

TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL

Safety Data Sheet

Section 1: Identification**Product Identifier and Other Means of Identification****Product Name:** Total Ground™ Carbon Conductive Coating**SDS Code:** 838AR-Aerosol**Related Part #** 838AR-340G**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
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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 accidentsUSA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300****For emergencies involving dangerous goods;** Collect 24/7CANADA: Call CANUTEC ☎: **+1-613-996-6666** or ***666** on cellular phones

TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL

Section 2: Hazard(s) Identification





Classification of Hazardous Chemical

GHS Categories

Criteria	Category	Signal Word	Pictograms
Flammable Aerosol	2	Warning	Flame
Gas Under Pressure	Liquefied gas	Warning	Gas cylinder
Carcinogenicity	2	Warning	Health
Eye Irritation	2	Warning	Exclamation
Specific Target Organ Toxicity Single Exposure	3	Warning	Exclamation

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	WARNING
Pictograms	Hazard Statements
	H223: Flammable aerosol
	H280: Contains gas under pressure; may explode if heated
	H351: Suspected of causing cancer by inhalation
	H319: Causes serious eye irritation H336: May cause drowsiness and dizziness

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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.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P280	Wear protective gloves/eye protection.
P264	Wash hands thoroughly after handling.
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/attention.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER/doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
Storage	Precautionary Statements
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F].
P403	Store in well-ventilated place.
P405	Store locked up.
Disposal	Precautionary Statements
P501	Dispose of contents/container in accordance to local/regional/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
Simple Asphyxiant	May displace oxygen and cause rapid suffocation.	Warning	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
67-64-1	acetone	30%
78-93-3	butan-2-one ^{a)}	29%
74-98-6	propane	13%
75-28-5	isobutane	7%
1333-86-4	carbon black	5%
67-63-0	propan-2-ol ^{b)}	4%
108-65-6	1-methoxy-2-propanol acetate	4%

a) Commonly known as methyl ethyl ketone (MEK).

b) Commonly known as isopropyl alcohol (IPA).

Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>redness, irritation, pain, blurred vision, possible corneal damage</i>
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.

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IF INHALED	P304 + P340, P312, P308 + P313
Immediate Symptoms	<i>cough, drowsiness, dizziness, headaches, nausea, sore throat, unconsciousness</i>
Response	Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.
IF SWALLOWED	P301 + P330 + P331, P308 + P313
Immediate Symptoms	<i>sore throat, abdominal pain, diarrhea, nausea, vomiting, drowsiness, dizziness</i>
Response	Rinse mouth. Do NOT induce vomiting. IF exposed or concerned: Get medical advice/attention.
IF ON SKIN	P302 + P352
Immediate Symptoms	<i>dry skin</i>
Response	Wash with plenty of water.

Section 5: Fire-Fighting Measures

Extinguishing Media	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
Specific Hazards	Aerosols containers may erupt with force at temperatures above 50 °C [122 °F]. 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).
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL**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 extreme heat or open flames.
Environmental Precautions	Avoid releasing to the environment. Prevent spill from entering drains and waterways.
Containment Methods	Not applicable
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 ignition sources. No smoking. Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area. Do not pierce or burn, even after use.
Handling	Do not spray on an open flame or other ignition source. Wear protective gloves/clothing/eye protection. Wash hands thoroughly after handling.
Storage	Protect from sunlight. Do not expose to temperatures exceeding 50 °C [122 °F]. Store in well-ventilated place. Store locked up.

TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL
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
butan-2-one (methyl ethyl ketone)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	200 ppm 200 ppm 200 ppm 50 ppm 200 ppm 150 ppm	300 ppm Not established 300 ppm 100 ppm 300 ppm 300 ppm
propane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	See footnote ^{a)} 1 000 ppm 1 000 ppm 1 000 ppm 1 000 ppm 1 000 ppm	Not established Not established Not established Not established Not established Not established
isobutane	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	Not established Not established Not established Not established 1 000 ppm Not established	Not established Not established Not established Not established Not established Not established
carbon black ^{b)}	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	3.5 mg/m ³ 3.5 mg/m ³ 3.5 mg/m ³ 3 mg/m ³ 3.5 mg/m ³ 3.5 mg/m ³	Not established Not established Not established Not established Not established Not established
propan-2-ol	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	200 ppm (TWA) 400 ppm 200 ppm 200 ppm 200 ppm 400 ppm	400 ppm Not established 400 ppm 400 ppm 400 ppm 500 ppm

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Chemical Name	Country/ Provinces	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
1-methoxy-2-propanol 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

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 by 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.

a) Refer to the ACGIH Appendix F: Minimum Oxygen Content for Asphyxia TLV Basis

b) Respirable airborne particles

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/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.

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General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

Section 9: Physical and Chemical Properties

Physical State	Liquid, in an aerosol format	Lower Flammability Limit ^{b)}	2%
Appearance	Black	Upper Flammability Limit ^{b)}	13%
Odor	Ketone-like	Vapor Pressure @20 °C	8.3 kPa [62 mmHg]
Odor Threshold ^{a)}	5 ppm	Vapor Density	≥2 (Air =1)
pH	Not available	Specific Gravity @25 °C	0.84
Freezing/Melting Point	Not available	Solubility in Water	Partially miscible
Boiling Point ^{a)}	≥56 °C [≥132 °F]	Partition Coefficient	Not available
Flash Point ^{a)}	-17 °C [1.4 °F]	Auto-ignition Temperature ^{c)}	≥315 °C [≥599 °F]
Evaporation Rate	Fast	Decomposition Temperature	Not available
Flammability (solid, gas)	Not available	Viscosity @25 °C	46 cP

a) The values for the boiling point and closed cup flash point are based on the acetone component.

b) Lower and Upper Explosive Limits of mixture calculated using Le Chatelier principle and liquid component LFL and UFL limits

c) The auto-ignition value is based on 1-methoxy-2-propanol acetate, which is the component with the lowest value.

TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL**Section 10: Stability and Reactivity**

Reactivity	Not available
Chemical Stability	Chemically stable at normal temperatures and pressures
Conditions to Avoid	Temperatures above 50 °C [122 °F], open flames, and incompatible substances
Incompatibilities	Oxidizing agents, strong acids, peroxides, alkali or alkali earth metals
Polymerization	Will not occur
Decomposition	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

Section 11: Toxicological Information**Routes of Exposure**

Eye contact, Ingestion, Inhalation, and Skin contact

Symptoms Summary

Eyes	May cause redness, 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	May cause dry skin.
Chronic	Prolonged or repeated exposure may cause skin dryness, cracking, as well as defatting the skin.

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Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
acetone	5 800 mg/kg Rat	20 mL/kg Rabbit ^{a)}	16 000 ppm 4 h Rat ^{a)}
butan-2-one	2 737 mg/kg Rat	6 480 mg/kg Rabbit	23 500 mg/m ³ 8 h Rat
propane	Not Applicable	Not Applicable	>800 000 ppm Rat 4 h
isobutane	Not applicable	Not applicable	>570 000 ppm Rat 4 h
carbon black	>15 g/kg Rat	>3 g/kg Rabbit	Not established
propan-2-ol	3 600 mg/kg Rat	12 800 mg/kg Rabbit	16 000 ppm 8 h Rat
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not available

Note: Toxicity data from the RTECS² and ECHA databases were consulted. Data from supplier (M)SDS were also consulted.

a) Supplier safety data sheet

Other Toxicological Effects

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Serious eye damage/irritation

Acetone, butan-2-one, and propan-2-ol are known serious eye irritants.

Sensitization
(allergic reactions)

Based on available data, the classification criteria are not met.

Carcinogenicity
(risk of cancer)

The carbon black [1333-86-4] is possibly carcinogenic by airborne routes of exposures under WHMIS.

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)	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	Inhalation of acetone, butan-2-one, and propan-2-ol 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 (<http://echa.europa.eu>), and other reliable sources.

Acetone, butan-2-one, carbon black, propan-2-ol, 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).
- Butan-2-one has minimal LC50 of 3 130 mg/L 96 h for *Pimephales promelas* (fathead minnow); EC50 24 h 5 102 mg/L 24 h *Daphnia magna* (water flea).
- Propan-2-ol has a minimal LC50 96 h of 9 640 mg/L for *Pimephales promelas* (fathead minnow); EC50 24 h of 5 102 mg/L for *Daphnia magna* (water flea); EC50 24 h of >2 000 mg/L *Desmodesmus subspicatus* (green algae).
- The 1-methoxy-2-propanol component 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).

Acute Ecotoxicity

Not regulated

Chronic Ecotoxicity

Not regulated

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Biodegradability

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

Other Effects

Actual VOC (Volatile Organic Compounds) content according to the US (EPA) and Canadian (CEPA) authorities.

Actual VOC = 58% [483 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 CFR 49 Regulations (Parts 100 to 185).

Limited Quantity



UN number: UN1950
Shipping Name: AEROSOL,
flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No
Flash Point -17 °C [1.4 °F]



Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Limited Quantity



UN number: UN1950
Shipping Name: AEROSOL,
flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No
Flash Point -17 °C [1.4 °F]



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TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL

Sea

Refer to IMDG regulations.

Limited Quantity



UN number: UN1950
Shipping Name: AEROSOL,
flammable
Class: 2.1
Packing Group: Not applicable
Marine Pollutant: No
Flash Point -17 °C [1.4 °F]



Note: Shipper must be appropriately trained and certified 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.

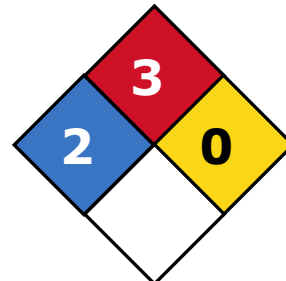
USA

Other Classifications

HMIS® RATING

HEALTH:	*	2
FLAMMABILITY:		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)

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TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL**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 up to 18% propan-2-ol (CAS # 67-63-0) 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 acetone (CAS# 67-64-1) and butan-2-one (CAS# 78-93-3), which are subject to the CERCLA reporting requirements at the 5000 lb (2268 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, June 06, 2014 revision, USA).

This product contains carbon black, which is listed as a carcinogenic substance when airborne, as unbound particles of respirable size.

Europe**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, or PBDE's, 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 24 April 2017
Supersedes 17 August 2016
Reason for Changes: Changes section 14.

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TOTAL GROUND™ CARBON CONDUCTIVE COATING 838AR-AEROSOL**Reference**

- 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®)

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
ECHA	European Chemicals Agency
EU	European Union
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.

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