MATERIAL SAFETY DATA SHEET
COPPER ALLOYS 101, 102, 103, 104, 110, 122, 151, XP5

1.0 PRODUCT AND COMPANY IDENTIFICATION

PMX Industries, Inc.
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PRODUCT NAMES:

PMX ALLOY #	COMMON NAME	UNS #/CDA #
101	Oxygen Free Electronic OFHC	C10100
102	Oxygen Free Copper OFHC	C10200
103		C10300
104		C10400
110	ETP Copper Electrolytic Tough Pitch	C11000
122	Deoxidized Copper (DHP) Phos Deoxidized Copper	C12200
151	PMX High Precision Alloy	C15100
XP5	PMX High Precision Alloy	

CHEMICAL FAMILY: Copper Alloy

ISSUE DATE: December 15, 2004

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2.0 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Copper alloy products in the natural state do not present a hazard for emergency response personnel.

POTENTIAL HEALTH EFFECTS:

Copper alloy products in the natural state do not present an inhalation, ingestion, or contact hazard. However, operations such as burning, welding, sawing, brazing, or grinding may release fumes and/or dusts which may present health hazards if occupational exposure limits are exceeded.

LIKELY ROUTES OF EXPOSURE: Inhalation, Eye Contact, Skin Contact

INHALATION: Short-term exposure to fumes/dust may produce irritation of the respiratory system. High concentrations of copper oxide fumes may cause metal fume fever.

EYE: Short-term exposure to fumes/dust may produce irritation.

SKIN: Repeated or prolonged exposure to copper dusts or mists may cause irritant or allergic contact dermatitis.

INGESTION: Abdominal pain, nausea, vomiting.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Exposure to fumes or dust may aggravate existing respiratory disease or dermatitis.

TARGET ORGANS: Upper respiratory tract, eyes, skin

SIGNS AND SYMPTOMS:

Metal fume fever – metallic taste in mouth, dryness, and irritation of the throat, and influenza-like symptoms. The effects may be delayed.

CARCINOGENICITY:

COMPONENT	ACGIH	IARC	NTP
Copper (fume, dusts & mists)	No	No	No

See Toxicological Information (Section #11)

POTENTIAL ENVIRONMENTAL EFFECTS:

None known. Product has not been tested for environmental properties.

3.0 CHEMICAL COMPONENTS

NOTE: This MSDS applies to a range of alloys. For actual compositions refer to material test report or specific alloy specification. All percentages are by weight.

COMPONENT	CAS #	%
Copper	7440-50-8	99.8 – 99.99

4.0 FIRST AID MEASURES

INHALATION: If exposed to excessive levels of metal fumes, remove to fresh air. Seek medical attention.

EYE: Flush with water for at least 15 minutes.

SKIN: Wash with soap and water.

5.0 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Use extinguishing media appropriate to the surrounding material.

SPECIAL FIREFIGHTING INSTRUCTIONS: Copper alloy products in the solid state present no fire or explosion hazard, but may react with strong acids, bases, or oxidizing agents.

6.0 ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN THE EVENT OF SPILLS, LEAKS, OR RELEASES: Not applicable

7.0 HANDLING AND STORAGE

HANDLING: In welding, precautions should be taken for airborne contaminants that may originate from components of the welding rod.

8.0 EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

COMPONENT	OSHA PEL TWA	ACGIH® TLV® TWA
Copper dust, mist	1.0 mg/m^3	1.0 mg/m^3
Copper fume	0.1 mg/m^3	0.2 mg/m^3

ENGINEERING CONTROLS: Local exhaust ventilation should be utilized when welding, burning, sawing, brazing, grinding, or machining when exposure exceeds occupational exposure limits.

EYE PROTECTION: Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by welding standards.

SKIN PROTECTION: Wear appropriate personal protective clothing to prevent skin contact with copper dusts and mists.

RESPIRATORY PROTECTION: NIOSH-approved dust or fume respirator should be used to avoid excessive inhalation of particulates when exposure exceeds occupational exposure limits.

OTHER PREVENTIVE MEASURES: Do not eat, drink, or smoke during work. Wash hands before eating or smoking.

9.0 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Salmon-colored, lustrous metal		
ODOR:	None	**PHYSICAL STATE:**	Solid
pH:	Not applicable	**VAPOR PRESSURE:**	Not applicable
VAPOR DENSITY (AIR = 1)	Not applicable	**PERCENT VOLATILE:**	Not applicable
EVAPORATION RATE:	Not applicable	**SPECIFIC GRAVITY:**	8.9
SOLUBILITY IN WATER:	Not applicable	**DENSITY, LB/IN^3:**	0.3230
MELTING POINT:	1,981 °F		
FLASH POINT:	Not applicable	**LOWER EXPLOSIVE LIMIT (%):**	None
AUTOIGNITION TEMPERATURE:	Not applicable	**UPPER EXPLOSIVE LIMIT (%)**	None

10.0 STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable
CONDITIONS TO AVOID:	None
INCOMPATIBLE MATERIALS:	Mercury, ammonia, acetylene acids. Contact with strong acids, bases, or oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS:	Metallic dust or fumes may be produced during welding, burning, grinding, and machining.
POSSIBILITY OF HAZARDOUS REACTIONS:	Will not occur

11.0 TOXICOLOGY INFORMATION

ACUTE TOXICITY DATA FOR COMPONENTS

Copper TDLo: 120 μg/kg (human, oral—gastrointestinal effects)

LD_{50}: 0.07 mg/kg (mouse, intraperitoneal)

CHRONIC EFFECTS:

Repeated or prolonged overexposure to copper fume may cause the skin and hair to change color.

12.0 ECOLOGICAL INFORMATION

Not applicable

13.0 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS:

According to local, state, and federal regulations.

14.0 TRANSPORT INFORMATION

Not applicable

15.0 REGULATORY INFORMATION

GLOBAL INVENTORIES

	COPPER
TSCA: United States	Included
DSL: Canada	Included
EINECS: European Union:	Included

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

These alloys are not regulated under Section 302 of SARA and 40 CFR 355.

SARA TITLE III SECTION 311/312 HAZARDOUS CATEGORIZATION (40 CFR 370):

OSHA defines these alloys as hazardous 29 CFR 1910.1200(d).

SARA TITLE III SECTION 313 TOXIC CHEMICALS (40 CFR 372):

These alloys may contain the following toxic chemical(s) subject to reporting requirements under this section of SARA and of 40 CFR 372:

COMPONENT	CAS #	% BY WEIGHT
Copper	7440-50-8	$\geq$ 99.8

OTHER LISTS

Chemical Name	CA Prop 65 Chemical	MA Toxic Substance List	MI Critical Materials Register	NJ Hazardous Substances List	PA Right-to-Know List
Copper	No	Yes	Yes	Yes	Yes

16.0 OTHER INFORMATION

REFERENCES

ACGIH® Threshold Limit Values (TLV®) (2004)

Agency for Toxic Substances and Disease Registry (ATSDR):

Toxicological Profile for Copper, September 2002

International Agency for Research on Cancer (IARC) Monographs

National Library of Medicine (NLM) Databases:

- ChemID
- Integrated Risk Information (IRIS)
- International Toxicity Estimates for Risk (ITER)
- Chemical Carcinogenesis Risk Information System (CCRIS)
- Hazardous Substances Data Bank (HSDB)

National Toxicology Program (NTP) Reports

NIOSH Pocket Guide to Chemical Hazards (2003)

NIOSH/OSHA Occupational Health Guideline for Copper Fume

NIOSH/OSHA Occupational Health Guideline for Copper Dusts and Mists

OSHA General Industry Standards (29 CFR 1910)

Registry of Toxic Effects of Chemical Substances (RTECS®)

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