)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	2 mg/m ³ 20 mppcf ^{a)} 2 mg/m ³ 2 mg/m ³ 2 mg/m ³ 3 mg/m ³	Not established Not established Not established Not established Not established Not established
n-butyl acetate	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	150 ppm 150 ppm 150 ppm 20 ppm 150 ppm 150 ppm 150 ppm	Not established Not established 200 ppm 200 ppm Not established 200 ppm

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 RTECS² database and 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.

a) Millions of particles per cubic foot air, based on impinge samples counted by light-field technique.

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 disposable natural rubber or other chemically resistant gloves.
Respiratory Protection	For over-exposures up to 10 x OEL of mist, vapors or 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.

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Section 9: Physical and Chemical Properties

Physical State	Liquid	Lower Flammability Limit ^{b)}	1%
Appearance	Metallic silver	Upper Flammability Limit ^{b)}	11%
Odor	Amine-like	Vapor Pressure @20 °C	>2.56
Odor Threshold	Not available	Vapor Density	Not available
рН	Not available	Relative Density @25 °C	1.65
Freezing/Melting Point	Not available	Solubility in Water	Partially miscible
Initial Boiling Point ^{a)}	116 °C [241 °F]	Partition Coefficient n-octanol/water	Not available
Flash Point ^{a)}	18 °C [64 °F]	Auto-ignition Temperature ^{c)}	>345 °C [653 °F]
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability	Highly Flammable	Viscosity @25°C	59 cP

a) Values based on isobutyl acetate.

b) Values calculated using Raoult's Law and Le Chatelier principle for solvent components.

c) Value based on butan-1-ol.

Section 10: Stability and Reactivity

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Ignition sources, open flames, excessive heat, and incompatible substances. Low lying vapors may form explosive mixture with air.
Incompatibilities	Strong oxidizing agents, strong acids, strong bases
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

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Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure			
Eyes	Causes severe irritation, redness, pain, burns and/or eye damage.		
Skin	Causes skin irritation, redness, rash, or dry skin.		
Inhalation	May cause cough, shortness of breath, dizziness, drowsiness, or headaches.		
Ingestion	May cause nausea, sore throat, abdominal pain, and diarrhea (also see inhalation symptoms).		
Chronic	Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.		

Chemical Name	LD50	LD50	LC50
	oral	dermal	inhalation
silver	>2 000 mg/kg	>2 000 mg/kg	5.16 mg/m ³
	Rat	Rat	4 h Rat (dust)
isobutyl acetate	13 431 mg/kg	>17 400 mg/kg	Not
	Rat	Rat	available
bisphenol-A-(epichlorhydrin)	11 400 mg/kg	100 pph	Not
	Rat	7 h Rabbit	available
butan-1-ol	790 mg/kg	3 400 mg/kg	Not
	Rat	Rabbit	available
talc	Not	Not	Not
	available	available	available
n-butyl acetate	10 768 mg/kg	>17 600 mg/kg	>10 mg/L
	Rat	Rabbit	4 h Rat (vapor)

Acute Toxicity (Lethal Exposure Concentrations)

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

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Other Toxicological Effects		
Skin corrosion/irritation	The bisphenol-A and butan-1-ol are known skin irritants.	
Serious eye damage/irritation	The butan-1-ol in the mixture is expected to cause severe eye irritation or irreversible eye damage.	
Sensitization (allergic reactions)	Exposure to the epoxy resin may cause an allergic skin reaction.	
Carcinogenicity (risk of cancer)	Based on available data, the classification criteria are not met.	
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	The isobutyl acetate and butan-1-ol can affect the central nervous system by inhalation causing drowsiness or dizziness, and they are a respiratory system irritant.	
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 ingredients present.	

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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 (<u>http://echa.europa.eu</u>), and other reliable sources.

Contains silver of less than a 1 mm but more than 100 nm (larger than nanoparticles), which release ionic silver levels that are very toxic to the environment. While massive silver and copper are insoluble in water, their powders are considered sufficiently soluble to give rise to an ecological hazard by EU regulators. The classification that follows takes into account to chronic aqueous toxicity of category 1 (M = 10 for silver) of the EU.

In Europe, similar the epoxy resins with CAS# 25085-99-8 and MW <700 is generally classified as chronic category 2 marine pollutant. It generally has LC50 96 h of >1 mg/L but \leq 10 mg/L.

Isobutyl acetate, butan-1-ol, talc (non-asbestos fiber), and n-butyl acetate are not classifiable as an environmental toxicant (with minimal LC50 of >100 mg/L).

Acute Ecotoxicity

Category 1 Very toxic to aquatic life

Chronic Ecotoxicity

Category 1

Very toxic to aquatic life with long lasting effects

Avoid release to the environment. Collect spillage.

Biodegradability

Solvent part expected to be biodegradable, but not the polymer or metal filler. The volatile solvent constituents will oxidize rapidly in air by photochemical reaction.

Other Effects

VOC Actual Volatile Organic Content) = 44% [734 g/L]

Section 13: Disposal Information

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

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Section 14: Transport Information

Ground

Refer to TDG regulations (Canadian Transportation of Dangerous Goods regulations); **USA CFR 49 Regulations** (Parts 100 to 185).

Sizes 5 L and under 842ER-60ML, 842ER-250ML, 842ER-900ML, 842ER-4.25L Limited Quantity



FOR REFERENCE ONLY

UN number: UN1263 Shipping Name: PAINT Class: 3 Packing Group: II Marine Pollutant: Yes

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 0.5 L and under 842ER-60ML, 842ER-250ML Limited Quantity

Total Net QTY per package 1 L



Sizes up to 5 L (passenger), 60 L (cargo) 842ER-900ML, 842ER-4.25L UN number: UN1263 Shipping Name: PAINT Class: 3 Packing Group: II Marine Pollutant: Yes

Sea

Refer to IMDG regulations.

Sizes 5 L and under 842ER-60ML, 842ER-250ML, 842ER-900ML,842ER-4.25L Limited Quantity



FOR REFERENCE ONLY

UN number: UN1263 Shipping Name: PAINT 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.

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Section 15: Regulatory Information

Canada

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

All hazardous ingredients are listed on the DSL/NDSL.

Hazardous Products Act (R.S.C., 1985, c. H-3)

The safety data sheet and label comply with the Hazardous Product Act and WHMIS 2015.

USA

Other Classifications

HMIS® RATING

HEALTH:	*	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 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 silver (CAS# 7440-22-4; reportable quantity = 1 000 lb), which is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

This product contains isobutyl acetate (CAS# 110-19-0), which are subject to the CERCLA reporting requirements at the 5 000 lb (2 268 kg) threshold.

This product contains n-butyl acetate (CAS# 123-86-4), 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 does not contain any substances known to be listed 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

MSDS Prepared by	MG Chemicals' Regulatory Department
Date of Creation	11 June 2020
Supersedes	03 March 2020
Reason for Changes:	Added new part number.

References

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®), MDL Information Systems, Inc.

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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 <u>www.mgchemicals.com</u>.

Email: support@mgchemicals.com

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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.