

SAI Global File #004008 Burlington, Ontario, Canada

**843AR** 

# **Safety Data Sheet**

#### Section 1: Identification

#### **Product Identifier and Other Means of Identification**

**Product Identifier: 843AR** 

Other Means Of Identification: Super Shield™ Silver Coated Copper Conductive Paint

Related Part # 843AR-900ML, 843AR-1G, 843AR-3.78L, 843AR-18.9L

#### Recommended Use and Restriction on Use

Use: Electrically conductive coating and EMI/RFI shield

Uses Advised Against: Not available

### **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 www.mgchemicals.com WEB

MG Chemicals (Head Office)

9347-193 Street

Surrey, British Columbia V4N 4E7

CANADA

+1-905-331-1396 +1-905-331-2682 FAX 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
Eye Irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	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
	H225: Highly flammable liquid and vapor
_	H319: Causes serious eye irritation
	H336: May cause drowsiness or dizziness
*	H411: Toxic to aquatic life with long lasting effects

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Prevention	Precautionary Statements
P102	Keep out of reach of children.
P210	Keep away from heat, hot surfaces, sparks, 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, P271	Avoid breathing mist, vapors, and spray. Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, and eye protection.
P264	Wash hands thoroughly after handling.
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 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340, P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE or doctor if you feel unwell.
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.
P391	Collect spillage.
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, and international regulations.
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#### **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 bluegrey discoloration of the skin.	None	None

# **Section 3: Composition/Information on Ingredients**

CAS #	Chemical Name	% (weight)
67-64-1	acetone	31%
616-38-6	dimethyl carbonate	22%
7440-50-8	copper	20%
110-43-0	heptan-2-one <sup>a)</sup>	13%
108-65-6	1-methoxy-2-propanol acetate	4%
7440-22-4	silver	2%

a) Also known as methyl amyl ketone (MAK)

Section 4:	First-Aid	Measures
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Exposure Condition	GHS Code/Symptoms/Precautionary Statements
IF ON SKIN (or hair)	P303 + P361 + P353, P363
Immediate Symptoms	redness, mild irritation, dry skin
Response	Take off immediately all contaminated clothing. Rinse skin with water or shower.
	Wash contaminated clothing before reuse.
IF INHALED	P304 + P340, P312
Immediate Symptoms	cough, drowsiness, dizziness, headaches, nausea, unconsciousness
Response	Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE or doctor if you feel unwell.

Section continued on the next page

Page **4** of **17** 



SAI Global File #004008 Burlington, Ontario, Canada

# 843AR

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IF IN EYES	P305 + P351 + P338, P337 + P313	
Immediate Symptoms	irritation, redness, pain	
Response	Rinse cautiously with water for 20 minutes or more. 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, P312	
Immediate Symptoms	nausea, sore throat, abdominal pain, diarrhea, drowsiness, dizziness	
Response	Rinse mouth. Do NOT induce vomiting.	

# **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.
<b>Combustion Products</b>	Produces carbon oxides (CO, CO <sub>2</sub> ) and metal oxide fumes.
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting

turn-out gear.

# Chemicals

#### ISO 9001:2015 Quality Management System

SAI Global File #004008 Burlington, Ontario, Canada

# 843AR

#### **Section 6: Accidental Release Measures**

**Personal Protection** See personal protection recommendations in Section 8.

Precautions for Response

Avoid breathing mist, spray, and 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.

# **Section 7: Handling and Storage**

**Prevention** Keep out of reach of children.

Keep away from heat, hot surfaces, sparks, flames, and other ignition

sources. No Smoking.

Ground and bond container and receiving equipment. Use explosion-proof

equipment. Take action to prevent static discharges.

Avoid breathing mist, vapors, and spray. Use only outdoors or in a well-

ventilated area. Keep container tightly closed.

**Handling** Wear protective gloves, protective clothing, and eye protection. Wash

hands thoroughly after handling. Take off contaminated clothing and wash

it before reuse.

Avoid release to the environment. 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)
acetone	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	500 ppm 1 000 ppm 500 ppm 250 ppm 500 ppm 750 ppm	750 ppm Not established 750 ppm 500 ppm 750 ppm 1 000 ppm
copper (dust and mist)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	1.0 mg/m <sup>3</sup> 1.0 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> 1.0 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> 1 mg/m <sup>3</sup>	Not established Not established Not established Not established Not established Not established
heptan-2-one methyl amyl ketone	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	50 ppm 100 ppm 50 ppm 50 ppm 25 ppm 50 ppm	Not established Not established Not established Not established Not established Not established
1-methoxy-2-propanol acetate	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	Not established 50 ppm Not established 50 ppm 50 ppm Not established	Not established Not established Not established 75 ppm Not established Not established
silver (metal dust, mist) (metal) (Ag and its compounds) (metal, dust, fumes)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	0.1 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.1 mg/m <sup>3</sup>	Not established Not established Not established 0.03 mg/m³ Not established 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 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.

Section continued on the next page

Page **7** of **17** 



SAI Global File #004008 Burlington, Ontario, Canada

# 843AR

**Engineering Controls** 

**Ventilation** Keep airborne concentrations below the occupational exposure

limits (OEL).

**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.

**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.



SAI Global File #004008 Burlington, Ontario, Canada



# **843AR**

# **Section 9: Physical and Chemical Properties**

Physical State	Liquid	Lower Flammability Limit <sup>b)</sup>	2%
Appearance	Light brown metallic	Upper Flammability Limit <sup>b)</sup>	13%
Odor	Acetone-like	Vapor Pressure b) @20 °C	16 kPa [118 mmHg]
Odor Threshold <sup>a)</sup>	5 ppm	Vapor Density	≥2 (Air =1)
рH	Not available	Relative Density @25°C	1.1
Freezing/Melting Point	Not available	Solubility in Water	Partially miscible
Initial Boiling Point <sup>a)</sup>	56 °C [132 °F]	Partition Coefficient n-octanol/water	Not available
Flash Point a)	-17 °C [1.4 °F]	Auto-ignition Temperature <sup>c)</sup>	≥315 °C [≥599 °F]
Evaporation Rate	Fast	Decomposition Temperature	Not available
Flammability	Highly Flammable	Viscosity @25 °C	<30 cP

- a) Values based on acetone component.
- b) Lower and Upper Explosive Limits, and vapor pressure of mixture calculated using Le Chatelier principle and component physical values.
- c) The auto-ignition value is based on 1-methoxy-2-propanol acetate, which is the component with the lowest value.

# **Section 10: Stability and Reactivity**

Reactivity	The copper may form shock sensitive compounds in the presence of acetylenic compounds.
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Ignition sources, open flames, excessive heat, and incompatible substances
Incompatibilities	Oxidizing agents, strong acids, peroxides, and acetylenic compounds
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

Page **9** of **17** 



## **Section 11: Toxicological Information**

### **Summary of Effects and Symptoms by Routes of Exposure**

**Eyes** Causes redness, severe irritation, and pain.

**Inhalation** May cause cough, drowsiness, dizziness, headaches, nausea, or

unconsciousness.

**Ingestion** May cause nausea, sore throat, abdominal pain, and diarrhea (also see

inhalation symptoms).

**Skin** Causes skin redness, mild irritation, and dry skin.

**Chronic** Prolonged or repeated exposure may cause skin dryness, cracking, as well

as defatting the skin. Exposure to silver powder may also cause argyria,

an irreversible blue-grey discoloration of the skin.

# **Acute Toxicity (Lethal Exposure Concentrations)**

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	
acetone	5 800 mg/kg	20 mL/kg	16 000 ppm	
	Rat	Rabbit <sup>a)</sup>	4 h Rat (vapeur) <sup>a)</sup>	
copper	>2 500 mg/kg	>2 000 mg/kg	>5.11 mg/m³	
	Rat <sup>b)</sup>	Rabbit	4 h Rat (dust)	
dimethyl carbonate	>6.4 g/kg	>5 000 mg/kg	Not	
	Rat & Mouse	Rabbit	available	
heptan-2-one	1 670 mg/kg	12 600 μL/kg	>16.7 mg/kg	
	Rat	Rabbit	4 h Rat (vapor)	
1-methoxy-2-propanol acetate	8 532 mg/kg	>5 g/kg	Not	
	Rat	Rabbit	available	
silver	>2 000 mg/kg	>2 000 mg/kg	5.16 mg/m <sup>3</sup>	
	Rat	Rat	4 h Rat (dust)	
ATE Mixture	>5 053 mg/Kg	>4 457 mg/kg	>37 mg/L	

Note: Toxicity data from the RTECS $^2$  and ECHA databases were consulted. The data from supplier SDS were also consulted.

- a) Supplier safety data sheet
- b) Copper flake

Section continued on the next page

Page **10** of **17** 



(allergic reactions)

#### ISO 9001:2015 Quality Management System

SAI Global File #004008 Burlington, Ontario, Canada

# 843AR

**Other Toxicological Effects** 

**Skin corrosion/irritation**Based on available data, the classification criteria are

not met.

**Serious eye damage/irritation** Acetone is a known serious eye irritant. Contains

mechanically abrasive particles.

**Sensitization** Based on available data, the classification criteria are

not met.

**Carcinogenicity** None of the ingredients are classified or listed as a

(risk of cancer) carcinogen by IARC, ACGIH, CA Prop 65, or NTP.

**Mutagenicity** Based on available data, the classification criteria are

(risk of heritable genetic effects) not met.

**Reproductive Toxicity** Based on available data, the classification criteria are

(risk to sex functions) not met.

**Teratogenicity** Based on available data, the classification criteria are

(risk of fetus malformation) not met.

**STOT-single exposure** Inhalation of acetone and heptan-2-one may affect the

central nervous system.

**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 is less than 10% category 1

components.

# 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 (<a href="http://echa.europa.eu">http://echa.europa.eu</a>), and other reliable sources.

Contains silver and copper particles of less than a 1 mm but more than 100 nm (larger than nanoparticles), which release ionic silver and ionic copper 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 and M = 1 for copper) of the EU.

Section continued on the next page



SAI Global File #004008 Burlington, Ontario, Canada

### **843AR**

Acetone, heptan-2-one, and 1-methoxy-2-propanol acetate are not classifiable as an environmental toxicant (with minimal LC50 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).
- Heptan-2-one has a minimal LC50 96 h of 126 mg/L for Pimephales promelas (fathead minnow).
- 1-methoxy-2-propanol acetate has a minimal LC50 96 h of ≥100 mg/L Salmo gairdneri and an EC50 48 h of >500 mg/L for Daphnia magna (water flea).

There is insufficient data to classify dimethyl carbonate for aqueous toxicity.

# **Acute Ecotoxicity**

Category 1

Very toxic to aquatic life

# **Chronic Ecotoxicity**

Category 2

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**

Actual Volatile Organic Compounds (VOC) = 17% [187 q/L]; Regulated VOC = 553 q/L

#### Section 13: Disposal Information

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



SAI Global File #004008 Burlington, Ontario, Canada

### 843AR

# **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 L and under 843AR-900ML, 843AR-1G, 843AR-3.78L

**Limited Quantity** 



Sizes greater than 5 L 843AR-18.9L

UN number: UN1263 Shipping Name: PAINT

Class: 3

Packing Group: II Marine Pollutant: Yes



#### Air

#### Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes up to 5 L (passenger), 60 L (cargo) 843AR-900ML, 843AR-1G, 843AR-3.78L,

843AR-18.9L

UN number: UN1263 Shipping Name: PAINT

Class: 3

Packing Group: II Marine Pollutant: Yes



Section continued on the next page

Page **13** of **17** 



SAI Global File #004008 Burlington, Ontario, Canada

### 843AR

#### Sea

# Refer to IMDG regulations.

Sizes 5 L and under 843AR-900ML, 843AR-1G, 843AR-3.78L

**Limited Quantity** 



Sizes greater than 5 L 843AR-18.9L

**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.

# **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



SAI Global File #004008 Burlington, Ontario, Canada

### 843AR

#### 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 products that are listed as hazardous air pollutants.

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

This product contains copper (CAS# 7440-50-8; reportable quantity = 5 000 lb) and silver (CAS# 7440-22-4; reportable quantity = 1 000 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.

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity)

This product does not contain any substances known to be listed in California.

Section continued on the next page

# N Chemicals

#### ISO 9001:2015 Quality Management System

SAI Global File #004008 Burlington, Ontario, Canada

### 843AR

## **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 Review 08 March 2021 Supersedes 14 April 2020

**Reason for Changes:** Update to the classification.

#### 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®)

Section continued on the next page

SAI Global File #004008 Burlington, Ontario, Canada

# 843AR

#### **Abbreviations**

ACGIH American Conference of Governmental Industrial Hygienists (USA)

ECHA European Chemicals Agency

EU European Union

Chemical

Half maximal effective concentration EC50

EL50 Half maximal effective loading

International Agency for Research on Cancer IARC

No observable effect loading ratio NOELR NTP National Toxicology Program

GHS Globally Harmonized System of Classification of Labeling of Chemicals

Lethal Concentration 50% LC50

Lowest published lethal concentration LCLo

LD50 Lethal Dose 50%

OEL Occupational Exposure Limit Permissible Exposure Limit PEL

Safety Data Sheet SDS

STEL Short-Term Exposure Limit Time Weighted Average TWA 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.

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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.

Page **17** of **17**