

Material Safety Data Sheet

Product: Hot Rolled Carbon Steel

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SECTION 1 COMPOSITION / INFORMATION ON INGREDIENTS

I - Base Metal & Alloys

Component	CAS number	% weight
Iron	7439-89-6	balance
Carbon	7440-44-0	0.001 - 0.50
Manganese	7439-96-5	0 - 2.00
Silicon	7440-21-3	0 - 0.70
Chromium	7440-47-3	0 - 0.50
Nickel	7440-02-0	0 - 0.50

II - Coatings/Chemical Surface Treatment

Hot Rolled Carbon Steel surfaces may be treated with small amounts (<0.05%) of corrosion-inhibiting oil.

III - Heavy metal content and radioactive components

All commercial steel products may contain small amounts of various elements in addition to those specified. These small quantities (less than 0.1%) may exist as intentional additions, or as "trace" or "residual" elements that generally originate in the raw materials used. These elements may include: aluminum, antimony, arsenic, boron, cadmium, calcium, chromium, cobalt, columbium, copper, lead, molybdenum, nickel, silicon, tin, titanium, vanadium, and zirconium.

SECTION 2 HAZARDS IDENTIFICATION

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding, or other similar processes, potentially hazardous airborne particulate and fumes may be generated. Avoid inhalation of metal dusts and fumes. Operations having the potential to generate airborne particulates should be performed in well-ventilated areas and, if appropriate, respiratory protection and other personal protective equipment should be used. Iron or steel foreign bodies imbedded in the cornea of the eye may produce rust stains unless removed fairly promptly.

Potential Acute Health Effects

Primary entries of potentially hazardous material are through inhalation of metal particulates and fumes, and skin, if metal is coated.

Inhalation

Excessive exposure to high concentrations of dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns from many metals can produce an acute reaction known as "metal fume fever". Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last for 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese and copper have been associated with causing metal fume fever.

Skin: Skin contact with dusts may cause irritation or sensitization, possibly leading to dermatitis. Repeated or prolonged contact with oil residue may cause skin irritation, dermatitis or allergic reactions in sensitized individuals.

Eye: Excessive exposure to high concentrations of dust may cause irritation to the eyes. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly. Torching or burning operations on steel products with oil coatings may produce emissions that can be irritating to the eyes.

Ingestion: Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of dust may cause nausea or vomiting.

Potential Chronic Effects

Long-term exposures to metallic fumes and inhaled particulates have been associated with the following conditions: pneumoconiosis (siderosis); inflammation of the respiratory passages, ulcers of the mucous membranes, dermatitis; pulmonary disorders; languor, weakness, sleepiness, spastic gait, paralysis. Individual conditions are determined by long-term exposure to specific alloy components.

Individuals with chronic respiratory disorders may be more adversely affected by metallic fume and particulate exposure.

SECTION 3 FIRST- AID MEASURES

Inhalation

Remove the victim to fresh air and seek medical attention. If breathing is difficult or has stopped, administer artificial respiration or oxygen as needed. Metal fume fever may be treated with bed rest and pain/fever reducing medication.

Skin contact

Remove contaminated clothing. Wash affected areas with soap/mild detergent and water. If thermal burns occur, flush with cold water and seek medical attention.

Eye contact

Immediately flush eyes with large amounts of water. Seek medical attention if irritation persists.

Ingestion

Ingestion is not probable. However, should ingestion occur, seek medical attention.

SECTION 4 FIRE FIGHTING MEASURES

Steel products in the solid state present no fire or explosion hazard. Use extinguishing media appropriate to surrounding fire conditions.

SECTION 5 ACCIDENTAL RELEASE MEASURES

Not applicable to steel in the solid state. Particulates created from sawing, grinding, or machining, should be removed by vacuuming or wet sweeping. Collect particulate material in appropriate labeled containers and dispose of in accordance to federal, state, and local regulations.

SECTION 6 HANDLING AND STORAGE

Handling

Operations with the potential for generating high concentrations of airborne particulates and fumes should be evaluated and controlled as necessary.

Personal measures: Avoid breathing metal fumes and/or dust. Wash hands before work breaks and when finished working. Safety goggles and gloves should be worn when around fumes and particulates.

Technical measures: Supply sufficient ventilation.

Storage

Store away from acids and other incompatible materials.

SECTION 7 EXPOSURE CONTROLS / PERSONAL PROTECTION

Technical measures

Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations.

Ventilation

Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Respiratory protection

Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen.

Hand protection

Protective gloves should be worn as required for welding, burning, brazing, sawing, machining, and grinding. Wash hands and replace gloves with a new pair if they become saturated/soaked through with oil coating.

Eye protection

Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations. Contact lenses should not be worn.

Body protection

Depending upon the conditions of use and specific work situations additional protective equipment and/or clothing may be required.

SECTION 8 PHYSICAL AND CHEMICAL PROPERTIES

State: solid

Appearance: metallic gray luster

Odor: odorless

Boiling point/range: not applicable

Melting point/range: approx. 1540°C / 2800°F

Flammability: not applicable

Auto flammability: not applicable

Explosive properties: not applicable

Oxidizing properties: not applicable

Vapor pressure: not applicable

Relative density: 7.6 - 7.8gm/cc

Solubility (20°C / 68°F): not applicable

Viscosity: not applicable

SECTION 9 STABILITY AND REACTIVITY

Steel products are stable under normal storage and handling conditions.

Chemical incompatibilities: steel products will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen, and may cause explosion.

Conditions to avoid: storage or contact with strong acids, calcium hypochlorite and halogens.

Hazardous decomposition products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

SECTION 10 TOXICOLOGICAL INFORMATION

The possible presence of oil coatings should be considered when evaluating potential employee health hazards and exposures during handling and welding or other fume generating activities.

Effects after ingestion: not applicable to steel in the solid state.

Effects after inhalation: not applicable to steel in the solid state. Inhalation of the individual alloy components has been shown to cause various respiratory, pulmonary, and central nervous system effects.

Effects after eye contact: not applicable to steel in the solid state. Particulates may cause irritation. If particulates implant in the cornea, rust rings may occur around particulate. Rust rings may lead to corneal softening about the ring area.

Effects after skin contact: not applicable to steel in the solid state. Contact with particulates may cause abrasions, irritation, dermatitis, and sensitization.

LD50: No LC50 or LD50 has been established for the sheet metal as a whole. Iron LD50: 30g/kg oral (rat). Calcium LD50: No data. Carbon LD50: No data. Copper TD_{Lo}: 120ug/kg oral (human). Manganese LD50: 9g/kg oral (rat). Phosphorous LD50: No data. Silicon LD50: 3160 mg/kg oral (rat). Sulfur LD50: >8437 mg/kg oral (rat).

Carcinogenicity: The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP), and OSHA do not list steel products as carcinogens. IARC identifies welding fumes as a Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.

Mutagenicity: no data available

Teratogenicity: no data available

SECTION 11 ECOLOGICAL INFORMATION

Ecotoxicity: No data available for the product as a whole. However, individual components of the product have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife.

Environmental Fate: No data available.

Environmental Degradation: No data available.

Soil Absorption/Mobility: No data available for the product as a whole. However, individual components of the product have been found to be absorbed by plants from soil.

SECTION 12 DISPOSAL CONSIDERATION

Steel scrap and dust should be recycled when possible. Material that cannot be recycled should be disposed according local, Federal and state regulations. Do not discharge into drains or the environment.

Applicable Federal, state, and local regulations should be followed when cleaning containers for disposal material. Observe safe handling precautions.

SECTION 13 TRANSPORT INFORMATION

Hot Rolled Carbon Steel is not listed as hazardous substances under DOT Transportation Data (49 CFR 172.101).

SECTION 14 REGULATORY INFORMATION

Regulatory Information: The following listing of regulations relating to this product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): The product as a whole is not listed. However, individual components of the product are listed.

EPA Regulations:

RCRA (40CFR261): Steel scrap is not regulated as a solid waste or a hazardous waste under this act. If product dusts and/or fumes from processing operations are not recycled, they are considered to be a solid waste and may be classified as a hazardous waste depending on the toxicity characteristics of the dust as defined within 40CFR261.24.

CERCLA Hazardous Substance (40 CFR 302.4): The product as a whole is not listed. However, individual components of the product are listed: Copper (Reportable Quantity(RQ)-5000#). Manganese compounds are listed although no reportable quantity is assigned to this generic or broad class.

SARA 311/312 Codes (40CFR370): Immediate (acute) health hazard and delayed (chronic) health hazard.

SARA 313 (40CFR372.65): Manganese is subject to SARA 313 reporting requirements. Please note that if you prepackage or redistribute this product to industrial customers, SARA 313 requires that a notice be sent to those customers.

State Regulations: The product as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations.

Pennsylvania Right to Know: Contains regulated material in the following categories:

- Hazardous Substances: Calcium, Silicon, and Sulfur
- Environmental Hazards: Copper and Manganese

New Jersey Right to Know: Contains regulated material in the following categories:

- Hazardous Substance: Copper, Manganese, and Sulfur
- Special Health Hazard Substances: Calcium

California Prop. 65: The product may possibly contain trace quantities (generally much less than 0.1%) of metallic elements known to the State of California to cause cancer or reproductive toxicity. These include arsenic (inorganic), cadmium, lead and nickel.

Other Regulations: The product as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations.

WHMIS Classification (Canadian): D-2

SECTION 15 OTHER INFORMATION

This information is based on our present knowledge and is supplied for proper and safe handling of our products. The source of key data used to compile the datasheet is the data sheets of the ingredients.

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. Hohmann & Barnard shall not be held liable for any damage resulting from handling or from contact with the above product.