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MATERIAL SAFETY DATA SHEET

MATERIAL NAME:

Hot Rolled Carbon Steel

CURRENT ISSUE DATE:

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I. HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

COMPONENT NAME	C.A.S.#	OSHA PEL (mg/m ³)	WEIGHT %
Iron	1309-37-1	10 mg/m ³ FeO ₂ fume	Balance
Copper	7440-50-8	1 mg/m ³ dust, 0.1 mg/m ³ fume	0.50 max
Carbon	7440-44-0	N/A	0.01 - 0.50
Nickel**	7440-02-0	1 mg/m ³ dust	.060 max
Manganese	7439-96-5	CEILING 5 mg/m ³	0.25- 1.80
Chromium**	7440-47-3	1 mg/m ³ metal	.80 Max
Lead**	7439-92-1	50 micrograms/m ³	<0.01 max
Phosphorus	7723-14-0	0.1 mg/m ³	0.00 -0.10
Aluminum	7429-90-5	15 mg/m ³ total, 5 resp. Dust	0.00 - 0.08
Silicon	7440-21-3	15 mg/m ³ total, 5 resp. Dust	0.00-0.70

** Designated toxic chemicals contained in this product are subject to the reporting requirements of SECTION 313 of THE EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT OF 1986 (40 CFR372).

II. PHYSICAL DATA

APPEARANCE AND ODOR:

Gray to Silver/No Odor

BOILING POINT:

N/A

SPECIFIC GRAVITY

N/A

MELTING POINT:

2750 °F

SOLUBILITY in WATER (% by weight):

N/A

pH:

N/A

EVAPORATION RATE:

N/A

% VOLATILES by VOLUME:

N/A

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III. PRECAUTIONS/PROCEDURES (FIRE AND EXPLOSION)

FLASH POINT:

N/A

AUTO IGNITION TEMP.:

N/A

EXTINGUISHING MEDIA:

N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Temperatures above the melting point may liberate fumes of Iron, Nickel, and Zinc Oxide.

SPECIAL FIRE FIGHTING PRECAUTIONS:

NONE. Steel products in the solid state present no fire or explosion hazards.

IV. HEALTH HAZARD INFORMATION

HEALTH EFFECTS / SIGNS AND SYMPTOMS:

Steel products in their usual physical form do not pose a health hazard. Inhalation of metal dust and fume may result from further processing of the material by the user, particularly during welding, burning, grinding, and machining activities, and should be evaluated by an industrial hygienist.

ALUMINUM (Al)

Long-term excessive inhalation exposure to Al dusts or fumes has been associated with a fibrotic lung condition known as Shaver's disease; however, the evidence of this is not conclusive since affected workers were exposed to other substances (such as Silica) as well. Symptoms of this condition may include shortness of breath, cough, and fatigue.

CARBON (C)

Considered to be a nuisance dust. Excessive dust exposure may irritate the eyes and respiratory tract.

CHROMIUM (Cr)

Chromium metal and its divalent and trivalent compounds are of low toxicity. Adverse reactions on the skin may include dermatitis for a Cr sensitive individual. Long-term excessive inhalation exposure to ferro-chromium alloys may cause lung changes in workers exposed to these alloys. Exposure to Chromium metal does not give rise to pulmonary fibrosis or pneumoconiosis.

COPPER (Cu)

Excessive inhalation exposure to Cu fume may cause irritation of the eyes, nose, and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough, and weakness. Cu fume may also produce a metallic or sweet taste. Long-term excessive exposure to Cu fume may cause discoloration of the skin and hair.

IRON (Fe)

Long-term excessive inhalation exposure to iron oxide fumes or dust has been associated with a benign lung condition known as siderosis. No physical impairment of lung function has been linked to siderosis.

LEAD (Pb)

Acute or long-term excessive inhalation exposures to the fumes or dusts of inorganic Lead compounds (such as Lead Oxide) can adversely affect several organ systems including the nervous system, the digestive system, the blood and blood forming system and the renal system. Early affects are characterized by fatigue, constipation, muscle aches, abdominal pains, and decreased appetite. Later signs and symptoms can include anemia, pallor, a "lead line" on the gums, and reduced handgrip. Severe central nervous system symptoms and effects (referred to as lead encephalopathy) usually only occur after heavy and rapid lead exposures. Signs and symptoms may include headache, dizziness, convulsions, delirium, coma and possible death. Long-term exposures can also produce kidney damage.

MANGANESE (Mn)

The dusts and fumes can act as minor irritants to the eyes and respiratory tract. Acute and long-term excessive inhalation exposures to the oxide or salts of Mn may adversely affect the central nervous system, but symptoms are more likely to occur after at least 1 or 2 years of prolonged or repeated exposures. Early symptoms may include weakness in lower extremities, sleepiness, salivation, nervousness, and apathy. In more advanced stages, severe muscular coordination, impaired speech, spastic walking, mask-like facial expression and uncontrollable laughter may occur. Excessive inhalation exposures to manganese fumes have also been reported to result in metal fume fever, a flu-like syndrome with symptoms such as dizziness, chills, fever, headache, and nausea. An increased incidence of pneumonia, bronchitis, and inflammation of the lungs has been reported in some worker populations exposed excessively to manganese.

NICKEL (Ni)

Ni fumes and dusts are respiratory irritants and excessive exposure may cause severe inflammation of the lungs. Prolonged and repeated skin contact with nickel and its compound may cause an allergic dermatitis. The resulting skin rash is often referred to as "nickel itch." Ni and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids. Studies have linked nickel and certain nickel compounds to an increased incidence of cancer of the respiratory system.

PHOSPHOROUS (P)

The dust and fumes can act as minor irritants to the eyes, throat, and respiratory tract. Long-term excessive inhalation of phosphorus compounds may lead to cough, bronchitis, and pneumonia.

SILICON (Si)

This is considered to be a nuisance particulate by the American Conference of Governmental Industrial Hygienists (ACGIH)

USUAL ROUTE(S) OF ENTRY

Inhalation

MEDICAL CONDITIONS POSSIBLY AGGRAVATED

Not determined for these products. Individuals with chronic diseases or disorders should consult a physician regarding workplace exposure to ingredients.

CARCINOGEN INFORMATION

The National Toxicology Program (NTP) and The International Agency for Research on Cancer (IARC) consider (1) Chromium and certain chromium compounds to be known human carcinogens, (2) Nickel and certain nickel compounds to be probable human carcinogens.

This product contains chemicals (chromium, cadmium, lead, nickel) known to the state of California to cause cancer (22 Cal. Code Regs. § 12601 (b)(4)(A)) and chemicals (cadmium, lead) known to the State of California to cause birth defects or other reproductive harm (22 Cal. Code Regs. § 12601 (b)(4)(B)).

V. FIRST AID AND MEDICAL EMERGENCY PROCEDURES

EYE CONTACT

Treat for foreign body in the eye. Call a physician.

SKIN CONTACT

Not anticipated to pose a significant skin hazard. However, should dermatitis develop, wash affected area with mild soap and warm water. Call a physician if conditions persist.

INHALATION

Remove from excessive exposure levels. Give CPR if breathing has stopped. Get medical attention.

INGESTION

This product is not considered to be an ingestion hazard.

STABILITY

Stable under normal conditions of use, storage and transport.

HAZARDOUS POLYMERIZATION

Will not occur; however, will react with strong acid to liberate hydrogen.

VI. SPILL AND DISPOSAL PROCEDURES

SPILLS

Not applicable to steel in the solid state.

WASTE DISPOSAL METHOD

Metals may be reclaimed. Dispose of in a landfill in accordance with all local, state, and federal regulations.

VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

When engineering controls are not feasible or sufficient to lower PEL, use a NIOSH/MSHA approved dust and fume respirator to avoid excessive inhalation of particulate above PEL.

VENTILATION

Ventilation should be sufficient to maintain exposure below applicable limits,

PROTECTIVE GLOVES

Gloves should be worn as required for welding, burning, or handling operations.

EYE PROTECTION

Safety glasses or goggles as needed for welding, burning, grinding, or machine operations.

VIII. DISCLAIMER

NUCOR STEEL HERTFORD DISCLAIMS ANY RESPONSIBILITY FOR HARM TO PERSONS OR PROPERTY RESULTING FROM CONDITIONS ARISING FROM STORAGE OR HANDLING OF THIS MATERIAL OR ARTICLE BY INDIVIDUALS BEYOND THE CONTROL OF NUCOR STEEL HERTFORD OR RESULTING FROM THE USE OF THE MATERIAL OR ARTICLE IN A MANNER INCONSISTENT WITH ITS NORMAL COMMERCIAL USE.

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NITROGEN

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)			Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.		
VENTILATION		LOCAL EXHAUST (See Page 4)	SPECIAL		
See Local Exhaust		MECHANICAL (Gen.)	N/A		
			OTHER		
					N/A
PROTECTIVE GLOVES Any material					
EYE PROTECTION Safety goggles or glasses					
OTHER PROTECTIVE EQUIPMENT Safety shoes					

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Nitrogen, compressed	DOT Hazard Class: Division 2.2
DOT Shipping Label: Nonflammable Gas	I.D. No.: UN 1066

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. For additional handling recommendations, consult Compressed Gas Association's Pamphlets P-1, P-9, P-14, and Safety Bulletin SB-2.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1, P-9, P-14, and Safety Bulletin SB-2.

SPECIAL PACKAGING RECOMMENDATIONS

Nitrogen is noncorrosive and may be used with any common structural materials.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). (Continued on Page 4)

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*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.