



MATERIAL SAFETY DATA SHEET

Company: RANGER STEEL 1225 N LOOP WEST STE 650, HOUSTON TX 77008		Tel: (713) 633-1306		Identification: Carbon Steel HSLA Steel Alloy Steel	
Issue Date: 10/20/95 Original	Trade Name: Steel Plate		Chemical Name: Steel		Form: Plate

I. COMPONENTS

Material or Component	CAS Number	% Weight	Exposure Limits	
			OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Iron (Fe)	7439-89-6	Balance	10 (Fe ₂ O ₃ Fume)	5.0 (Fe ₂ O ₃ Fume)
Carbon (C)	7440-44-0	0.01-1.5	None listed	None Listed
Chromium (Cr)	7440-47-3	0.01-12	1.0 as Chrome	0.5 as Chrome
Manganese (Mn)	7439-96-5	0.05-2.0	5 as Manganese	5 as dust; 1 as fume
Molybdenum (Mo)	7439-98-7	0.01-1.10	15 as insoluble compounds	10 as insoluble compounds
Nickel (Ni)	7440-02-0	0.01-10	1.0 as Nickel	1.0 as Nickel
Phosphorous (P)	7723-14-0	0.15 max	0.1 as Phosphorous	0.1 as Phosphorous
Silicon (Si)	7440-21-3	0.15-2.20	None Listed	10 total dust
Sulfur (S)	7704-34-9	0.001-0.35	13 Sulfur Dioxide	5 Sulfur Dioxide
Zinc (Zn) coating	1314-13-2	10 max	5.0 as Fume	5.0 as Fume

NOTE: The above is a listing of elements in alloying steel. Various grades contain different combinations of these elements. Trace elements also possible.

II. PHYSICAL DATA

Material is (at Normal Conditions): [] Liquid Solid [X] Solid [] Gas [] Other			Appearance and Odor Gray-black with metallic lustre - odorless
Acidity/alkalinity ph = N/A	Specific Gravity (H ₂ O = 1) - 7 Solubility in water (% by weight) -N/A	Melting Point Approx. 2750°F Boiling Point N/A °F	Vapor Pressure (mm Hg at 20°C) N/A

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection NIOSH/MSHA approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Hands, Arms, and Body Use appropriate protective clothing such as welder's aprons and gloves when welding or burning. Check local codes.
Eyes and Face Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning	Other Clothing and Equipment As required

IV. EMERGENCY MEDICAL PROCEDURES

Inhalation:	Remove to fresh air; if condition continues, consult physician.
Eye Contact:	Immediately flush well with running water to remove particulate; get medical attention.
Skin Contact:	If irritation develops, remove clothing and wash well with soap and water. If condition persists, seek medical attention.
Ingestion:	If significant amounts of metal are ingested, seek medical attention.

V. HEALTH / SAFETY INFORMATION

HEALTH

Steel products in the natural state do not present an inhalation, ingestion, or contact health hazard. However, operations such as welding, burning, sawing, brazing, grinding, and possibly machining, which results in elevating the temperature of the product to or above its melting point or results in the generation of airborne particulates may present hazards. The above operations should be performed in well ventilated areas. The major exposure hazard is inhalation.

Effects of overexposure are as follows:

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

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the Conditions listed opposite the element:

Iron (iron oxide) Pulmonary effects, siderosis

Manganese Bronchitis, pneumonitis, lack of coordination

Chromium Various forms of dermatitis, inflammation and/or ulceration of upper respiratory tract, and possibly cancer of nasal passages and lungs. Based on available information, there does not appear to be any evidence that exposure to welding fume induces to human cancer.

Nickel Same as Chromium

Copper Pulmonary effects

Molybdenum Pain in joints, hands, knees and feet

Zinc None reported

Occupational Exposure Limits: See Section I

FIRE AND EXPLOSION

Flash Point N/A	Auto Ignition Temperature NA	Flammable Limits in Air Lower NA % Upper NA%	Extinguishing Media N/A
Fire and Explosion Hazards: None		Extinguishing Media: Not to be Used	

REACTIVITY

Stability [X] Stable [] Unstable	Incompatibility (Materials to Avoid) Reacts with strong acids to form hydrogen gas Keep Area Well Ventilated
Conditions to Avoid: Non-ventilated areas when cutting, welding, burning, or brazing; avoid generation of airborne dusts and fumes.	
Hazardous Decomposition Products: Metallic Oxides	

VI. ENVIRONMENTAL

Spill or Leak Procedures: NA
Special Precautions: Use good housekeeping practices to prevent accumulation of dust and to keep airborne dust to a minimum.
Waste Disposal Method: Dust, etc. - Follow federal, state, and local regulations regarding disposal.

VII. ADDITIONAL INFORMATION

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, expressed 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.