Material Safety Data Sheet

pany	Issue Date	Identification
Steel & Pipe Supply, Inc. P.O. Box 1688 Manhattan, Kansas 66502	4-15-93	Carbon Steel
Trade Name **Carbon Steel**	Phone Number 913-587-5100	
Chemical Name Steel	Form Bar, Sheet, Plate, Tubing, Structurals	

I. COMPONENTS

Material or Component	CAS Numer	% Weight	Exposure Limits	
			OSHA PEL (mg/m^3)	ACGIH TLV (mg/m^3)
Iron (Fe)	7439-89-6	Balance	10(Fe_2O_3 Fume)	5.0(Fe_2O_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

rial is (at Normal Conditions):				Appearance and Odor
☐ Liquid	■ Solid	☐ Gas	☐ Other	Gray-black with metallic lustre - odorless

Acidity/alkalinity	Specific Gravity	Melting Point	Vapor pressure
ph=NA	(H_2O = 1) -7	Approx. 2750°F	(mm Hg at 20°C)
	Solubility in water	Boiling Point	
	(% by weight) - NA	NA °F	NA

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection	Hands, Arms, and Body
NIOSH approved dust/mist/fume respirator should be used during welding or burning if OSHA PEL or TLV is exceeded.	Use appropriate protective clothing such as welders aprons and gloves when welding or burning. Check local codes.
Eyes and Face	Other Clothing and Equipment
Safety glasses should always be worn when grinding or cutting; face shields should be worn when welding or burning.	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 perfomed 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, inflamation 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	Auto Ignition Temperature	Flammable Limits in Air	Extinguishing Media
NA °F	NA °F	Lower NA % Upper NA %	NA

Fire and Explosion Hazards	Extinguishing Media Not to be Used
NONE	NA

REACTIVITY

Stability	Incompatibility (Materials to Avoid)
■ Stable ☐ Unstable	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

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