

MATERIAL SAFETY DATA SHEET

STAINLESS STEEL WIRE PRODUCTS

(ARCHWIRES, STRANDED, LOOPED, LIGATURES, COATED LIGATURES, ROTATION SPRINGS, KOBAYASHI HOOKS, PREFORMED LIGATURES, BULK LIGATURE WIRE)

Document Number: MSDS-002	Revision Date : Jan 1,2015	Material Type : 304 Stainless Steel
Revision : 0	Number of Pages : 3	

1-SUBSTANCE

Chemical Nature : Metal

Sales Name: 304 Stainless Steel

Exposure to specialty steel alloys occurs primarily from inhalation of dust or fumes. However, constituents of these alloys may cause effects directly upon the skin or eyes. Certain constituents may also be harmful if swallowed.

2-COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	%	PEL/TLV 8 Hour TWA Unless Otherwise Noted
Iron* 13097-37-1	69.5	PEL: 10.0 MG/M3 TLV: 5.0 MG/M3
Chromium 7440-47-3	18.5	PEL: 1.0 MG/M3 TLV: 0.5 MG/M3
Nickel 7440-02-0	9.0	PEL: 1.0 MG/M3 TLV: 1.0 MG/M3
Manganese 7439-96-5	1.0	PEL: 5.0 MG/M3 TLV: 50 MG/M3
Cobalt 7440-48-4	.75	PEL: 0.1 MG/M3 TLV: 0.1 MG/M3
Silicon Carbon Phosphorus Sulfur	Balance	Trace elements in varying concentrations less than 1% each

* These substances are regulated in their oxide form

3-HAZARDS IDENTIFICATION

Specialty steel alloys are generally not considered hazardous in the form shipped (solid bars, billets wire, etc.), however, if your process involves grinding, melting, welding, cutting, or any other process that causes a release of dust or fume, hazardous levels of dust or fume of the constituents of these alloys could be generated. The following is a list of potential health effects for all hazardous elements that are possibly contained in the alloy represented by this MSDS. Please refer to section 2 titled "hazardous ingredients" for a list of those specific elements contained in this particular alloy.

Health Effects

Iron Oxide : Has caused irritation of the eyes, nose, and skin of experimental animals; it may have the same effect on humans.

Chromium: Ferrochrome alloys have been associated with lung changes in workers exposed to these alloys.

Cobalt : Fume or dust causes irritation of the nose and throat and may cause an allergic skin rash. Also has been reported to cause respiratory disease with symptoms ranging from cough and shortness of breath to permanent disability and death. The symptoms frequently go away when exposure has stopped, but sometimes the symptoms progress after exposure has ceased.

Manganese : Inhalation of manganese fume may cause "metal fume fever" with symptoms of chills, fever, nausea, cough, dry throat, weakness, muscle aches, and a sweet or metallic taste in the mouth. Prolonged or repeated exposure may affect the nervous system, with difficulty in walking and balancing, weakness or cramps in the legs. Hoarseness of the voice, trouble with memory or judgment, unstable emotions or unusual irritability. The respiratory system may also be affected by a pneumonia like illness with symptoms of coughing, fever, chills, body ache, chest pain and other common signs of pneumonia.

Nickel: Fumes are respiratory irritants and may cause respiratory disease, skin contact can also cause an allergic skin rash, nickel and its compounds have been reported to cause cancer of the lungs and sinuses.

4-FIRST AID MEASURES

Inhalation: Move person to fresh air until recovered. Consult a physician.

Skin Contact: Wash with water and mild detergent.

Eye Contact: Flush thoroughly with water. Consult a physician.

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

5-FIRE FIGHTING MEASURES

Suitable Extinguishing Media : N/A.

Unsuitable Extinguishing Media : N/A

Particular Hazards : See Section 3

Protective Equipment for Fire Fighters : N/A

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6-ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Ventilation

If your process causes a release of dust or fume, use local and general exhaust ventilation to keep airborne concentrations of dust or fumes below the TLV.

Respiratory Protection: If your process causes a release of dust or fume in the excess of the permissible exposure limit, use approved respirators for protection against airborne dust or fumes should be worn. Respirators should be used in accordance with 29 CFR 1910.134

Protective Equipment: Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis. If your process involves grinding or any other action that causes the release of dust or fume, approved safety glasses or goggles should be worn.

Environmental Precautions : No hazard.

Cleaning Methods : N/A

7-HANDLING AND STORAGE

Handling: See section 6.

Storage: N/A

Storage Conditions : N/A

8-EXPOSURE CONTROLS/PERSONAL PROTECTION

Minimize contact as outlined in section 6.

9-PHYSICAL AND CHEMICAL PROPERTIES

Form : Wire

Color : Solid

Odor : Odorless

Change of State : Liquid

Melting Point/Range : 2400F to 2800F

Boiling Point : High

Flash Point: N/A

Ignition Point : N/A

Vapor Pressure: (20°C): NIL

Density (20 °C): 7.5 to 8.5 specific gravity

Solubility in Water (20 °C) : Insoluble

Solubility in Organic Solvent (20 °C): Insoluble

PH Value (at 10g/1H₂O): N/A

Viscosity (20 °C): Solid

10-STABILITY AND REACTIVITY

Thermal Decomposition : None

Conditions to Avoid : None

Materials to Avoid : None

Hazardous Decomposition Products : None

11-TOXOLOGICAL INFORMATION

Oral Toxicity : Reference Sections 3 and 6.

Inhalation : Reference Sections 3 and 6.

Skin Irritation: Reference Sections 3 and 6.

Sensitization: Reference Sections 3 and 6.

Eye Irritation: Reference Sections 3 and 6.

Further Details: None

12-ECOLOGICAL INFORMATION

Acute toxicity in fish (LC-50/48h) : Not defined

Bacterial Toxicity (EC-0) : Not defined

Biodegradability : Not defined

13-DISPOSAL CONSIDERATIONS

Product : N/A

Packaging : N/A

Waste Disposal Code : N/A

14-TRANSPORT INFORMATION

Overland Transport ADR/RID/GGVS/GGVE : N/A

Sea Transport: GGVSEA/IMDG-Code : N/A

Air Transport ICAO/IATA-DGR : N/A

Inland Waterway Transport ANDR : N/A

Further Details: Product is not considered dangerous for transport.

15-REGULATORY INFORMATION

Preparation as defined by the (German) Chemicals Act (dated 4/03/1990):

Labeling: N/A

Product Contains:

Danger Symbol:

R-Sentences R36/37/38:

S-Sentences S26:

S-Sentences 28

National Regulation:

VbF:

TA-Air:

Water Pollution1:



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16-OTHER INFORMATION

The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. Therefore, it should not be construed as guaranteeing specific properties.

The information in this MSDS is based on technical data that we believe to be reliable. MO assumes no responsibility and makes no warranties, expressed or implied, regarding the accuracy or currency of any data so provided. Since conditions of storage, use, and disposal of this product are beyond our control, we make no warranties, expressed or implied, and assume no liability in connection with the use of this product.