

Contractors Steel Company

P.O. Box 3364

Livonia, Michigan 48150

(734) 464 4000 / Fax (734) 452 3939

MATERIAL SAFETY DATA SHEET



(This product may contain chemicals subject to reporting requirements of section 313, Emergency Planning and Community Right To Know Act of 1986 and of 40CFR72)

Revision: January 5, 2009

Section 1 - Product Identification

Manufacturers Name: **VARIOUS**

Product Name / Trade Name **Carbon and Alloy Steels (Bar (Hot rolled- Round, Square, Strip, Flat)(Cold Finished - Round, Square, Flat) (Angle - Bar size, Structural)(Channel - Bar, Structural, Junior)(Beam - Standard I, Wide Flange & H, Junior)(Sheet - Hot rolled) (Plate - Floor, Abrasion Resisting)(Pipe)(Tubing - Square, Rectangular)(Expanded Metal - Standard, Flattened) (Bar size Tees) (Grating - Standard, Bar, Stair tread, Catwalk, Grip strut) (Molded Cover Bar) (Re rod)(Threaded Rod)(Rail) (Structural Tees))**
Galvanized (Sheet, Round, Angle, Channel)

Section 2 - Ingredients

Components	CAS#	% Weight (1)	ACGIH TLV (mg/m ³) (Threshold limit value) (2)	OSHA PEL (mg/m ³) (Permissible exposure limit)
Base Metal Iron (Fe)	7439-89-6	balance	5	Oxide dust/fume 10
Alloying Elements				
Aluminum (Al)	7429-90-5	0-.15	10 5	Dust 15 Respirable fraction 5
Antimony (Sb)	7440-36-0	< 1	.5	As Antimony 5
Arsenic (As)	7440-38-2	< 1	.01	as Arsenic (A1 Carcinogen) .01
Beryllium (Be)	7440-41-7	< 1	.002	as Beryllium (A1 Carcinogen) .002
Bismuth	7440-69-9	.0001-.001		not established
Boron (B)	7440-42-8	< 1	10	Oxide dust 15
Cadmium (Cd)	7440-43-9	< 1	.01 .002	as Cadmium (A2 Carcinogen) .005 Respirable fraction .0025
Calcium (Ca)	1305-78-8	0-1	2	Oxide dust 5
Carbon (C)	7440-4-0	.003-.1.1		not established
Chromium (Cr)	7440-47-3	.01-1	.5	Metal 1
Cobalt (Co)	7440-48-4	< 1	.02	as Cobalt (A3 Carcinogen) .1
Copper (Cu)	7440-50-8	.04-1	1 .2	Dust 1 Fume .1
Lead (Pb)	7439-92-1	0-.0.9	.05	Dust / Fume (A3 Carcinogen) .05
Magnesium (Mg)	7439-95-4	0-1		Not established
Manganese (Mn)	7439-96-5	0.2-2	0.2	Elemental Mn and Inorg compounds 5
Molybdenum (Mo)	7439-98-7	0.01-0.8	10	Insoluble compounds 15
Niobium (Nb)	7440-03-1	0-1		Not established
Nickel (Ni)	7440-02-0	0.01-1	1.5	Metal 1
Nitrogen (N)	7727-37-9	< 1		simple Asphyxiant
Phosphorus (P)	7723-14-0	0-1	0.1	Phosphorus 0.1
Selenium (Se)	7782-49-2	< 1	0.2	Selenium 0.2
Silicon (Si)	7440-21-3	0-3	10	Dust 15
Sulfur (S)	7446-09-5	0-1	5.2 13	Sulfur dioxide 13 Sulfur dioxide (STEL)
Tin (Sn)	7723-14-0	0-1	2	Metal, oxide and organic compounds 2
Titanium (Ti)	7440-32-6	0-1		Not established
Tungsten (W)	7440-33-7	0-1	5 10	Insoluble compounds as W Insoluble compounds as W (STEL)
Vanadium (V)	7440-62-2	0-1	0.05	Oxide Dust/Fume 0.5
Zinc (Zn)	7440-66-6	0-.05	10 5 10	Oxide dust 0.1 Oxide Fume (ceiling) 5 Oxide fume 10 Oxide fume (STEL)

(1) % of alloying material varies with grade of material. (2) ACGIH Threshold Limit Value. (NOTE: No OSHA PEL's or ACGIH TLV's exist for steel. Various grades of steel will contain different combinations of these elements and/or trace elements.

Section 3 - Physical Data

Material is (at normal conditions) Solid	Appearance and Odor (Carbon) Gray-Black metallic, Odorless (Galvanized) Silver or Bluish white	Melting Point (Base Metal) >2500° F 420° C (Galvanized)	Specific Gravity approximately 7
Boiling Point (Galvanized) 908° C	Vapor pressure (mm Hg.) Galvanized 1 mmHg 487° C	Vapor Density (Air = 1) No information Found (NIF)	Evaporation Rate NIF
pH N/A	Solubility in water (% by weight) N/A	Percent Volatile by Volume (%) N/A	

Section 4 - Fire and Explosion Data

Extinguishing Media (Base Metal) N/A (Galvanized) CO₂ Dry Powder extinguisher - Do not use water
 Special Fire Fighting Procedures Steel products in the solid state present no fire or explosion hazard
 Unusual Fire and Explosion Hazards Zinc oxide fume Flash Point (method used) Auto ignition (solid zinc in oxygen) 908° C
 Special fire fighting procedures Self - contained breathing apparatus

Section 5 - Reactivity Data

Stability Stable	Incompatibility (Materials to Avoid) Reacts with strong acids to produce Hydrogen gas (Galvanized) Avoid contact with acids and Alkalis
Conditions to avoid N/A	Hazardous Decomposition Products Zinc forms zinc oxide fumes at boiling point Metallic dust or fumes may be produced during welding, burning, grinding and machining

Section 6 - Health Hazard Data

Note: Steel products in their natural state do not present an inhalation, ingestion or contact hazard. However, operations such as Burning, Welding, Sawing, Brazing, Grinding and Machining may release fumes and/or dusts which may present health hazards if TLV's are exceeded. The major exposure hazard is inhalation. Effects of overexposure to fumes and dust are as follows:

ACUTE: Excessive inhalation of metallic fumes and dust may result in irritation of eyes, nose, and throat. High concentrations of fumes and dust of iron-oxide, manganese, and zinc may result in metal fume fever. Typical symptoms last from 12 to 48 hours and consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever

CHRONIC: Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals, and welding fumes as a general category have been listed by IARC as a carcinogen. See conditions listed opposite the element:

Iron (Fe)	siderosis, a benign pneumoconiosis, symptoms may include chronic bronchitis, emphysema, and shortness of breath. breathing fumes may result in metal fume fever. Penetration of iron particles into the skin or eye may cause an exogenous or ocular siderosis. Ingestion overexposures may affect the gastrointestinal, nervous, hematopoietic system and the liver
Aluminum (Al)	breathing fumes may result in metal fume fever
Antimony (Sb)	breathing fumes may result in metal fume fever
Arsenic (As)	breathing fumes may result in metal fume fever
Beryllium (Be)	breathing fumes may result in metal fume fever No chronic debilitating symptoms indicated
Bismuth	no information available
Boron (B)	breathing fumes may result in metal fume fever. Primary target organs are the lung and kidney. Because of its cumulative nature, chronic cadmium poisoning can cause serious disease which takes many years to develop and may continue to progress despite cessation of exposure. Progression of the disease may not reflect current exposure conditions. It is also capable of causing a painful osteomalacia called "Itai-Itai" in postmenopausal women, and has caused developmental effects and/or reproductive effects in male / female animals. Cadmium is a listed carcinogen.
Cadmium (Cd)	No information available
Calcium (Ca)	No chronic debilitating symptoms indicated
Carbon (C)	breathing fumes may result in metal fume fever. Prolonged and repeated overexposure to dust or fumes may cause skin ulcers, nasal irritation and ulceration, kidney damage and cancer of the respiratory system. Is listed as a carcinogen
Chromium (Cr)	breathing fumes may result in metal fume fever
Cobalt (Co)	Dust and fume can irritate the eyes, nose and throat causing coughing, wheezing, nosebleeds, ulcers and metal fume fever. Other effects from repeated inhalation include a metallic or sweet taste, discoloration of skin, teeth or hair, and allergic skin reaction.
Copper (Cu)	breathing fumes may result in metal fume fever, Lead can accumulate in the body. Consequently, exposure to fumes or dust may produce signs of polyneuritis, diminished vision and peripheral neuropathy, such as tingling and loss of feeling in fingers, arms and legs. Lead is a known reproductive and developmental toxin. It is also associated with central nervous system disorders, anemia, kidney dysfunction and neurobehavioral abnormalities. The brain is a major target organ. Lead is a listed carcinogen
Lead (Pb)	breathing fumes may result in metal fume fever
Magnesium (Mg)	breathing fumes may result in metal fume fever, Bronchitis, and pneumonitis. A variety of neurological symptoms including muscle spasms, gait disturbances, tremors, and psychoses.
Manganese (Mn)	No information available
Molybdenum (Mo)	No chronic debilitating symptoms indicated
Niobium (Nb)	breathing fumes may result in metal fume fever. Prolonged and repeated contact may cause sensitization dermatitis. Inhalation has caused lung damage as well as sinus, nasal and lung cancer in lab animals. Nickel is a listed carcinogen.
Nickel (Ni)	No information available
Nitrogen (N)	Necrosis of the mandible
Phosphorus (P)	breathing fumes may result in metal fume fever
Selenium (Se)	No chronic debilitating symptoms indicated
Silicon (Si)	(as sulfur dioxide) Edema of the lungs
Sulfur (S)	breathing fumes may result in metal fume fever
Tin (Sn)	No information available
Titanium (Ti)	No information available
Tungsten (W)	The major target for vanadium pentoxide toxicity is the respiratory tract. Fumes or dust can cause severe eye and respiratory irritation and systemic effects. Emphysema, pneumonia, Chronic bronchitis, green tongue, conjunctivitis, pharyngitis, rhinitis, rales, chronic productive cough, tightness of the chest, and allergic reactions have been reported following overexposure.
Vanadium (V)	breathing fumes may result in metal fume fever, as vanadium pentoxide - Emphysema, pneumonia
Zinc (Zn)	Gastrointestinal inflammation reported in animal studies

Carcinogen(N.T.P.) N/A Carcinogen(I.A.R.C.) N/A Medical conditions aggravated by exposure: Individuals with chronic respiratory disorders may be adversely affected by any fume or airborne particulate matter exposure

Emergency Medical Procedures: Inhalation: Remove to fresh air, if condition continues, consult a physician. Eye Contact: Flush thoroughly with running water to remove particulate, obtain medical attention. Skin Contact: Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists. Ingestion: If significant amounts of metal are ingested, consult a physician

HMIS RATING - Health 0 Flammability 0 Reactivity 0 HMIS HAZARD INDEX - Minimal 0 Slight 1 Moderate 2 Serious 3 Severe 4

Section 7 - Environmental Protection

Spill or Leak procedures: Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for reuse. Waste Disposal Method: Used or unused product should be disposed of in accordance with Federal, State and Local disposal or discharge laws.

Section 8 - Special Protection Information

Respiratory Protection: An appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulate. If exposure limits are reached or exceeded, use NIOSH approved equipment. Hands, Arms, and Body: Protective gloves should be worn as required for welding burning or handling operations. Eyes and Face: Face shields or goggles should be worn when grinding or cutting. Face shields should be worn when welding or cutting. Other Clothing and Equipment: As required depending on operations and safety codes

In welding, precautions should be taken for airborne contaminants which may originate from components of the welding rod.
Arc or Spark generated when welding or burning could be a source of ignition for combustible and flammable materials

DISCLAIMER

The information in this MSDS was obtained from sources which we believe are reliable, however, the information is provided without any representation or warranty, express or implied, regarding the accuracy or correctness.
The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use, or disposal of the product.