

MSDS No.: SC-000-041
 Date: 10/18/85
 Revisions: 6/1/95



MSDS # 0751

MATERIAL SAFETY DATA SHEET

SECTION I		GENERAL INFORMATION	
A.	Material Name:	<u>Gray iron casting</u>	
	Other Names:	<u>N/A</u>	Chemical Family: <u>Iron</u>
B.	Manufacturer:	NIBCO INC. 500 Simpson Ave. P.O. Box 1167 Elkhart, IN 46516	Telephone: 219-295-3000 For chemical emergency - spill, leak, fire exposure or accident, call: CHEMTEL 1-800-255-3924 day or night

SECTION II		HAZARDOUS INGREDIENTS		
Ingredient	CAS #	Weight %	ACGIH TLV	OSHA PEL
Aluminum	7429-90-5	0.01-0.05	5 mg/m ³ fume 10 mg/m ³ dust	5 mg/m ³ dust (respirable) 15 mg/m ³ dust (total)
Carbon	7440-21-3	2.5-4.0	None established	None established
Chromium	7440-47-3	0.01-0.9	0.5 mg/m ³	1 mg/m ³
Copper	7440-50-8	0.01-0.9	0.2 mg/m ³ fume 1 mg/m ³ dust	0.1 mg/m ³ fume 1 mg/m ³ dust
Iron	7439-89-6	86.3-96.2	5 mg/m ³ iron oxide fume (as Fe)	10 mg/m ³ iron oxide fume (as Fe)
Manganese	7439-96-5	0.16-1.5	1 mg/m ³ fume; STEL 3 mg/m ³ 5 mg/m ³ dust	1 mg/m ³ fume C 5 mg/m ³ dust
Molybdenum	7439-98-7	0.01-0.75	10 mg/m ³	10 mg/m ³
Nickel	7440-02-0	0.01-1.5	0.05 mg/m ³ dust and fume	1 mg/m ³
Phosphorus	7723-14-0	0.01-0.8	0.1 mg/m ³	0.1 mg/m ³
Silicon	7440-21-3	0.2-2	10 mg/m ³	5 mg/m ³ dust (respirable) 15 mg/m ³ dust (total)
Sulfur	7704-34-9	0.02-0.18	None established	None established
Titanium	7440-32-6	0.01-0.06	10 mg/m ³ as titanium oxide	15 mg/m ³

KNOWN HAZARDS UNDER 29 CFR 1910.1200											
	Yes	No		Yes	No		Yes	No		Yes	No
Combustible Liquid		x	Skin Hazard		x	Oxidizer		x	Reproductive Toxin		x
Flammable Material		x	Eye Hazard		x	Organic Peroxide		x	Blood Toxin		x
Pyrophoric Material		x	Toxic Agent		x	Corrosive Material		x	Nervous Sys. Toxin		x
Explosive Material		x	Highly Toxic Agent		x	Compressed Gas		x	Lung Toxin		x
Unstable Material		x	Sensitizer		x	Irritant		x	Liver Toxin		x
Water Reactive Mat.		x	Carcinogen		x				Kidney Toxin		x

Comments: The following ingredients must be reported under Section 313 of SARA - aluminum, copper, chromium, manganese, nickel, phosphorus.

SECTION II HAZARDOUS INGREDIENTS (CONTINUED)			
SHIPPING INFORMATION	SPECIAL HAZARD DESIGNATIONS		
DOT HAZARD CLASS: N/A	HMIS	NFPA	HAZARD RATING
DOT SHIPPING NAME: N/A	HEALTH: 0	0	0 - MINIMAL
	FLAMMABILITY: 0	0	1 - SLIGHT
	REACTIVITY: 0	0	2 - MODERATE
	PROTECTIVE EQUIPMENT: -	-	3 - SERIOUS
SHIPPING I.D. NUMBER: N/A			4 - SEVERE

SECTION III PHYSICAL DATA	
Melting Point: <u>2750 °C</u>	Vapor Pressure (mm Hg): <u>N/A</u>
Boiling Point: <u>N/A</u>	Vapor Density (AIR=1): <u>N/A</u>
Specific Gravity (H ₂ O=1): <u>7.86</u>	Solubility in Water: <u>N/A</u>
Appearance and Odor: <u>Silver gray solid, no odor.</u>	

SECTION IV FIRE AND EXPLOSION HAZARD DATA	
Flash Point (method used): <u>N/A</u>	
LEL: <u>N/A</u>	UEL: <u>N/A</u>
Extinguishing Media: <u>N/A</u>	
Special Fire fighting Procedures: <u>N/A</u>	
Unusual Fire and Explosion Hazards: <u>Castngs will not burn or explode.</u>	

SECTION V REACTIVITY DATA	
A. Stability	<input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable
Conditions to Avoid: <u>N/A</u>	
B. Hazardous Polymerization:	<input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur
Conditions to Avoid: <u>N/A</u>	
C. Incompatible Materials:	Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater).
D. Hazardous Decomposition Products:	None

SECTION VI

HEALTH HAZARD DATA

Route(s) of Entry: Inhalation Ingestion Skin

Health Hazards (Acute and Chronic):

Fittings as received do not present an inhalation, ingestion, skin contact or eye contact hazard. Listed hazards may result from remelting, soldering or brazing.

A. Metals:

Aluminum: Aluminum and its components can cause respiratory damage, such as pulmonary fibrosis. Greatest hazard is that it is a reactive metal in many industrial chemical applications.

Carbon: Experimental reproductive effects have been reported. Exposure to carbon black can cause a dust irritation, particularly to the eyes and mucous membranes.

Chromium: Metallic chromium can cause dermatitis. It is not associated with lung toxicity or cancer in its divalent or trivalent forms.

Copper: Exposure to fumes or dusts may produce "metal fume fever" with flu-like symptoms including: fever, chills, aches, dry throat and nausea. Other symptoms of overexposure may include metallic taste, discoloration of the skin or hair and irritation of eyes, nose or throat.

Iron: Exposure to iron oxide fumes or dusts has not been linked to illness but prolonged exposure may produce siderosis, or "iron pigmentation" of the lungs, which may appear on X-rays.

Manganese: A skin and eye irritant. Human systemic effects by inhalation: degenerative brain changes, change in motor activity, muscle weakness. Questionable carcinogen with experimental tumorigenic data. Mutation data reported.

Molybdenum: Elemental molybdenum, is essential for human nutrition and a normal part of the human diet. It exhibits low toxicity by inhalation and ingestion.

Nickel: Elemental nickel has been identified as a possible carcinogen. The fume is a respiratory irritant and may cause respiratory diseases. Skin contact may cause an allergic reaction.

Phosphorus: Phosphorus is a human poison by ingestion. Chronic exposure by inhalation or ingestion can cause anemia, gastrointestinal effects and brittleness of the long bones leading to spontaneous fractures.

Silicon: Silicon does not occur freely in nature, but is found as silicon dioxide which causes respiratory effects.

Sulfur: Sulfur is a poison by ingestion, intravenous and intraperitoneal routes. It is a human eye irritant. Chronic exposure can cause irritation of the mucous membranes.

Titanium: Titanium is classified as a nuisance dust, and will cause irritation of the eyes and nose at high concentrations. Questionable carcinogen. Experimental tumorigenic data have been reported.

B. Other Constituents:

Not applicable.

C. Carcinogenicity: NTP IARC OSHA

According to the NTP, elemental nickel is a substance that may reasonably be anticipated to be a carcinogen. Elemental nickel is classified by IARC in group 2B as possibly carcinogenic to humans

D. Emergency First Aid:

Exposure effect occur primarily by inhalation of dusts or fumes. Remove person to fresh air. consult physician.

SECTION VII**SPILL OR LEAK PROCEDURES**

- A. **Special Handling or Storage:**
Keep dry if metal is to be remelted.
- B. **Spill or Leak Containment:**
Recover solid material, no environmental hazard anticipated. If material is to be remelted, care should be taken to handle molten metal carefully during pouring to avoid severe metal burns that could occur.
- C. **Waste Disposal:**
Recycle where possible, consult state and federal regulations for landfill disposal.
- D. **Other Precautions:**
None.

SECTION VIII**SPECIAL PROTECTION INFORMATION**

- A. **Respiratory Protection (specify type):** NIOSH approved for toxic dust/ fume
- B. **Ventilation:** Local Exhaust Mechanical (General)
Other (specify): N/A
- C. **Eye Protection:** Yes No Type: goggles or faceshield if remelted
- D. **Protective Gloves:** Yes No Type: non-porous
- E. **Other Protective Equipment or Clothing:** Yes No
Type: Appropriate high-temperature protective clothing may be needed if the material is remelted.
- F. **Special Precautions or Work Practices:**
Special precautions may be needed to protect against metal fume if material is remelted.

DISCLAIMER OF LIABILITY

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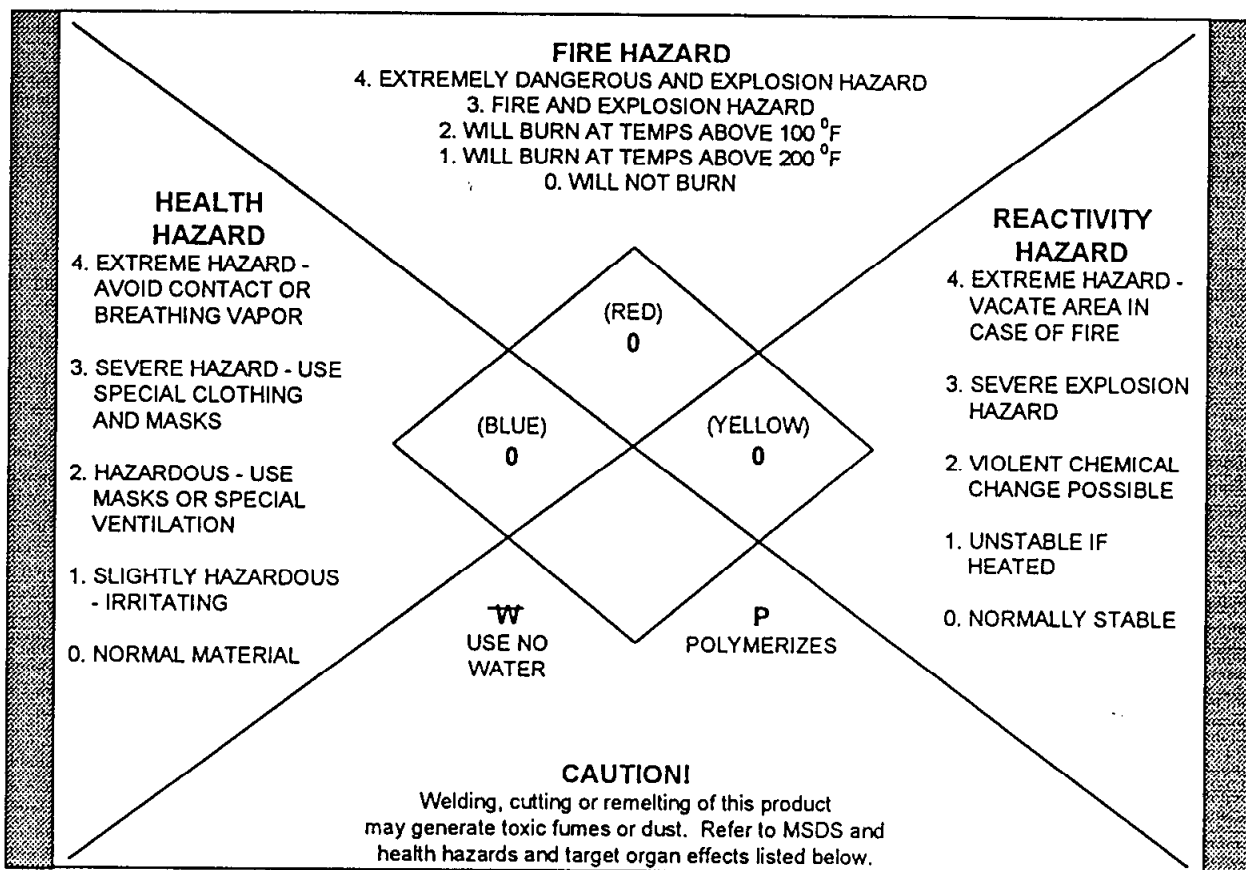
PRODUCT NAME: Gray Iron Castings

MSDS No: SC-000-041

Refer to Material Safety Data Sheet for more information



NIBCO INC.
500 SIMPSON AVE.
P.O. BOX 1167
ELKHART, IN 46516
219-295-3000



NFPA RATING AS SHIPPED

INGREDIENTS Aluminum, carbon, copper, chromium, iron, manganese, molybdenum, nickel, phosphorus, silicon, sulfur, titanium	STORAGE AND HANDLING Material should be kept dry if it is to be remelted to prevent steam explosion
SARA SECT. 313 NOTIFICATION Aluminum, chromium, copper, manganese, nickel, phosphorus, zinc	

<input type="checkbox"/> TOXIC <input type="checkbox"/> HIGHLY TOXIC <input type="checkbox"/> REPRODUCTIVE TOXIC	HEALTH HAZARDS <input type="checkbox"/> IRRITANT <input type="checkbox"/> CORROSIVE <input type="checkbox"/> SENSITIZER	<input type="checkbox"/> CARCINOGEN <input type="checkbox"/> _____ <input checked="" type="checkbox"/> NO KNOWN EFFECTS
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<input type="checkbox"/> HEPATOTOXINS (LIVER DAMAGE) - jaundice, liver enlargement	<input type="checkbox"/> HEMATOPOIETICS (BLOOD DAMAGE) - cyanosis, unconsciousness	<input type="checkbox"/> CUTANEOUS HAZARDS - skin damage, rashes, irritation, defatting of skin
<input type="checkbox"/> NEPHROTOXINS (KIDNEY DAMAGE) - edema, proteinuria	<input type="checkbox"/> PULMONARY DYSFUNCTIONS (Lung Damage) - shortness of breath, chest tightness, cough	<input type="checkbox"/> EYE HAZARDS - impaired vision, conjunctivitis, corneal damage
<input type="checkbox"/> NEUROTOXINS (NERVOUS SYSTEM DAMAGE) - narcosis, behavioral changes, decrease in	<input type="checkbox"/> REPRODUCTIVE TOXINS - birth defects, sterility	<input checked="" type="checkbox"/> NONE - no known immediate or delayed effects