SAFETY DATA SHEET

SECTION 1 : IDENTIFICATION

Product identifier used on the label:

Product Name: **MicroGuard IV**

Other means of identification:

Synonyms: MicroGuard

Recommended use of the chemical and restrictions on use:

Chemical manufacturer address and telephone number:

Manufacturer Name: PMX Industries, Inc.

Address: 5300 Willow Creek Drive SW
Cedar Rapids, Iowa 52404-4303
USA

General Phone Number: 319-368-7700

General Fax Number: 319-368-7701

Emergency phone number:

Emergency Phone Number: 319-368-7700

SECTION 2 : HAZARD(S) IDENTIFICATION

Classification of the chemical in accordance with CFR 1910.1200(d)(f):

Signal Word: Not applicable.

GHS Class: Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200..

Hazards not otherwise classified that have been identified during the classification process:

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

Route of Exposure: Inhalation, Eye Contact, Skin Contact

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.

- 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.
- Inhalation: Short-term exposure to fumes/dust may produce irritation of the respiratory system. Exposure to high concentrations of oxide fumes of copper or zinc may cause metal fume fever.
- Ingestion: Not a likely route of exposure for finished metal components.

Carcinogenicity: See Toxicological Information (Section #11).

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

Target Organs: Upper respiratory tract, eyes, skin.

Aggravation of Pre-Existing Conditions: Exposure to fumes or dust may aggravate existing respiratory disease or dermatitis.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures:

Chemical Name	CAS#	Ingredient Percent	EC Num.
Copper	7440-50-8	66.2 - 79.8% by weight	231-159-6

Tin	7440-31-5	0 - 8.5% by weight	231-141-8
Silicon	7440-21-3	0 - 0.6% by weight	231-130-8
Iron	7439-89-6	0 - 4% by weight	231-096-4
Manganese	7439-96-5	0 - 15% by weight	231-105-1
Zinc	7440-66-6	0 - 32.7% by weight	231-175-3
Nickel	7440-02-0	0 - 33% by weight	231-111-4
Magnesium	7439-95-4	0 - 0.15% by weight	231-104-6
Aluminum	7429-90-5	0 - 11.5% by weight	231-072-3

SECTION 4 : FIRST AID MEASURES

Description of necessary measures:

Eye Contact: Flush with water for at least 15 minutes.

Skin Contact: Wash with soap and water.

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

SECTION 5 : FIRE FIGHTING MEASURES

Suitable and unsuitable extinguishing media:

Suitable Extinguishing Media: SUITABLE: Use extinguishing media appropriate to the surrounding material.

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

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up:

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

SECTION 7 : HANDLING and STORAGE

Precautions for safe handling:

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

Conditions for safe storage, including any incompatibilities:

Storage: No special requirements
Shelf Life Limitations: None known
Incompatible Materials for Packaging: None known.
Incompatible Materials for Storage or Transportation: None known.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Copper :

Guideline ACGIH: TLV-TWA: 1 mg/m3
TLV-TWA: 0.2 mg/m3

Guideline OSHA: PEL-TWA: 1 mg/m3
PEL-TWA: 0.1 mg/m3

Tin :

Guideline OSHA: PEL-TWA: 2 mg/m3

Silicon :

Guideline OSHA: PEL-TWA: 15 mg/m3 Total particulate/dust (T)
PEL-TWA: 5 mg/m3 Respirable fraction (R)

Manganese :

Guideline ACGIH:	TLV-TWA: 0.2 mg/m3
Guideline OSHA:	PEL-Ceiling/Peak: 5 mg/m3 PEL-Ceiling/Peak: 5 mg/m3

Nickel :

Guideline ACGIH:	TLV-TWA: 1.5 mg/m3 Inhalable fraction (I)
Guideline OSHA:	PEL-TWA: 1 mg/m3 PEL-TWA: 1 mg/m3 PEL-TWA: 1 mg/m3

Aluminum :

Guideline ACGIH:	TLV-TWA: 1 mg/m3 Respirable fraction (R) TLV-TWA: 1 mg/m3 Respirable fraction (R) TLV-TWA: 1 mg/m3 (R)
Guideline OSHA:	PEL-TWA: 15 mg/m3 Total particulate/dust (T) PEL-TWA: 5 mg/m3 Respirable fraction (R)

Appropriate engineering controls:

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

Individual protection measures:

Eye/Face 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 Description:	Wear appropriate personal protective clothing to prevent skin contact with copper dust.
Respiratory Protection:	NIOSH-approved dust or fume respirator should be used to avoid excessive inhalation of particulates when exposure exceeds occupational exposure limits.
Other Protective:	Do not eat, drink, or smoke during work. Wash hands before eating or smoking.

SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES:

Physical State:	Solid
Color:	Gold, Yellow, Brown or Silver Metallic
Odor:	None
Melting Point:	1000 - 1090 deg C
Density:	8.94 g/cc
Specific Gravity:	8.94
Vapor Density:	(Air = 1): Not applicable
Vapor Pressure:	Not Applicable
Percent Volatile:	Not Applicable
Evaporation Rate:	Not Applicable
pH:	Not Applicable
Flash Point:	Not Applicable
Lower Flammable/Explosive Limit:	(%): None
Upper Flammable/Explosive Limit:	(%): None
Auto Ignition Temperature:	Not Applicable

SECTION 10 : STABILITY and REACTIVITY

Reactivity:

Reactivity:	POSSIBILITY OF HAZARDOUS REACTIONS: Will not occur.

Chemical Stability:

Chemical Stability:	Stable

Conditions To Avoid:

Conditions to Avoid:	Avoid contact with carbon monoxide at temperatures between 50 and 300 deg C to prevent formation of nickel carbonyl which is toxic and a carcinogen.

Incompatible Materials:

Incompatible Materials:	Mercury, ammonia, acetylene acids. Contact with strong acids, Bases, or oxidizing agents. MATERIALS TO AVOID: Acetylene, Chlorine

Hazardous Decomposition Products:

Special Decomposition Products:	Metallic dust or fumes may be produced during welding, burning, grinding, and machining.

SECTION 11 : TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

Acute Toxicity:	Potential Exposure Routes: For dust: ingestion, inhalation and eye contact. For fume: inhalation and eye contact. The finished alloy metal is not hazardous.

Copper :

ACGIH:	No
IARC:	No
NTP:	No

Tin :

ACGIH:	No
IARC:	No
NTP:	No

Silicon :

ACGIH:	No
IARC:	No
NTP:	No

Iron :

ACGIH:	No
IARC:	No
NTP:	No

Manganese :

ACGIH:	No
IARC:	No
NTP:	No

Zinc :

ACGIH:	No
IARC:	No
NTP:	No

Nickel :

ACGIH:	No
IARC:	Yes
NTP:	Yes

Magnesium :

ACGIH:	No
IARC:	No
NTP:	No

Aluminum :

ACGIH:	No
IARC:	No
NTP:	No

Skin:	For Product: Dermal LD50: Believed to be > 2 g/kg
Inhalation:	For Product: Inhalation LC50: Believed to be slightly to moderately toxic
Ingestion:	For Product: Oral LD50: Believed to be > 5 g/kg
Chronic Effects:	Repeated or prolonged overexposure to copper fume may cause the skin and hair to change color.

Copper :

Skin:	Dermal LD50: 375 mg/kg (rabbit subcutaneous
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: 413 mg/kg (mouse)

Tin :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: No data

Silicon :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: 3.16 g/kg (rat)

Iron :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: No data

Manganese :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: 9 g/kg (rat)

Zinc :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: No data

Nickel :

Skin:	Dermal LD50: > 7.5 g/kg (rabbit subcutaneous)
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: > 5 g/kg (rat)

Magnesium :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: No data

Aluminum :

Skin:	Dermal LD50: No data
Inhalation:	Inhalation LC50: No data
Ingestion:	Oral LD50: No data

SECTION 12 : ECOLOGICAL INFORMATION

Ecotoxicity:

Ecotoxicity:	Not applicable.

SECTION 13 : DISPOSAL CONSIDERATIONS

Description of waste:

Waste Disposal:	WASTE DISPOSAL METHODS: According to local, state, and federal regulations. This product may be a candidate for metal reclamation.

SECTION 14 : TRANSPORT INFORMATION

DOT Shipping Name:	Not restricted as a dangerous good.
DOT UN Number:	Not restricted as a dangerous good.

SECTION 15 : REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product:

Copper :

TSCA Inventory Status:	Listed
Section 313:	EPCRA - 40 CFR Part 372 - (SARA Title III) Section 313 Listed Chemical.
Canada DSL:	Listed
EC Number:	231-159-6

Tin :

TSCA Inventory Status:	Listed
Canada DSL:	Listed
EC Number:	231-141-8

Silicon :

TSCA Inventory Status:	Listed
Canada DSL:	Listed
EC Number:	231-130-8

Iron :

TSCA Inventory Status:	Listed
Canada DSL:	Listed
EC Number:	231-096-4

Manganese :

TSCA Inventory Status:	Listed
Section 313:	EPCRA - 40 CFR Part 372 - (SARA Title III) Section 313 Listed Chemical.
Canada DSL:	Listed
EC Number:	231-105-1

Zinc :

TSCA Inventory Status:	Listed
Section 313:	EPCRA - 40 CFR Part 372 - (SARA Title III) Section 313 Listed Chemical.
Canada DSL:	Listed
EC Number:	231-175-3

Nickel :

TSCA Inventory Status:	Listed
Section 313:	EPCRA - 40 CFR Part 372 - (SARA Title III) Section 313 Listed Chemical.
California PROP 65:	Listed: cancer.
Canada DSL:	Listed
EC Number:	231-111-4

Magnesium :

TSCA Inventory Status:	Listed

Canada DSL:	Listed
EC Number:	231-104-6

Aluminum :

TSCA Inventory Status:	Listed
Section 313:	EPCRA - 40 CFR Part 372 - (SARA Title III) Section 313 Listed Chemical.
Canada DSL:	Listed
EC Number:	231-072-3

SECTION 16 : ADDITIONAL INFORMATION

HMIS Ratings:

SDS Creation Date:	March 15, 2009
SDS Revision Date:	September 09, 2015
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