

(In accordance with OSHA Standard 1910.1200)

# Material Safety Data Sheet

## Carbon & Alloy Steel Tubing

### I - IDENTIFICATION

**COMMON DESCRIPTION:**

Carbon or Alloy - Seamless or Welded  
Cold Drawn or Hot Finish - Mechanical  
or Pressure - To AISI, ASTM, ASME,  
API, MILT and Other Specifications

**MICHIGAN SEAMLESS TUBE**  
400 McMunn  
South Lyon, MI 48178  
(248) 437-2742  
(800) 521-8416  
Emergency Tel. # (248) 486-0143

### II- INGREDIENTS

Seamless Steel Tubing manufactured from solid steel billet and /or Welded Steel Tubing formed from flat roll steel is available in a broad range of Standard published chemistry grades. Formulation of a particular grade is referenced in the Test Report prepared and made part of the actual shipment. Steel tube products, per se, under normal conditions do not present an inhalation, ingestion or contact health hazard. The base metal iron (Fe) and alloying ingredients' percentages by weight vary from grade to grade, by exposure limits for specific elements are as follows:

ELEMENTS	CAS NUMBER	% WEIGHT	OSHA PEL (EXPOSURE LIMITS IN MG/M <sub>3</sub> ) ACGIH TLV	
IRON (Fe)	7439-89-6	65.0/99.4	10.0-Iron oxide fume	5.0-Iron oxide fume
ALUMINUM (Al)	7429-90-5	.001/1.30	15.0 Dust 5.0 Respirable	10.0 as Al <sub>2</sub> O <sub>3</sub>
CARBON (C)	7440-44-0	.01/1.10	None established	3.5 as carbon black
CHROMIUM (Cr)*	7440-47-3	.01/20.0	1.0 as Cr metal .05-soluble Cr salts	.05 as Cr metal 0.05-Cr compounds
COLUMBIUM (Cb)	7440-03-1	.01/.25	None established	None established
COPPER (Cu)	7440-50-8	.01/.60	0.1-fume/1.0-dust	0.2-fume/1.0-fume dust/mist
MANGANESE (Mn)*	7439-96-5	.25/2.00	Dust 5.0 Stel 3.0 Fume 1.0 Ceiling 5.0	5.0-dust/1.0-fume
MOLYBDENUM (Mo)	7439-98-7	0.01/1.10	10.0 Dust	10.0-as insoluble or 5.0-soluble compounds
NICKEL (Ni)*	7440-02-0	.01/11.0	1.0 as Ni metal and insoluble compounds	1.0 as Ni metal and insoluble compounds
PHOSPHORUS (P)*	7723-14-0	0.15 Max.	None for inorganic	.01 as Phosphorus (P)
SILICON (Si)	7440-21-3	.15/2.20	0.1 Dust/Fume	10.0 total dust
SULFUR (S)	7704-34-9	.001/3.5	13.0 as SO <sub>2</sub>	5.0 as SO <sub>2</sub>
VANADIUM (V)	7440-62-2	.01/.50	0.05 dust 0.05 fume	.05 as respirable dust and fume

\* Also, see Section X

NOTE: All commercial metals contain small amounts of elements in addition to those specified. These small quantities, frequently referred to as "trace" or "residual" elements, generally originate in the raw materials used. Typical levels of commonly involved trace or residual elements that may be encountered in steel products are less than 0.1%/weight.

### III - PHYSICAL DATA - SOLID STATE

BOILING POINT - N/A  
VAPOR PRESSURE - N/A  
VAPOR DENSITY - N/A  
SPECIFIC GRAVITY - N/A  
N/A - NONAPPLICABLE

MELTING POINT Base Metal - 2650 - 2750°F  
APPEARANCE AND ODOR - Metallic Grey/ Metallic Odor  
EVAPORATION RATE - N/A  
SOLUBILITY IN WATER - N/A

### IV - FIRE AND EXPLOSION HAZARD DATA

STEEL TUBE PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD  
National Fire Protection Association (NFPA) Code "O" applies.

FLASH POINT - N/A  
FLAMMABLE LIMITS - N/A

EXTINGUISHING MEDIA - N/A (LEL/UEL - N/A)  
SPECIAL FIRE FIGHTING PROCEDURES - N/A  
UNUSUAL FIRE & EXPLOSION HAZARDS - N/A

### V - REACTIVITY DATA

#### STABILITY:

Steel tube products are stable under normal conditions of use, storage and transport.

#### INCOMPATIBILITY/HAZARDOUS DECOMPOSITION OR BY-PRODUCTS

Will react with various acids to liberate Hydrogen (H) gas. At temperatures above the melting point, fumes containing oxides of iron or alloying elements may be emitted. NFPA Code "O" applies.

#### HAZARDOUS POLYMERIZATION:

Will not occur .

### VI - HEALTH HAZARD DATA

NOTE: Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations such as burning, welding, sawing, brazing, grinding, and possibly machining, etc. which results in elevating the temperature of the product to or above its melting point or results in generation of airborne particulates, may present health hazards. Under normal conditions, NFPA Code "O" applies.

#### ROUTE OF ENTRY - EFFECTS OF OVER-EXPOSURE BY INHALATION:

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumonitis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

The inhalation of high concentrations of freshly formed oxide fumes and dusts of Manganese (Mn), and Copper (Cu), in the respirable particle size range can cause an influenza-like illness termed "metal fume fever." Typical symptoms last 12 to 48 hours and are characterized by metallic taste in mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

#### EMERGENCY AND FIRST AID PROCEDURES:

For over-exposure to airborne fumes and particulates, from grinding and cutting operations remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated. Seek medical attention promptly. Treat metal fume fever by bed rest, and administer a pain and fever reducing medication.

## VII - SPILL OR LEAK PROCEDURES

NOT APPLICABLE TO STEEL TUBING IN THE SOLID STATE

## VIII - SPECIAL PROTECTION INFORMATION

<b>RESPIRATORY</b>	NIOSH/OSHA - approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends upon the magnitude of exposure.
<b>SKIN</b>	Protective gloves should be worn as required for welding, burning, or handling operations. Tubing may have oil coating.
<b>EYE</b>	Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.
<b>VENTILATION</b>	Local exhaust ventilation should be provided when welding, burning, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.
<b>OTHER</b>	Provide clean coveralls or similar full-body protective clothing on a weekly basis to workers exposed to Lead (Pb) concentrations above levels of 0.05 mg/M <sup>3</sup> . Daily changes if exposures exceed 0.2 mg/M <sup>3</sup> .
<b>INGESTION</b>	Wash hands before eating or smoking to prevent ingestion of particulates or possible oil coating.

## IX - SPECIAL PRECAUTIONS

### PRECAUTIONS TO BE TAKEN IN HANDLING, STORAGE AND TRANSPORTATION:

Operations with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Avoid breathing metal fumes and/or dusts. Special transportation requirements usually not necessary.

## X - OTHER COMMENTS

As part of the cold draw tube manufacturing process, various lubricants and/or drawing compounds are used to reduce friction. Generally, such coating are removed during the drawing or annealing operations and, in some cases, a surface residue may remain. Coatings, oils, and the like, can be applied to protect the finished product surface during shipment and storage. Protective gloves are recommended to minimize minor skin irritation, if any, resulting from contact with such coatings. A list of residual chemicals and suppliers is available upon request. Wash hands after handling oiled material.

IARC identifies welding fumes as a group 2B carcinogen.

IARC (Suppl. 1,29-39,1979) has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possible chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

IARC (11,75-112,1976) has determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel (Ni) compounds are carcinogenic to laboratory animals by various routes of exposure. Lead is a known or suspected carcinogen as listed by NTP, IARC or OSHA.

SARA Reporting Requirements: SARA 311/312 Potential Hazard Category, immediate acute health hazard deemed chronic Health Hazard.

\* SARA Section 313 - These chemicals are subject to Section 313 reporting.

\*\* No ozone depleting chemicals are used in our manufacturing.

\*\*\* California proposition 65, This product contains material known to the State of California to cause Cancer or Reproductive toxicity.

\*\*\*\* Other state regulations may vary.

Steel is a recyclable product, dispose of according to local, state and/or federal regulations.

**- CARBON AND/OR ALLOY STEEL TUBING -**

**WARNING!! -** Particulates may be harmful if inhaled or ingested. If steel grade contains Chromium, Nickel or Lead, exposure may create cancer risk. Avoid breathing fumes or dust. Adequate ventilation required in welding, sawing, brazing, grinding or machining operations. **FIRST AID:** For exposure to airborne dust and fumes, remove exposed person to fresh air. If breathing is difficult or has stopped, administer artificial respiration or oxygen as indicated and seek medical attention promptly.

**MICHIGAN SEAMLESS TUBE**

The above label can be reproduced or the information contained therein extracted according to the composition of the steel and the varying degrees of hazards associated with the chemical involved.

**THIS MSDS IS INTENDED FOR USE SOLELY IN SAFETY EDUCATION AND ENVIRONMENTAL HEALTH TRAINING AND NOT FOR SPECIFICATION PURPOSES. THIS INFORMATION IS TAKEN FROM SOURCES OR BASED UPON DATA BELIEVED TO BE RELIABLE. HOWEVER, MICHIGAN SEAMLESS TUBE MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.**