

TOTAL GROUND CARBON CONDUCTIVE PEN

838AR-PEN

# Safety Data Sheet

## Section 1: Identification

### Product Identifier and Other Means of Identification

**Product Name:** Total Ground™ Carbon Conductive Pen**SDS Code:** 838AR-Pen**Related Part #** 838AR-P

### 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

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
CANADA

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### 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

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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
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**

<b>Signal Word</b>	<b>DANGER</b>
<b>Pictograms</b>	<b>Hazard Statements</b>
	H225: Highly flammable liquid and vapor
	H351: Suspected of causing cancer by inhalation
	H319: Causes serious eye irritation H336: May cause drowsiness or dizziness

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<b>Prevention</b>	<b>Precautionary Statements</b>
P102	Keep out of reach of children.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, flames, and other ignition sources. No Smoking.
P233	Keep container tightly closed.
P261 + P271	Avoid breathing vapors. Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/eye protection/face protection.
P264	Wash hands thoroughly after handling.
<b>Response</b>	<b>Precautionary Statements</b>
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P303 + P361 + P353	IN 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/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/attention.
<b>Storage</b>	<b>Precautionary Statements</b>
P403 + P235	Store in well-ventilated place. Keep cool.
P405	Store locked up.
<b>Disposal</b>	<b>Precautionary Statements</b>
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Hazards Not Otherwise Classified**

<b>Other Criteria</b>	<b>Hazard Statements/Precautionary Statement</b>	<b>Signal Word</b>	<b>Pictograms</b>
Defats skin	Repeated exposure may cause skin dryness or cracking.	<i>None</i>	<i>None</i>

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

CAS #	Chemical Name	% (weight)
67-64-1	acetone	41%
78-93-3	butan-2-one <sup>a)</sup>	37%
1333-86-4	carbon black	6%
108-65-6	1-methoxy-2-propanol acetate	5%

a) Also known as methyl ethyl ketone (MEK)

**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
<b>IF ON SKIN (or hair)</b>	P303 + P361 + P353, P263
<b>Immediate Symptoms</b>	<i>redness, mild irritation, dry skin</i>
<b>Response</b>	Take off immediately all contaminated clothing. Rinse skin with water or shower.  Wash contaminated clothing before reuse.
<b>IF INHALED</b>	P304 + P340 + P312, P308 + P313
<b>Immediate Symptoms</b>	<i>cough, drowsiness, dizziness, headaches, nausea, unconsciousness</i>
<b>Response</b>	Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel unwell.  IF exposed or concerned: Get medical advice/attention.
<b>IF IN EYES</b>	P305 + P351 + P338, P337 + P313
<b>Immediate Symptoms</b>	<i>redness, severe irritation, pain</i>
<b>Response</b>	Rinse cautiously with water for 15 minutes or more. Remove contact lenses, if present and easy to do. Continue rinsing.  If eye irritation persists: Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P330 + P331
<b>Immediate Symptoms</b>	<i>nausea, abdominal pain, diarrhea, drowsiness, dizziness</i>
<b>Response</b>	Rinse mouth. Do NOT induce vomiting.

**TOTAL GROUND CARBON CONDUCTIVE PEN****838AR-PEN****Section 5: Fire-Fighting Measures**

<b>Extinguishing Media</b>	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish. Use water spray to cool containers.
<b>Specific Hazards</b>	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> ).
<b>Fire-Fighter</b>	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

**Section 6: Accidental Release Measures**

<b>Personal Protection</b>	See personal protection recommendations in Section 8.
<b>Precautions for Response</b>	Avoid breathing the vapors. Remove or keep away all sources of extreme heat or open flames.
<b>Environmental Precautions</b>	Prevent spill from entering drains and waterways.
<b>Containment Methods</b>	Not applicable
<b>Cleaning Methods</b>	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.
<b>Disposal Methods</b>	Dispose of spill waste according to Section 13.

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**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, flames, and other ignition sources. No Smoking.
- Keep container tightly closed.
- Avoid breathing vapors. Use only outdoors or in a well-ventilated area.
- Handling**        Wear protective gloves/clothing/eye protection.
- Wash hands thoroughly after handling.
- Take off contaminated clothing and wash it before reuse.
- Storage**         Store in 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
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
carbon black <sup>a)</sup>	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	3.5 mg/m <sup>3</sup> 3.5 mg/m <sup>3</sup> 3.5 mg/m <sup>3</sup> 3 mg/m <sup>3</sup> 3.5 mg/m <sup>3</sup> 3.5 mg/m <sup>3</sup>	Not established Not established Not established Not established Not established Not established

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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 ACGIH<sup>1</sup>, OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>2</sup> 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) Respirable airborne particles

**Engineering Controls**

**Ventilation**

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

Because the carbon black is bound to the liquid mixture, it does not present an airborne hazard under normal use. Ensure adequate ventilation if the product is mechanically misted or aerosolized.

**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.

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**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 and particulate filter.

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 your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this SDS, and that the respirator is fitted to the employee by a professional.

### General Hygiene Considerations

Wash hands thoroughly with water and soap after handling.

### Section 9: Physical and Chemical Properties

<b>Physical State</b>	Liquid	<b>Lower Flammability Limit</b> <sup>b)</sup>	2%
<b>Appearance</b>	Black	<b>Upper Flammability Limit</b> <sup>b)</sup>	12%
<b>Odor</b>	Ketone-like	<b>Vapor Pressure</b> <sup>b)</sup> @20 °C	17 kPa [125 mmHg]
<b>Odor Threshold</b> <sup>a)</sup>	5 ppm	<b>Vapor Density</b>	≥2 (Air =1)
<b>pH</b>	Not available	<b>Specific Gravity</b> @25 °C	0.85
<b>Freezing/Melting Point</b>	Not available	<b>Solubility in Water</b>	Partially miscible
<b>Boiling Point</b> <sup>a)</sup>	56 °C [132 °F]	<b>Partition Coefficient</b>	Not available
<b>Flash Point</b> <sup>a)</sup>	-17 °C [1.4 °F]	<b>Auto-ignition Temperature</b> <sup>c)</sup>	≥315 °C [≥599 °F]
<b>Evaporation Rate</b>	Fast	<b>Decomposition Temperature</b>	Not available
<b>Flammability (solid, gas)</b>	Not available	<b>Viscosity</b> @25 °C	154 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.



**TOTAL GROUND CARBON CONDUCTIVE PEN****838AR-PEN****Section 10: Stability and Reactivity**

<b>Reactivity</b>	Not available
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures
<b>Conditions to Avoid</b>	Ignition sources, open flames, excessive heat, and incompatible substances
<b>Incompatibilities</b>	Oxidizing agents, strong acids
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5.

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

Inhalation, Eye contact, Skin contact, and Ingestion

**Symptoms Summary**

<b>Eyes</b>	Causes redness, severe irritation, and pain.
<b>Inhalation</b>	May cause cough, drowsiness, dizziness, headaches, nausea, or unconsciousness.
<b>Ingestion</b>	May cause nausea, abdominal pain, and diarrhea (see inhalation symptoms).
<b>Skin</b>	Causes skin redness, mild irritation, and dry skin.
<b>Chronic</b>	Prolonged or repeated exposure may cause skin dryness, cracking, as well as defatting the skin.

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**Acute Toxicity (Lethal Exposure Concentrations)**

<b>Chemical Name</b>	<b>LD50 oral</b>	<b>LD50 dermal</b>	<b>LC50 inhalation</b>
acetone	5 800 mg/kg Rat	20 mL/kg Rabbit <sup>a)</sup>	16 000 ppm 4 h Rat <sup>a)</sup>
butan-2-one	2 737 mg/kg Rat	6 480 mg/kg Rabbit	23 500 mg/m <sup>3</sup> 8 h Rat
carbon black	>15 g/kg Rat	>3 g/kg Rabbit	Not established
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not established

*Note:* Toxicity data from the RTECS database accessed through the Canadian Centre for Occupational Health and Safety (CCOHS)<sup>2</sup> were consulted. The 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 and butan-2-one 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

**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.

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<b>Teratogenicity</b> (risk of fetus malformation)	Based on available data, the classification criteria are not met.
<b>STOT-single exposure</b>	Inhalation of acetone and butan-2-one may affect the central nervous system.
<b>STOT-repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard</b>	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, 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).
- The 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).
- 1-Methoxy-2-propanol has a minimal LC50 96 h of  $\geq 100$  mg/L *Salmo gairdneri* and an EC50 48 h of >500 mg/L for *Daphnia magna* (water flea).

Based on available data, carbon black is not classified as environmental hazards according to GHS criteria.

**Acute Ecotoxicity**

Available data doesn't give rise to classification as an acute ecotoxicant.

**Chronic Ecotoxicity**

Available data doesn't give rise to classification as a chronic ecotoxicant.

**Biodegradability**

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

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**Other Effects**

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

Actual VOC = 41% [370 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** (Canadian Transportation of Dangerous Goods regulations) and **USA DOT 49 CFR** (Parts 100 to 185) **Regulations.**

Sizes 5 liters and under

**Limited Quantity**



**UN number:** UN1263  
**Shipping Name:** PAINT  
**Class:** 3  
**Packing Group:** II  
**Marine Pollutant:** No  
Flash Point = -17 °C [1.4 °F]

**Air**

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

Sizes 30 mL and under

**Excepted Quantity**  
Document as class **E2**



**UN number:** UN1263  
**Shipping Name:** PAINT  
**Class:** 3  
**Packing Group:** II  
**Marine Pollutant:** No  
Flash Point = -17 °C [1.4 °F]

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**TOTAL GROUND CARBON CONDUCTIVE PEN****838AR-PEN****Sea****Refer to IMDG regulations.**

Sizes 30 mL and under

**Excepted Quantity**  
Document as class **E2****UN number:** UN1263**Shipping Name:** PAINT**Class:** 3**Packing Group:** II**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****WHMIS 1988 Classification**

B2 – Flammable Liquid;

D2A – Very Toxic (Carcinogen IARC 2B);

D2B – Toxic Other (Eye Irritant)

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

All hazardous ingredients are listed on the DSL.

**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.

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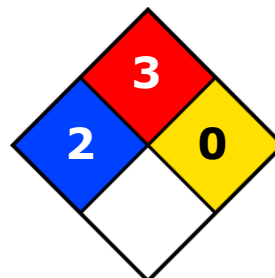
**USA**

**Other Classifications**

**HMIS® RATING**

<b>HEALTH:</b>	<b>* 2</b>
<b>FLAMMABILITY:</b>	<b>3</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	

**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 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.

**TOTAL GROUND CARBON CONDUCTIVE PEN****838AR-PEN****Section 16: Other Information****SDS Prepared by** Michel Hachey**Date of Review** 13 November 2015**Supersedes** Not applicable**Reason for Changes:** New product classified to meet both HCS2012 and WHMIS 2015 regulations.**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

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Quality System Certified to ISO 9001:2008

SAI Global File #004008  
Burlington, Ontario, Canada

## TOTAL GROUND CARBON CONDUCTIVE PEN

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**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](http://www.mgchemicals.com).

Email: [support@mgchemicals.com](mailto:support@mgchemicals.com)

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