



INDUSTRIES 3R

MATERIAL SAFETY DATA SHEET

IDENTITY

Part Number: **INC**
 Identity: Inconel Steel
 Description: Inconel Steel Wire Mesh

SUPPLIER

Industries 3R inc.
 55, route 116 Ouest
 Danville (Québec) J0A 1A0
 Tel: 819-839-2793
 Fax: 819-839-2797

INGREDIENTS INFORMATIONS

Hazardous Ingredients

Material or Component	% Weigh	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Iron (Fe)	proprietary	10	5.0
(as oxide fume)			
Chromium (Cr)	proprietary	1.0	0.5
Nickel (Ni)	proprietary	1.0	1.0
Cobalt (Co)	proprietary	0.1	0.1
Aluminum (Al)	proprietary	none	10
Manganese(Mn)	proprietary		
Dust		5 C*	5 C*
Fume		3	---
Molybdenum (Mo)	proprietary	15	10
Tantalum (Ta)	proprietary	5	5
Tungsten (W)	proprietary	none	5
Yttrium	proprietary	1	1

Nonhazardous Ingredients

Niobium (Nb)	proprietary	---	---
Iron (Fe) Dust	proprietary	---	---

C* = Ceiling Limit

PHYSICAL DATA

Appearance and Odor:	Metallic appearing mesh – Odorless
pH:	N/A
Melting Point:	NM (not measured)
Boiling Point:	N/A (Not applicable)
Evaporation rate (Ethyl Ether=1):	N/A
Specific Gravity (Bare Glass):	NM (not measured)
Solubility in water (% by weight):	Not soluble
Vapor Pressure (mm Hg):	N/A
Vapor Density (Air=1):	NA
Percent Volatile:	NA

FIRE-FIGHTING MEASURES

Flash Point (°F):	N/A
Auto Ignition Temperature (°F):	N/A
Flammable Limits on Air:	Lower: N/A % Upper: N/A %
Extinguishing Media:	Water, foam, carbon dioxide, dry chemical
Special fire-fighting instructions:	In a sustained fire, self contained breathing apparatus should be worn.
Unusual Fire/Explosion Hazards:	None known.

REACTIVITY

Stability (conditions to avoid):	Stable
Incompatibility (Materials to avoid):	None known.
Hazardous Decomposition Products:	See Section <i>HAZARDS IDENTIFICATION</i>
Hazardous Polymerization:	Will not occur.

HEALTH AND SAFETY INFORMATION / HAZARDS IDENTIFICATION

Inconel products in their usual physical state do not pose any health hazards. However, when subjected to welding, burning, grinding, cutting, abrasive blasting, heat treatment, pickling, or similar operations, potentially hazardous fumes or dusts may be emitted. Despite the fact that welding, burning, etc. of Inconel products in this category may produce fumes containing manganese, chromium, nickel and copper, the air concentrations generated of these components are expected to be extremely low.

Iron (Fe): Subjected iron and alloys containing iron to high temperatures (such as welding) will cause the formation of iron oxide. Long-term exposure to iron oxide fumes or dusts has been associated with a benign lung condition known as siderosis which is observable as an x-ray change. No physical impairments of lung function has been linked to siderosis.

Manganese (Mn): Mn intoxication usually due to the oxide or salts of Mn; elemental Mn exhibits very low toxicity. The dusts and fumes can act as minor irritants to the eyes and respiratory tract. Both acute and chronic exposure may adversely affect the central nervous system (CNS), but symptoms are more likely to occur after at least one or two years of prolonged or repeated exposures. Early symptoms may include weakness in the lower extremities, sleepiness, salivation, nervousness and apathy. In more advanced stages, severe muscular incoordination, impaired speech, spastic walking, mask-like facial expressions and uncontrollable coughing may occur. Manganese fumes have also been reported to result in metal fume fever, a flu-like syndrome with symptoms of pneumonia, bronchitis and pneumonitis has been reported in some worker populations exposed to manganese. Animal studies indicate exposure may increase susceptibility to bacterial and viral infection.

Chromium (Cr): The toxicity and health hazards of chromium are heavily dependent on its oxidation state. The elemental (as in the metals), divalent and trivalent forms are of very low toxicity. The hexavalent form (such as occurs in chromates and chromic acids) is very toxic and can produce both acute and chronic effects. Adverse effects on the skin may include ulcerations, irritative dermatitis and allergic skin reactions. Adverse effects on the respiratory system may include bronchospasms, edema, hypersecretion, bronchitis, irritation, allergic asthmatic reactions, and, ulceration and perforation of the nasal septum. Respiratory symptoms may include coughing and wheezing, shortness of breath and nasal itch. Eye irritation or inflammation can also be produced. Exposure to some hexavalent chromium compounds have also been shown to be associated with an increased risk of lung cancer.

Nickel (Ni): Ni fumes and dust are respiratory irritants and may cause severe pneumonitis. Skin contact with nickel and its compounds may cause an allergic dermatitis. The resulting skin rash is often referred to as "nickel itch". Ni and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e. the conjunctiva). Animal and/or epidemiology studies have linked nickel and certain nickel compounds to an increased incidence of cancer of the lungs and nasal passages.

Copper (Cu): Inhalation of copper fume may cause irritation of the eyes and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough and weakness. Cu fumes may also produce a metallic or sweet taste. Repeated or prolonged exposure to Cu fume may cause discoloration of the skin or hair.

Aluminium (Al): There are no reported known health effects. Aluminum is generally considered to be in the nuisance dust category.

Silicone (Si): Silicone may produce x-ray changes in the lungs. There has been no known disability reported from the x-ray changes.

Tungsten (W): There has been some reported evidence of pulmonary involvement such as a cough.

Molybdenum (Mo): Molybdenum was caused, in animal studies, irritation of the nose and throat, weight loss and digestive disturbances. There have been no reports of industrial poisoning.

Cobalt (Co): Cobalt has been reported to cause asthma. It may also cause interstitial pneumonitis sensitization of the respiratory system.

Acute: Inhalation: Inhalation of dusts and fibers may result in irritation of the upper respiratory tract (mouth, nose and throat).
Inconel – dust or fumes may give a metallic taste; headache; nausea; chills; fever; tightness of chest; irritation of the respiratory tract, eyes, nose; cough.
Loss of consciousness/death due to welding gases or lack of oxygen.
Skin contact: Skin contact with dusts and fibers may produce itching and temporary mechanical irritation.
Eye contact: Eye contact with fibers and dusts may produce temporary mechanical irritation.
Ingestion: Temporary mechanical irritation of the digestive tract. Observe individual. If symptoms develop, consult a physician.

Chronic: See carcinogenicity section below. Chronic exposure to Chromium (Cr)/Nickel (Ni)/Manganese (Mn) fumes or dust may cause skin sensitization, asthma, bronchitis, lung fibrosis or pneumoniosis. It may also cause damage to the kidneys and liver as well as the nervous system.

Carcinogenicity:
Hazardous ingredients: Listed as carcinogen by: ACGIH IARC NTP OSHA
Chromium (Cr)/Nickel (Ni)** ----- one known-----
** Dusts and fumes containing Chromium (Cr) or Nickel (Ni) should be considered carcinogens.

Medical conditions aggravated by exposure: persons with a history of chronic respiratory or skin conditions that are aggravated by mechanical irritants may be at increased risk for worsening their condition from exposure during use of the product.

EXPOSURE CONTROLES / PERSONAL PROTECTIVE EQUIPMENT

Ventilation:
General dilution ventilation and/or local exhaust ventilation should be provided, as necessary, to maintain exposures below PEL's or TLV's. Adequate ventilation must be provided at elevated temperatures. Adequate ventilation must also be provided when welding or grinding the Inconel core.

Respiratory Protection:
A properly fitted NIOSH/MHSA approved disposable dust respirator should be used when: high dust levels are encountered; the level of Chromium/ Nickel/ Manganese/ Cobalt/ Alumium/ Molybdeum/ Tantalum/ Tungsten/

Yttrium dust in the air exceeds the OSHA permissible exposure limits; or if irritation occurs. Use an air supplied respirator in confined spaces. Use industrial hygiene air monitoring to insure that TLV or PEL values are not exceeded. Use respiratory protection in accordance with your company's respiratory protection program and OSHA regulations under 29 CFR 1910.134.

Eye Protection:

Safety glasses, goggles or face shields should be worn.

Protective Clothing:

Wear loose fitting, long sleeved shirt that covers to the base of the neck, and long pants. Wear gloves when handling product.

Work/Hygienic Practices:

Handle in accordance with good industrial hygiene and safety practices. Avoid unnecessary exposure to dusts.

Do not expose skin when cutting, grinding or welding the Inconel mesh cable.

Be careful not to rub or scratch irritated areas. Use of barrier creams can, in some instances, be helpful.

Use vacuum equipment to remove dusts from clothing. **COMPRESSED AIR SHOULD NEVER BE USED.**

Always wash work clothes separately.

Keep the work area clean of any dusts generated during fabrication. Use vacuum equipment to clean up dusts.

Avoid sweeping or using compressed air as these techniques resuspend dusts into the air.

Have access to safety showers and eye wash fountains.

For professional use only. **Keep out of children's reach.**

HANDLING , STORAGE AND DISPOSAL

Handling: See section *EXPOSURE CONTROLS / PERSONAL PROTECTIVE EQUIPMENT*

Storage: No special precautions necessary.

Disposal: Dispose in accordance with federal, state and local regulations as a solid nonhazardous waste.

EMERGENCY MEDICAL PROCEDURES

Inhalation: Remove to fresh air; If irritation persists, seek medical attention. Administer artificial respiration, if breathing has stopped.

Eye Contact: Flush eyes with flowing water for at least 15 minutes. Seek medical attention if irritation persists.

Skin Contact: Wash with mild soap and running water. To avoid further irritation do not rub or scratch irritated area. Seek medical attention if irritation persists.

Ingestion: N.A. (Not applicable)

ACIDENTAL RELEASE MEASURES

Action to take for spills (Use appropriate safety equipment): For solid product, not applicable. For dusts and fibers generated during fabrication vacuum up and containerize.

ADDITIONAL INFORMATION

The information, details, dimensions and values indicated are to our best knowledge. We recommend testing according to local conditions. The specifications are subject to change without notice.