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INTRAMICRON

# MATERIAL SAFETY DATA SHEET - MSDS

## 1 - I - PRODUCT IDENTIFICATION

Date Prepared: Apr 6<sup>th</sup>, 2010

Chemical Name: **316L Stainless Steel**  
**Iron Chrome Aluminum (FeCrAl)**

**24 Hour Emergency Contact Phone (USA):**  
**(334) 740-8310**

Chemical Family: **N / A** Formula: **Varies with Grade, See Below**

This product is considered non-hazardous by the criteria specified in 29 CFR 1910.1200 (Hazard Communication).

## 2&3 - II - HAZARDOUS INGREDIENTS

## 9 - III - PHYSICAL PROPERTIES

### ALLOYS & METALLIC COATINGS

STATE OF MATER: Solid

Component	% by Weight	ACGIH TLV (mg/m <sup>3</sup> )
Iron, Fe	60-88%	5, as iron oxide

(BASE METAL)

APPEARANCE: Metallic fiber

Chromium, Cr	10-30%	0.5
Nickel, Ni	00-27%	1.0 ( NIOSH 0.015 )
Aluminum, Al	<10%	5 ( Respirable Dust )
Manganese, Mn	<6%	5 ( as dust ceiling )
Molybdenum, Mo	<6%	10 ( Insol. Compound )
Copper, Cu	<6%	1 ( dust & mist )
Titanium, Ti	<6%	10 ( total dust )
Yttrium, Y	<8%	1

ODOR: None

Carbon, C	<2%	None Established
Phosphorous, P	<2%	None Established
Sulfur, S	<2%	5 ( as SO <sub>2</sub> )
Silicon, Si	<2%	10 ( total dust )
Cobalt, Co	<2%	0.1 ( dust & fume )

MELTING POINT: >2500° F (>1370° C)

FLASH POINT: >500° F (>260° C)

VAPOR PRESSURE: Not Applicable

SPECIFIC GRAVITY: 7.0 – 8.1 grams / cubic centimeter

VAPOR DENSITY: Not applicable

% VOLATILE (By Vol.): Not applicable

EVAPORATION RATE: Will not Evaporate

SOLUBILITY IN WATER: None

% of allowable alloy varies with grade of stainless steel

See grade specifications for an exact list

TLV ( 1985-1986 ACGIH Threshold Limit Value )

HMIS Ratings: Health: 1 Fire: 1 Reactivity: 1 Pers. Prot.: Safety glasses with side shields, impervious gloves

## 15 – TRANSPORTATION INFORMATION

Transported by Ground (DOT): Non hazardous – Not Regulated      Transported by Vessel (IMDG): Non hazardous – Not Regulated  
Transported by Air (IATA): Non hazardous – Not Regulated

## 11 - VI - HEALTH & HAZARD INFORMATION

### Emergency Overview:

May be irritating to eyes, skin and respiratory tract.

EFFECTS OF OVER- EXPOSURE: (THRESHOLD LIMIT VALUE: 1 mg / meter<sup>3</sup> dust)

Short term exposure to fumes / dust may produce irritation of eyes and respiratory system. Inhalation of high concentrations of freshly formed oxide fumes of iron, manganese and copper may cause metal fume fever, characterized by a metallic taste in the mouth, dryness and irritation of the throat and influenza-like symptoms.

Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to a benign pneumoconiosis ( siderosis ). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Chromium and Nickel and their compounds are listed in the 9<sup>th</sup> Annual Report on carcinogens, as prepared by the National Toxicology Program ( NTP ). Exposure to high concentrations of dust and fumes can cause sensitization, dermatitis, inflammation and / or ulceration of upper respiratory tract and possibly cancer of nasal passages and lungs.

Recent epidemiological studies of workers melting and working alloys containing nickel / chromium have found to increase risk of cancer.

## **4 - FIRST AID MEASURES**

### **First Aid - Eyes:**

Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

### **First Aid - Skin:**

For skin contact, wash with soap and water. If irritation persists, seek medical attention. A few fibers embedded in skin will generally come out on their own after 7-8 days. If a significant number of fibers become embedded in the skin infection is likely.

**First Aid - Ingestion:** Use of this product for medicinal purposes should be conducted only by qualified medical personnel. If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting unless instructed to do so by medical personnel.

### **First Aid - Inhalation:**

In case of contact with dust or metal fumes, remove to fresh air and contact medical aid immediately.

## **5 - IV - FIRE AND EXPLOSION HAZARD INFORMATION**

### **General Fire Hazards:**

**Though stainless steel is not generally regarded as flammable fine metal fiber IS FLAMABLE**

FLAMMABLE LIMITS: May burn (hot) if ignited, highly dependent on fiber diameter.

### **Hazardous Combustion Products:**

Thermal decomposition or combustion may produce oxides of Nickel, Iron, Copper, Molybdenum, and Manganese

**Extinguishing Media:** Dry chemical ('D' type Extinguisher), Water, Carbon Dioxide

**IMPORTANT NOTE:** ABC type extinguishers will NOT WORK (fire too hot)

### **Fire Fighting Equipment/Instructions:**

Firefighters should wear full protective clothing including self contained breathing apparatus.

## **10 - V - REACTIVITY DATA**

Stability:	Stable
Conditions To Avoid:	Open flames, sparks & incompatible materials.
Incompatible Materials:	Strong acids to produce hydrogen gas.
Hazardous Decomposition Products:	Thermal decomposition or combustion may produce oxides of Nickel, Iron, Copper, Molybdenum, and Manganese
Polymerization:	Will not occur

## **8 - VII & VIII - CONTROL MEASURES - SPECIAL PROTECTIONS**

Exposures should be minimized in accordance with good industrial hygiene practices. Dust mask should be worn when fiber may become airborne.

### **Engineering Controls:**

Ventilation should be sufficient to effectively remove and prevent buildup of airborne dusts.

**Personal Protective Equipment:** Thin or thick Nitrile, Latex, or leather gloves should be worn when handling fiber, Wear safety glasses with side shields when a potential for dust is present.

## **12&13 - SPILL OR LEAK PROCEDURES**

Steps To Be Taken In Case Material Is Released Or Spilled:	Sweep up spills and place in a waste disposal container. Flush area with water.
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