(In accordance with OSHA Standard 1910.1200)
Issue Date: May 10, 1986
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MATERIAL SAFETY DATA SHEET

CARBON & ALLOY STEEL PIPE

TUBING & BAR

I - IDENTIFICATION -

COMPANY: Tubular Steel Inc

TRADE NAME (Common or Synonym): Carbon, Alloy and Stainless Steel

CHEMICAL NAME: AISI Grades 10XX - 41XX/630

FORM: Tubing, Pipe, Hollow Structurals (Smls & Wld) and Bar Products

EMERGENCY TELEPHONE: (314) 851-9200

II - INGREDIENTS -

Steel tubing, pipe, hollow structurals (smls & wld) and steel bars are available in a broad range of standard published chemistry grades. Steel pipe tubing and bar products, per se, under normal conditions do not present inhalation, ingestion or contact health hazard. The base metal iron (Fe) and alloying ingredients percentages by weight vary from grade to grade, but exposure limits for specific elements are as follows:

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ELEMENTS	CAS NUMBERS	%WEIGHT	EXPOSURE LIMITS IN mg/M3 OSHA PEL	ACGIH TLV
IRON (Fe)	7439-89-6	98.0/99.0	10.0-Iron oxide fume	5.0-Iron oxide fume
ALUMINUM (Al)	7429-90-5	.001/1.00	None established	10.0 as Al_2O_3
BISMUTH (Bi)	7440-69-9	.10/.15	None established	None established
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 0.5 soluble Cr salts	0.5 as Cr metal 0.05 Cr compounds
COLUMBIUM (Cb)	7440-25-7	.01/.25	None established	None established
COPPER (Cu)	7440-50-8	.01-5.0	0.1 fume/1.0 dust	0.2-fume/1.0-dust
LEAD (Pb)	7439-92-1	.15/.35	.05-Pb dust or fume	.15 Pb dust or fume
MANGANESE (Mn)	7439-96-5	.25/2.0	5.0 limit (ceiling)	5.0 dust/1.0 fume
MOLYBDENUM	7439-98-7	.01/3.00	15.0-as insoluble or 5.0-soluble compounds	10.0-as insoluble or 5.0-soluble compound
NICKEL (Ni)	7440-02-0	.01-14.0	1.0 as Ni Metal and insoluble compounds	1.0 as Ni Metal and insoluble compounds
PHOSPHORUS (P)	7723-14-0	.04 Max	None for inorganic	.01 as Phosphorus (P
SILICON (Si)	7440-21-3	.15/2.20	None established	10.0 total dust
SULFUR (S)	7704-34-9	.001/.40	13.0 as SO_2	5.0 as SO_2
VANADIUM (V)	7440-62-2	.01/.50	0.5-C dust ceiling 0.1 as V_2O_5 fumm ceiling	.05 as respirable dust and fume
METALLIC COATINGS:				
ZINC COATING	7440-66-6	.70/6.0	5.0 fume	10.0 dust/5.0 fume
ALUMINUM COATINGS	7429-90-5	.18/1.5	None established	10.0 dust/5.0 fume

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*NOTE: Metals may contain light coatings of oil or varnish to prevent corrosion. Use gloves when handling to prevent skin irritation. Red primered materials (RedKote) developed by Glidden Company as tested by Northwest Testing Laboratories, Inc., Portland, OR is addressed under section VI-HEALTH HAZARD DATA, Effects of Overexposure by Inhalation.

III - PHYSICAL DATA -

MELTING POINT (Base Metals) - 2650-2750°F APPEARANCE & ODOR Grey, silver, rust, or red primered. No odor.

IV - FIRE & EXPLOSION HAZARD -

Steel tubing, pipe, hollow structurals and bar products in the solid state present no fire or explosion hazard.

V - REACTIVITY -

Steel tubing, pipe, hollow structurals and bar products are stable under normal conditions of use, storage and transport. They will react with strong acid to liberate hydrogen (H). At temperatures above the melting point (620°F) of Lead (Pb), grades containing Lead may liberate Lead fume. At temperatures above the melting point of the zinc (galvanized) coating, the materials may liberate zinc fumes.

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.

EFFECTS OF OVEREXPOSURE BY INHALATION:

Chronic inhalation of high concentrations of iron oxide fumes or dusts may lead to a benign pneumoconiosis (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), Copper (Cu) Lead (Pb) and/or Zinc (Zn) in the respirable particle size range can cause an influenza like illness termed metal fume fever. Typical symtoms last 12 to 48 hours and are characterized by metallic taste in the mouth, dryness and irritation of the throat, followed by weakness, muscle pain, fever and chills.

Inhalation or ingestion of Lead (Pb) particles may result in lead induced systemic toxicity. Symptoms of lead poisoning include abdominal cramps, anemia, muscle weakness and headache. Prolonged exposures can cause behavioral changes, kidney damage, peripheral neuropathy characterized by decreased hand-grip strength and adverse human reproductive effects.

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RedKote (Red Primered Products)

Analysis of fumes and fumes emitted from welding process covered: "There was no measurable or visible increase in fume or smoke evaluation as compared to uncoated steel. There was no obnoxious or irritating odors produced."

"It is our opinion that welding or thermal cutting of metal products coated with Glidden 401-R-9111 RedKote Industrial Primer does not present a specific hazardous condition."

"All welding and cutting processes always emit fumes and gases. Permissible limits of exposure are specified by OSHA Regulation 29 CFR 1910 1000 and AWS, therefore, local and general ventilation should always be adequate to minimize exposure." Northwest Testing Lab.

EMERGENCY AND FIRST AID PROCEDURES:

For overexposure to airborne fumes and particulates, 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. Workers who experience the symptoms of Lead poisoning should be removed from exposure and receive medical care and guidance. Detailed biological testing and evaluation of possible exposure conditions are required to diagnose and control Lead poisoning. Restriction from exposure to Lead may be required.

VII - SPILL OR LEAK PROCEDURES -

NOT APPLICABLE TO STEEL TUBING, PIPE, HOLLOW STRUCTURAL AND BAR PRODUCTS IN THE SOLID STATE.

/III - SPECIAL PROTECTION INFORMATION -

RESPIRATORY: NIOSH/MSHA-approved dust and fume respirators should be used to avoid excessive inhalation of particulates. Appropriate respirator selection depends on the magnitude of exposure.

SKIN: Protective gloves should be worn as required for welding, burning or handling operations.

EYE: Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.

VENTILATION: Local exhaust ventilation should be provided when welding, burning, sawing brazing, grinding or machining to prevent excessive dust or fume exposure.

OTHER: Provide clean coveralls or similar full-body protective clothing on a weely basis to workers exposed to Lead (Pb) concentrations above levels of 0.05 mg/M^3. (Daily changes if exposures exceed 0.2 mg/m^3)

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