

# MATERIAL SAFETY DATA SHEET

## I. PRODUCT IDENTIFICATION

### **Manufacturer/Supplier:**

ESPI Metals  
1050 Benson Way, Ashland, OR 97520  
Toll Free (800) 638-2581 \* Fax (541) 488-8313  
E-Mail: sales@espimetals.com

**Trade Name:** Stainless Steel

**Synonyms:** Iron-Chromium-Nickel Alloys

## II. HAZARDOUS INGREDIENTS

<b>Ingredient</b>	<b>CAS #</b>	<b>Form</b>	<b>OSHA/PEL (mg/m<sup>3</sup>)</b>	<b>ACGIH/TLV (mg/m<sup>3</sup>)</b>
Aluminum	7429-90-5	Dust, fumes	--	10.00, 5.00
Carbon	1333-86-4	As carbon black	3.50	3.50
Chromium	7440-47-3		1.00	.50
Cobalt	7440-48-4		.10	.10
Copper	7440-50-8	Dust, fumes	1.00, .10	1.00, .20
Iron	1309-37-1	PEL-iron, oxide fumes, TLV-as Fe	10.00	5.00
Manganese	7439-96-5	Dust, fumes	5.00, --	5.00, 1.00
Molybdenum	7439-98-7	Insoluble compound	15.00	10.00
Nickel	7440-02-0		1.00	1.00
Niobium	7440-03-1		5.00	5.00
Phosphor	7723-14-0	Yellow	.10	.10
Silicon	7440-21-3	Respirable dust	--	5.00
Sulfur	7446-09-5	As sulfur dioxide	--	5.00
Tin	7440-31-5		2.00	2.00
Titanium	13463-67-7	As titanium dioxide	15.00	5.00
Tungsten	7440-33-7	Insoluble compound	--	5.00
Vanadium	1314-62-1	Dust, fumes (as vanadium pentoxide)	.50, .10	.05, .05

## III. PHYSICAL DATA

**Boiling Point:** High  
**Vapor Density:** Nil  
**Specific Gravity:** 7.5 - 8.5  
**Vapor Pressure:** Nil  
**Melting Point:** 2400 - 2800 °F  
**Solubility:** Insoluble  
**Appearance and Odor:** Solid, odorless metal

## IV. FIRE AND EXPLOSION HAZARDS DATA

**Flash Point:** N/A

**Autoignition Temperature:** N/A

**Flammable Limits: Lower:** N/A **Upper:** N/A

**Extinguishing Media:** Use suitable extinguishing media for surrounding materials and type fire.

**Special Firefighting Procedures:** Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes.

**Fire and Explosion Hazards:** None

## **V. HEALTH HAZARD INFORMATION**

**Acute Effects:** Welding and high temperature cutting may produce dust and fumes. Short-term exposure may cause nausea, fever, irritation of eyes, nose, throat, skin; metallic taste.

**Chronic Effects:** Long-term exposure to welding fumes, gases or dust may result in skin sensitization, neurological damage and respiratory disease.

**Effects of Exposure:**

**Inhalation:** Inhalation of excessive fume or dust concentrations may result in respiratory tract irritation.

**Eyes:** Mechanical irritation may result from an accumulation of dust particles in the eye.

**Skin:** Some skin irritation may result from exposure to dust.

**Ingestion:** Some constituents may be harmful if swallowed.

**Symptoms of Exposure:** Metallic taste, fever, loss of consciousness due to welding gases.

**Carcinogenicity:** Chromium, nickel and chromium-cobalt alloys have been identified by the international agency for research on cancer as potential cancer-causing agents.

## **EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Move person to fresh air until recovered.

**INGESTION:** While ingestion of large enough quantities to cause health effects is unlikely, consult a physician if it occurs.

**SKIN:** Wash with water and a mild detergent.

**EYES:** Flush thoroughly with water.

## **VI. REACTIVITY DATA**

**Stability:** Stable

**Incompatibility (Material to Avoid):** Reacts with strong acids to produce hydrogen gas.

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

## **VII. SPILL OR LEAK PROCEDURES**

**Steps to be Taken in Case Material is Released or Spilled:** No potential for spill or leak as delivered. Gather dust and residue from machining.

**Waste Disposal:** In accordance with state, federal and local regulations.

## **VIII. SPECIAL PROTECTION INFORMATION**

**Ventilation:** Use adequate ventilation to keep fume or dust concentration below the occupational exposure limits shown in section II.

**Respiratory Protection:** If your process causes a release of dust or fume in excess of PEL, NIOSH approved respirators should be worn in accordance with 29CFR 1910.134.

**Protective Equipment:** If your process causes a release of dust or fume, approved safety glasses or goggles should be worn. Gloves are recommended.

## **IX. SPECIAL PRECAUTIONS**

**Precautions to Be Taken in Handling and Storage:** Store in a cool, dry area. Wash thoroughly after handling.

**Work Practices:** Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air. Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

### **DOT Regulations:**

#### **Rod, Wire, Sheet, Foils:**

**Hazard Class:** None

#### **Powders:**

**Hazard Class:** 4.1

**Identification Number:** 3089

**Packing Group:** III

**Proper Shipping Name:** Metal powder, flammable, n.o.s. (stainless steel powder)

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

Issued by: S. Dierks  
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