Permalloy 80

1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Permalloy 80 - foil, sheet, rod, wire, pellets
Other: Nickel-Iron-Molybdenum Alloy, Hy-Mu 80, MIL N 14411C, Comp 1

Supplier: Eagle Alloys Corporation
178 West Park Court
Talbott, TN 37877
Telephone: 423-586-8738
Fax: 423-586-7456
Email: sales@eaglealloys.com

24 HOUR EMERGENCY ASSISTANCE: CHEMTREC 800-424-9300

Recommended Uses: Scientific Research

2 HAZARDS IDENTIFICATION

GHS Classification (29 CFR 1910.1200): Not classified as hazardous
GHS Label Elements:
Signal Word: N/A
Hazard Statements: N/A
Precautionary Statements: N/A

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient:	**CAS#**:	**%**:	**EC#**:
Nickel	7440-02-0	80	231-111-4
Iron	7439-89-6	15	231-096-4
Molybdenum	7439-98-7	5	231-107-2
Manganese	7439-96-5	<1	231-105-1
Silicon	7440-21-3	<1	231-130-8

4 FIRST AID MEASURES

General Measures: No special requirements.
INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.
INGESTION: Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.
SKIN: Remove contaminated clothing, brush material off skin, wash affected area with soap and water. Seek medical attention if symptoms persist.
EYES: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation. See section 11 for more information.
Indication of Immediate Medical Attention and Special Treatment: No other relevant information available.

5 FIREFIGHTING MEASURES

Extinguishing Media: Use suitable extinguishing media for surrounding material and type of fire.
Unsuitable Extinguishing Media: No information available.

Specific Hazards Arising from the Material: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings and dust from processing may be ignitable. May emit metal oxide fumes under fire conditions.
Special Protective Equipment and Precautions for Firefighters: Full face, self-contained breathing apparatus and full protective clothing when necessary.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Wear appropriate respiratory and protective equipment specified in section 8. Avoid breathing dust or fume. Avoid contact with skin and eyes.
Methods and Materials for Containment and Cleaning Up: Avoid dust formation. Sweep or scoop up. Place in a properly labeled container for further handling and disposal.
Environmental Precautions: Do not allow to enter drains or to be released to the environment.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Avoid creating dust. Avoid breathing dust or fumes. Provide adequate ventilation if dusts are created. Avoid contact with skin and eyes. Wash thoroughly before eating or smoking. See section 8 for information on personal protection equipment.
Conditions for Safe Storage: Store in a cool, dry area. See section 10 for more information on incompatible materials.

8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:	**OSHA/PEL**:	**ACGIH/TLV**:
Nickel	1 mg/m^3	1.5 mg/m^3
Iron	No exposure limit established	No exposure limit established
Molybdenum	15 mg/m^3 (insoluble compounds, total dust)	10 mg/m^3 (insoluble compounds, inhalable)
Manganese	5 mg/m^3	0.2 mg/m^3
Silicon	5 mg/m^3 (respirable)	5 mg/m^3 (respirable)

Engineering Controls: Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Respiratory Protection: If permissible levels are exceeded, use NIOSH approved dust respirator.
Eye Protection: Safety glasses
Skin Protection: Not normally needed. Wear impermeable gloves, protective work clothing as necessary.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
Form: Solid in various forms
Color: Silver-gray metallic
Odor: Odorless
Odor Threshold: Not determined
pH: N/A
Melting Point: ~1455 °C

Boiling Point: No data
Flash Point: N/A
Evaporation Rate: N/A
Flammability: No data
Upper Flammable Limit: No data
Lower Flammable Limit: No data

Vapor Pressure: No data
Vapor Density: N/A
Relative Density (Specific Gravity): ~8.7 g/cc

Solubility in H_2O: Insoluble
Partition Coefficient (n-octanol/water): Not determined

Autoignition Temperature: No data
Decomposition Temperature: No data
Viscosity: N/A

10 STABILITY AND REACTIVITY

Reactivity: No data
Chemical Stability: Stable under recommended storage conditions.
Possibility of Hazardous Reactions: No data
Conditions to Avoid: Avoid creating or accumulating fines or dusts.
Incompatible Materials: Acids, oxidizers.
Hazardous Decomposition Products: Metal oxide fume.

11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin, eyes. Product as shipped does not present an inhalation hazard; however subsequent operations may create dusts or fumes which could be inhaled.
Symptoms of Exposure: Fines/dusts may irritate skin and eyes.

Acute and Chronic Effects:
Nickel: The most common harmful health effect of metallic nickel in humans is an allergic skin reaction in those who are sensitive to nickel. Although nickel compounds are known human carcinogens, the evidence suggests that the relatively insoluble metallic nickel is less likely to present a carcinogenic hazard than are the nickel compounds that tend to release proportionately more nickel ion.
Iron: If inhaled, iron is a local irritant to the lung and gastrointestinal tract. Inhalation of large amounts may cause iron pneumoconiosis. Chronic inhalation of finely divided powder may cause chronic iron poisoning and pathological deposition of iron in the body tissue. Ingestion may cause vomiting, diarrhea, pink urine, black stool, and liver damage.
Molybdenum: No data
Manganese: Chronic inhalation exposure of humans to high levels of manganese may result in a syndrome called manganism which typically begins with feelings of weakness and lethargy and progresses to other symptoms such as gait disturbances, clumsiness, tremors, speech disturbances, a mask-like facial expression and psychological disturbances. Manganese is an essential micronutrient in humans.
Silicon: Inhalation or contact with silicon dusts may cause irritation. There is no available data to show any toxic effects for elemental silicon.
Acute Toxicity: No data
Carcinogenicity:
Nickel: **NTP**: R - reasonably anticipated to be a human carcinogen **IARC**: 2B - possibly carcinogenic to humans
To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

12 ECOLOGICAL INFORMATION

Ecotoxicity: No data
Persistence and Degradability: No data
Bioaccumulative Potential: No data
Mobility in Soil: No data
Other Adverse Effects: No further relevant information available.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Product: Dispose of in accordance with Federal, State and Local regulations.
Packaging: Dispose of in accordance with Federal, State and Local regulations.

14 TRANSPORT INFORMATION

DOT/ADR/IATA/IMDG Regulations: Not regulated

15 REGULATORY INFORMATION

TSCA Listed: All components are listed.
Regulation (EC) No 1272/2008 (CLP): N/A
Canada WHMIS Classification (CPR, SOR/88-66): N/A
HMIS Ratings: **Health**: 0 **Flammability**: 0 **Reactivity**: 0
NFPA Ratings: **Health**: 0 **Flammability**: 0 **Reactivity**: 0
Chemical Safety Assessment: A chemical safety assessment has not been carried out.

16 OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Eagle Alloys Corporation shall not be held liable for any damages resulting from handling or from contact with the above product.

Prepared by: Eagle Alloys Corporation
Revised/Reviewed: November 2015

24 HOUR EMERGENCY ASSISTANCE: CHEMTREC 800-424-9300