

410

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Identifier: 410**Other Means of Identification:** Ammonium Persulfate**Related Part #** 410-1KG; 410-25KG

Recommended Use and Restriction on Use

Use: For etching printed circuits**Uses Advised Against:** Not available

Details of Manufacturer or Importer

ManufacturerMG Chemicals
1210 Corporate Drive
Burlington, Ontario L7L 5R6
CANADAMG Chemicals (Head Office)
9347-193 Street
Surrey, British Columbia V4N 4E7
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 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
Sensitization	Respiratory	1	Danger	Health
Oxidizing solids		2	Danger	Flame over circle
Sensitization	Skin	1	Warning	Exclamation
Eye Irritation		2	Warning	Exclamation
Skin Irritation		2	Warning	Exclamation
Specific Target Organ Toxicity	Single Exposure	3	Warning	Exclamation
Acute Toxicity	Oral	4	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	DANGER
Pictograms	Hazard Statements
	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
	H272: May intensify fire; oxidizer

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Pictograms	Hazard Statements
	H302: Harmful if swallowed H317: May cause an allergic skin reaction H319: Causes serious eye irritation H315: Causes skin irritation H335: May cause respiratory irritation
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.
P220	Keep away from clothing and other combustible materials.
P270	Do not eat, drink or smoke when using this product.
P261	Avoid breathing dust.
P271	Use only outdoors or in a well-ventilated area.
P284	In case of inadequate ventilation wear respiratory protection.
P280	Wear protective gloves, protective clothing, eye protection or face protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P264	Wash hands thoroughly after handling.

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Response	Precautionary Statements
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER or a doctor.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
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.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or a doctor if you feel unwell.
P330	Rinse mouth.
Storage	Precautionary Statements
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
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
None	None	None	None

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	%(weight)
7727-54-0	ammonium persulfate	>99%

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Section 4: First-Aid Measures

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF INHALED	P304 + P340, P311
Immediate Symptoms	<i>cough, irritation of the respiratory track, wheezing, laboured breathing</i>
Response	Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or a doctor.
IF ON SKIN	P302 + P352, P333 + P313, P362 + P364
Immediate or Delayed Symptoms	<i>redness, irritation, dry skin, allergic contact dermatitis</i>
Response	Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
IF IN EYES	P305 + P351 + P338, P337 + P313
Immediate Symptoms	<i>redness, irritation, pain</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 or attention.
IF SWALLOWED	P301 + P330
Immediate Symptoms	<i>nausea, diarrhea, sore throat, vomiting</i>
Response	Call a POISON CENTER or a doctor if you feel unwell. Rinse mouth.

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Section 5: Fire-Fighting Measures

Extinguishing Media	In case of fire: Use extinguishing media suitable for surrounding materials.
Specific Hazards	Not flammable or combustible, but intensifies fires. Produces irritating smoke of unknown toxicity in fires. Incompatible with combustible or flammable materials. Prevent fire-fighting wash from entering waterway or sewer system.
Combustion Products	Produces carbon oxides (CO, CO ₂), nitrogen oxides (NO _x), and sulphur oxides.
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 dust formation and breathing the dust. You may wet with a water spray to prevent dust cloud formation. Remove or keep away all sources of open flames and flammable or combustible materials.
Environmental Precautions	Avoid releasing to the environment.
Containment Methods	Not applicable
Cleaning Methods	Sweep or shovel into a container that can be tightly closed. Use soap and water to remove the last traces of residue. Do NOT combine with flammable or combustible waste.
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.
- Do not eat, drink, or smoke when using this product.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials.
- Avoid breathing dust. Use only outdoors or in a well-ventilated area. In case of inadequate ventilation, wear respiratory protection.
- Avoid release to the environment.
- Handling** Wear protective gloves, protective clothing, and eye protection or face 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.
- Storage** Store in a well-ventilated place. Keep container tightly closed.
- 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)
ammonium persulfate	ACGIH	0.1 mg/m ³	Not established
	U.S.A. OSHA PEL	Not established	Not established
	Canada AB	0.1 mg/m ³	Not established
	Canada BC	0.1 mg/m ³	Not established
	Canada ON	0.1 mg/m ³	Not established
	Canada QC	Not established	Not established

Note: The ACGIH¹, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database² and from suppliers' SDSs were also consulted. Short term exposure limits (STEL) are usually for 15 min and long term permissible exposure limits (PEL) for 8 h.

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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 nitrile or other chemically resistant gloves.

For incidental contacts, use nitrile or other chemically resistant gloves.

Respiratory Protection For over-exposures up to 10 x OEL of dusts, wear respirator such as a full-face particle respirator type N100 (US).

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	Solid	Lower Flammability Limit	Not available
Appearance	White powder	Upper Flammability Limit	Not available
Odor	Not available	Vapor Pressure @20 °C	Not available
Odor Threshold	Not available	Vapor Density	Not applicable
pH	Not available	Relative Density @25 °C	1.98 (crystalline)
Freezing/Melting Point	Not available	Solubility in Water	600 g/L
Initial Boiling Point	Not available	Partition Coefficient n-octanol/water	Not available
Flash Point	Not available	Auto-ignition Temperature	Not available
Evaporation Rate	Not available	Decomposition Temperature	>120 °C [>248 °F]
Flammability	Non flammable	Viscosity @25 °C	Not applicable

Section 10: Stability and Reactivity

Reactivity	May decompose on exposure to moist air or water and heat.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Ignition sources, open flames, and incompatible substances
Incompatibilities	Strong oxidizing agents, inflammable or combustible organic materials, powdered metals
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	May cause redness, severe irritation, or pain.
Skin	May cause skin redness, irritation, dry skin, or allergic contact dermatitis.
Inhalation	May cause cough, irritation of the respiratory track, wheezing, and laboured breathing.
Ingestion	May cause nausea, diarrhea, sore throat, and vomiting.
Chronic	Prolonged and repeated exposure may lead to respiratory and skin sensitization.

Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
ammonium persulfate	689 mg/kg Rat	>2 000 mg/kg Rat	>2.95 mg/L Rat

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

Other Toxicological Effects

Skin corrosion/irritation	Ammonium persulfate causes skin irritation.
Serious eye damage/irritation	Ammonium persulfate causes serious eye irritation.
Sensitization (allergic reactions)	May cause an allergic respiratory and skin reaction
Carcinogenicity (risk of cancer)	None of the ingredients are classified or listed as a carcinogen by IARC, ACGIH, CA Prop 65, or NTP.
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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Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	Ammonium persulfate may cause respiratory irritation.
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.

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.

Ammonium persulfate does not meet classification criteria for aquatic environmental toxicants with minimal LC50 and EC50 of generally >100 mg/L.

- Ammonium persulfate has minimal LC50 96 h of 76.3 mg/L for *Oncorhynchus mykiss* (rainbow trout); EC50 48 h of 120 mg/L *Daphnia magna* (water flea) and EC50 72 h of 136 mg/L for *Phaeodactylum tricornutum* (marine algae).

Acute Ecotoxicity

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

Chronic Ecotoxicity

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

Biodegradability and Persistence

Not applicable

Bioaccumulation Potential

Not available

Other Effect

Not available

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 DOT 49 CFR (Parts 100 to 185) **Regulations.**

Sizes 5 kg and under

410-1KG

Limited Quantity



Sizes greater than 5 kg

410-25KG

UN number: UN1444

Shipping Name:

Ammonium Persulfate

Class: 5.1

Packing Group: III

Marine Pollutant: No



Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Sizes 10 kg and under

410-1KG

Limited Quantity



Net Qty per Inner
 Container = 1 kg

Sizes up to 25 kg

410-25KG

UN number: UN1444

Shipping Name: Ammonium
 Persulfate

Class: 5.1

Packing Group: III

Marine Pollutant: No



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Sea

Refer to IMDG regulations.

Sizes 5 kg and under
410-1KG
Limited Quantity



Sizes greater than 5 kg
410-25KG

UN number: UN1444
Shipping Name: Ammonium Persulfate
Class: 5.1
Packing Group: III
Marine Pollutant: No



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.

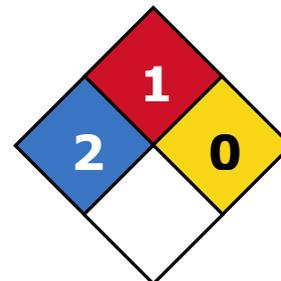
USA

Other Classifications

HMIS® RATING

HEALTH:	* 2
FLAMMABILITY:	1
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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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 substances which 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, USA).

This product does not contain any substances on the California Proposition 65 list.

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 electronic equipment and is therefore not governed by this regulation.

Section 16: Other Information

Prepared by the Regulatory Affairs Department

Date of Review 26 February 2020

Supersedes 11 December 2019

Reason for Changes: Update to the emergency contact information.

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®)

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Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
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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