

COPPER CLAD BOARDS

500-SERIES

Safety Data Sheet

Section 1: Identification

Product Identifier and Other Means of Identification

Product Name: Copper Clad Boards**SDS Code:** 500-Series**Related Part #** 503, 506, 509, 512, 515, 521, 540, 550, 555, 575, 580, 586, 587, 588, 589, 590

Recommended Use and Restriction on Use

Use: Copper clad, FR4 laminate for printed circuit board fabrication**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 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

Based on available data, this product does not meet the HCS 2012 or WHMIS 2015 classification criteria.

These products are manufactured article under the US OSHA 1910.1200 and Canadian Hazardous Product Act definitions, and therefore they don't require a hazard label nor a safety data sheet.

Label Elements

Signal Word	<i>No Signal Word</i>
Pictograms	Hazard Statements
<i>None mandated</i>	None

Hazards Not Otherwise Classified

Other Criteria	Hazard Statements/Precautionary Statement	Signal Word	Pictograms
<i>None</i>	<i>None</i>	<i>None</i>	<i>None</i>

Section 3: Composition/Information on Ingredients

CAS #	Chemical Name	% (weight)
7440-50-8	copper	3% or 6% ^{a)}
65997-17-3	fiberglass fiber	20-70%

a) Single sided-boards are composed of 3% copper and double-sided boards 6% copper.

COPPER CLAD BOARDS**500-SERIES****Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
IF INHALED	P304 + P340
Immediate Symptoms	<i>none known</i>
Response	Remove person to fresh air and keep comfortable for breathing.
IF IN EYES	P305 + P351 + P338
Immediate Symptoms	<i>none known</i>
Response	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF ON SKIN	P302 + P352
Immediate Symptoms	<i>none known</i>
Response	Wash with plenty of water.
IF SWALLOWED	P301 + P330, P331
Immediate Symptoms	<i>none known</i>
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	In a fire, this product can release metal oxide fumes and toxic fumes.
Combustion Products	Produces carbon oxides (CO, CO ₂), copper oxides, nitrogen oxides (NO _x), brominated compounds, and hydrogen bromide (HBr).
Fire-Fighter	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

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Section 6: Accidental Release Measures

Personal Protection	See personal protection recommendations in Section 8.
Precautions for Response	Avoid breathing the fumes/dust. Remove or keep away all sources of extreme heat.
Environmental Precautions	Not applicable
Containment Methods	Not applicable
Cleaning Methods	Not applicable
Disposal Methods	Dispose of spill waste according to Section 13.

Section 7: Handling and Storage

Prevention	Avoid breathing fumes/dust. Exposure to dust may occur during machining or cutting operations.
Handling	Wear protective gloves/clothing/eye protection. Wash hands thoroughly after handling. If dust is produced during processing of material, ensure adequate exposure control measures or wear personal protection equipment. Exposure to dust may lead to irritation of the eyes, skin, or upper respiratory tract. Avoid release to the environment.
Storage	Not applicable

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)
copper (dust and mist)	ACGIH U.S.A. OSHA PEL Canada AB Canada BC Canada ON Canada QC	1.0 mg/m ³ 1.0 mg/m ³ 1.0 mg/m ³ 1.0 mg/m ³ 1 mg/m ³ 1 mg/m ³	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)
fibrous glass nuisance dust	ACGIH	Not established	Not established
	U.S.A. OSHA PEL	15.0 mg/m ³ (total)	Not established
	U.S.A. OSHA PEL	5.0 mg/m ³ (resp.)	Not established
	Canada AB	5.0 mg/m ³	Not established
	Canada BC	2 f/cm ³ a)	Not established
	Canada ON	5.0 mg/m ³	Not established
	Canada QC	2 f/cm ³ a)	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.

a) fibres per cubic cm

Engineering Controls

Ventilation

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

Manufacturer's Note: Because the article is in a massive form, exposure is only possible if the product is drilled, cut, or sanded into an inhalable dust form.

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

Use appropriate protective gloves for the surrounding chemical environments.

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Respiratory Protection If exposed to fumes or dust above the exposure limit, wear a suitable respirator meeting local/regional/national guidelines.

For emergencies a, use a self-contained breathing apparatus with full face piece operated in a pressure positive mode.

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	Solid	Lower Flammability Limit	Not available
Appearance	Silver grey	Upper Flammability Limit	Not available
Odor	None	Vapor Pressure @20 °C	Not available
Odor Threshold	Not available	Vapor Density	Not available
pH	Not available	Specific Gravity @25 °C	7.4
Freezing/Melting Point	228 °C [442 °F]	Solubility in Water	Negligible ^{a)}
Boiling Point	Not available	Partition Coefficient	Not available
Flash Point	Not available	Auto-ignition Temperature ^{c)}	Not available
Evaporation Rate	Not available	Decomposition Temperature	Not available
Flammability (solid, gas)	Not available	Viscosity @25 °C	Not available

a) Metal components are sparingly soluble

COPPER CLAD BOARDS**500-SERIES****Section 10: Stability and Reactivity**

Reactivity	The copper may form shock sensitive compounds in the presence of acetylenic compounds.
Chemical Stability	Chemically stable at normal temperatures and pressures.
Conditions to Avoid	Extreme temperatures above 350 °C
Incompatibilities	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**Routes of Exposure**

Inhalation, Ingestion, and Eye contact

Symptoms Summary

Eyes	No effect known
Skin	No effect known
Inhalation	Overexposure to dust or metal fumes may lead to respiratory tract irritation.
Ingestion	No effect known
Chronic	No effect known

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Acute Toxicity (Lethal Exposure Concentrations)

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation
copper	>5 000 mg/kg Mouse	Not established	>5.11 mg/L Rat 4 h
glass fibre	Not established	Not established	Not established

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	Based on available data, the classification criteria are not met.
Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Sensitization (allergic reactions)	Based on available data, the classification criteria are not met.
Carcinogenicity (risk of cancer)	Not 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.
Teratogenicity (risk of fetus malformation)	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	There are no category 1 components, and the kinematic viscosity is >20.5 mm ² /s at 40 °C.

COPPER CLAD BOARDS**500-SERIES****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.

Based on transformation/dissolution data published by ECHA registrants, the classification threshold is not met for massive copper.

Based on available data the FR4 polymer, the GHS aqueous toxicity classification criteria are not met.

Acute Ecotoxicity

Available toxicity data does not meet classification thresholds.

Chronic Ecotoxicity

Available toxicity data does not meet classification thresholds.

Other Effects

Not available

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

Not Regulated

Air

Refer to ICAO-IATA Dangerous Goods Regulations.

Not Regulated

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Sea

Refer to IMDG regulations.

Not Regulated

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.

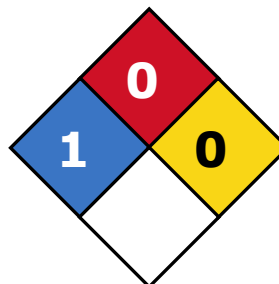
USA

Other Classifications

HMIS® RATING

HEALTH:	*	1
FLAMMABILITY:		0
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), which is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

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COPPER CLAD BOARDS**500-SERIES****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 does not contain any substances known to be listed in California.

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	Michel Hachey
Date of Review	30 May 2017
Supersedes	26 April 2017
Reason for Changes:	Changes to better meet with HCS2012 and WHMIS 2015 requirements.

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®)

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COPPER CLAD BOARDS**500-SERIES****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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