OVERCOAT PEN—GREEN **419D-P-GR**

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Overcoat Pen—Green

SDS Code: 419D–P-GR

Related Part # 419D–P-GR

Recommended Use and Restriction on Use

Use: Protective coating for printed circuit boards

Uses Advised Against: Not available

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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MG Chemicals (Head Office)
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Surrey, British Columbia V4N 4E7
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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 CHEMTREC at ***+1-800-424-9300***

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
Skin Sensitization		1	Warning	Exclamation
Eye Irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	Exclamation
Hazardous to the Aquatic Environment	Acute	3	*none*	*none*

Note: The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity). Severity categories rankings do not allow comparisons between classes.

Label Elements

Signal Word	**DANGER**
Pictograms	**Hazard Statements**
	H225: Highly flammable liquid and vapor
	H317: May cause and allergic skin reaction H319: Causes serious eye irritation H336: May cause drowsiness or dizziness
No Symbol Mandated	H402: Harmful to aquatic life

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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.
P261, P271	Avoid breathing vapors. Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/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 + P364 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
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.
Storage	**Precautionary Statements**
P403 + P235	Store in 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)
123-86-4	n-butyl acetate	53%
78-93-3	butan-2-one [a)]	12%
108-65-6	1-methoxy-2-propanol acetate	5%
1333-86-4	carbon black	1%
8052-41-3	Stoddard solvent	1%
13463-67-7	titanium dioxide	0.2%
80-62-6	methyl methacrylate	0.1%
97-88-1	n-butyl methacrylate	0.1%

a) Also known as methyl ethyl ketone (MEK)

Section 4: First-Aid Measures

Exposure Condition	*GHS Code/Symptoms/Precautionary Statements*
IF ON SKIN (or hair)	P303 + P361 + P352, P333 + P313, P363
Immediate Symptoms	*redness, irritation, dry skin*
Response	Take off immediately all contaminated clothing. Wash with plenty of water or shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
IF INHALED	P304 + P340, P312
Immediate Symptoms	*dizziness, drowsiness, cough, headaches, sore throat, nausea*
Response	Remove person to fresh air and keep comfortable for breathing. If you feel unwell: Call a doctor.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	*redness, irritation, pain*
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 SWALLOWED	P301 + P330, P331
Immediate Symptoms	*nausea, sore throat, diarrhea, drowsiness, dizziness, vomiting*
Response	Rinse mouth. Do NOT induce vomiting.

Section 5: Fire-Fighting Measures

Extinguishing Media	Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
Specific Hazards	The liquid may float on water and ignite. 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.

Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing the 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	Not applicable
Cleaning	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	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, open 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/eye protection.

Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

Wash hands thoroughly after handling.

Avoid release to the environment.

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	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
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	Not established Not established 200 ppm 200 ppm Not established 200 ppm
butan-2-one	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	125 ppm 300 ppm 300 ppm 100 ppm 300 ppm 300 ppm

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Chemical Name	Country	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
carbon black [a)]	ACGIH	3.5 mg/m^3	Not established
	U.S.A. OSHA PEL	3.5 mg/m^3	Not established
	Canada AB	3.5 mg/m^3	Not established
	Canada BC	3 mg/m^3	Not established
	Canada ON	3.5 mg/m^3	Not established
	Canada QC	3.5 mg/m^3	Not established
Stoddard solvent	ACGIH	100 ppm	Not established
	U.S.A. OSHA PEL	500 ppm	Not established
	Canada AB	100 ppm	Not established
	Canada BC	290 mg/m^3	580 mg/m^3
	Canada ON	100 ppm	Not established
	Canada QC	100 ppm	Not established
titanium dioxide	ACGIH	10 mg/m^3	Not established
	U.S.A. OSHA PEL	15 mg/m^3	Not established
	Canada AB	10 mg/m^3	Not established
	Canada BC	10 mg/m^3	Not established
	Canada ON	10 mg/m^3	Not established
	Canada QC	10 mg/m^3	Not established
methyl methacrylate	ACGIH	50 ppm [b)]	100 ppm
	U.S.A. OSHA PEL	100 ppm	Not established
	Canada AB	50 ppm	100 ppm
	Canada BC	50 ppm [b)]	100 ppm
	Canada ON	50 ppm	100 ppm
	Canada QC	100 ppm	Not established
n-butyl methacrylate	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada AB	Not established	Not established
	Canada BC	50 ppm	Not established
	Canada ON	Not established	Not established
	Canada QC	Not established	Not established

Note: The ACGIH[1], OSHA (Table Z-1), and Canadian provinces exposure limits were consulted. Limits from the RTECS database[2] 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) Respirable airborne particles

b) Sensitizer (S)

Section continued on the next page

Engineering Controls

Ventilation

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

Because the carbon black and titanium dioxide 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: Use safety glasses with lateral protection (side shields).

Skin Protection

For likely contacts, use of protective butyl rubber, neoprene, or other chemically resistant gloves.

For incidental contacts, use nitrile, polyvinyl alcohol (PVA) or other chemically resistant gloves.

Respiratory Protection

For over-exposures up to 10 x OEL of vapors, 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]	1.8%
Appearance	Green	**Upper Flammability Limit** [c]	9.2%
Odor	Fruity	**Vapor Pressure @20 °C** [c]	40 hPa [31 mmHg]
Odor Threshold	0.007 ppm	**Vapor Density**	>2.5 (Air =1)
pH	Not available	**Relative Density @25 °C**	0.93
Freezing/Melting Point	Not available	**Solubility in Water**	Slightly soluble
Initial Boiling Point [a]	≥80 °C [≥176 °F]	**Partition Coefficient**	Not available
Flash Point [a], [b]	-3 °C [26.6 °F]	**Auto-ignition Temperature** [d]	≥315 °C [≥599 °F]
Evaporation Rate	<1 (ButAc = 1)	**Decomposition Temperature**	Not available
Flammability (solid, gas)	Not applicable	**Viscosity @25 °C**	110 mm^2/s

a) Values based on butan-2-one component.
b) Pensky-Martens closed cup
c) Calculated based on components.
d) Values based on 1-methoxy-2-propanol acetate, which is the component with the lowest auto-ignition value.

Section 10: Stability and Reactivity

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

Section 11: Toxicological Information

Summary of Effects and Symptoms by Routes of Exposure

Eyes	May cause redness, severe irritation, or pain.
Skin	May cause skin redness, irritation, and dry skin.
Inhalation	May cause dizziness, drowsiness, cough, headaches, or nausea.
Ingestion	May cause nausea, sore throat, diarrhea, or vomiting (see inhalation symptoms).
Chronic	Prolonged or repeated exposure may cause skin dryness, cracking, as well as defatting the skin. May also cause skin allergies.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
n-butyl acetate	>10 768 mg/kg Rat	>17 600 mg/kg Rabbit	390 ppm 4 h Rat
butan-2-one	2 737 mg/kg Rat	6 480 mg/kg Rabbit	23 500 mg/m^3 8 h Rat
1-methoxy-2-propanol acetate	8 532 mg/kg Rat	>5 g/kg Rabbit	Not available
carbon black	>15 g/kg Rat	>3 g/kg Rabbit	Not available
Stoddard solvent	>5 000 mg/kg Rat	>3 000 mg/kg Rat	14 000 ppm 8 h Rat
titanium dioxide	60 g/kg Rat	Not available	Not available
methyl methacrylate	7 872 mg/kg Rat	>5 000 mg/kg Rabbit	78 000 mg/m^3 4 h Rat
n-butyl methacrylate	16 000 mg/kg Rat	113 000 µL/kg Rabbit	29.8 mg/L 4 h Rat

Note: Toxicity data from the RTECS[2] and ECHA were consulted. The data from supplier (M)SDS were also consulted.

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Other Toxicological Effects

Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/irritation	Butan-2-one is a known serious eye irritant.
Sensitization (allergic reactions)	The methyl methacrylate and n-butyl methacrylate may cause skin sensitization according to animal studies.
Carcinogenicity (risk of cancer)	The carbon black and titanium dioxide is possibly carcinogenic by airborne routes of exposures under WHMIS. Because the carbon black and titanium dioxide is bound in the liquid mixture, it is not available as an airborne hazard (dust) under normal use. **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 **Titanium Dioxide [13463-67-7]** 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.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	The n-butyl acetate, butan-2-one, Stoddard solvent, methyl methacrylate, and n-butyl methacrylate components can affect the central nervous system by inhalation causing drowsiness or dizziness.

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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. Contains less than 10% components of category 1, and the mixture has a kinematic viscosity of >20.5 mm^2/s at 40 °C.

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.

The n-butyl acetate ingredient is an acute category 3 environmental toxicant (biodegradable, with minimal LC50 of 18 mg/L for fathead minnow).

The 2-butanone (MEK) ingredient is not classified as an environmental hazard according to GHS criteria.

The 1-methoxy-2-propanol acetate component is an acute category 3 environmental toxicant (with minimal LC50 96 h of ≥100 mg/L Salmo gairdneri).

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

The Stoddard solvent is a chronic category 2 environmental toxicant.

Acute Ecotoxicity

Category 3

Harmful to aquatic life

Avoid release to the environment.

Chronic Ecotoxicity

Available toxicity data does not meet classification thresholds.

Biodegradability

Expected to be biodegradable. The volatile solvent constituents will oxidize rapidly in air by photochemical reaction.

Other Effects

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

VOC = 73% [678 g/L]

Section 13: Disposal Information

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

Section 14: Transport Information

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

Sizes 30 mL and under

Excepted Quantity
Code **E2**

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 30 mL and under

Excepted Quantity
Code **E2**

On air waybill, write:
"Dangerous Goods in Excepted Quantities".

UN number: UN1263
Shipping Name: PAINT
Class: 3
Packing Group: II
Marine Pollutant: No
Flash Point = -3 °C [26.6 °F]

Sea

Refer to IMDG regulations.

Sizes 30 mL and under

Excepted Quantity
Code **E2**
In transport document, write:
"Dangerous Goods in Excepted Quantities".

UN number: UN1263
Shipping Name: PAINT
Class: 3
Packing Group: II
Marine Pollutant: No
Flash Point = -3 °C [26.6 °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/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.

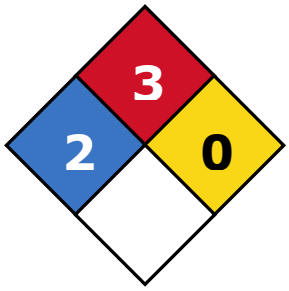
USA

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 does not contain ingredients that are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

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 contains carbon black and titanium dioxide, but it is bound and exposures during normal conditions of uses are below the Safe Harbor Threshold.

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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	Regulatory Department
Date of Revision	07 November 2018
Supersedes	08 November 2016
Reason for Changes:	Modifications to section 14 and other minor changes throughout SDS.

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.

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

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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.

Email: support@mgchemicals.com

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