



USS-POSCO Industries

Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Hot Rolled Pickled and Oiled Steel
Common Name: HRPO Steel, Rolled Steel

Intended Use: Conventional manufacturing of steel-related products

Manufacturer: USS-POSCO Industries, 900 Loveridge Rd., Pittsburg, California 94565

General Information: (925) 439-6088 (8:00 am to 5:00 pm); FAX: (925) 439-6706

Off-Hour Emergency Phone Number: (925) 439-6180

Section 2 - Hazards Identification

Emergency Overview

As sold, this product is not considered hazardous under Cal-OSHA 8CCR Section 5194 and OSHA 29CFR Parts 1910.1200 Hazard Communication Standard, steel products are considered articles/mixtures due to further processing which may produce dusts and/or fumes. However, individual customer processes, (such as welding, sawing, brazing, melting, grinding, abrasive blasting, and machining) may result in the formation of fumes, dust (combustible or otherwise), and/or particulate that may present the following hazards:

OSHA Hazards

Carcinogen

Skin Sensitizer

Target Organ Effect

Target Organs:

Respiratory system.

GHS Classification:

Carcinogenicity (Category 2)

Skin Sensitization (Category 1)

Specific Target Organ Toxicity (STOT)-Repeated Exposure (Category 1)

Specific Target Organ Toxicity (STOT)-Single Exposure (Category 3)

Toxic to Reproduction (Category 2)

Acute Toxicity -Oral (Category 4)

Eye Irritation (Category 2B)

Pictogram(s):



SIGNAL WORD: WARNING**Hazard Statement(s)**

May cause an allergic skin reaction

Suspected of causing cancer

Suspected of damaging fertility or the unborn child.

Causes damage to lungs through prolonged or repeated inhalation exposure.

Harmful if swallowed.

May cause an allergic skin reaction.

May cause respiratory irritation.

Causes eye irritation.

Precautionary Statement(s)

Do not breathe dusts / fume / spray.

Wear protective gloves / protective clothing / eye protection / face protection.

Contaminated work clothing must not be allowed out of the workplace.

Use only outdoors or in well ventilated areas.

Wash thoroughly after handling.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not eat, drink or smoke when using this product.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If exposed, concerned or feel unwell: Get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin: Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Hazards Not Otherwise Classified: None Known

Unknown Acute Toxicity Statement (mixture): None Known

Section 3 - Composition / Information on Ingredients

Chemical Name, CAS number and percentages of Ingredients:

Ingredient Name	CAS Number	Percentage by wt.
Base Metal		
Iron	7439-89-6	>97.0
Alloying Elements		
Boron	7440-42-8	0.0015-0.0030
Carbon	7440-44-0	0.020-0.420
Chromium	7440-47-3	0.15 max
Copper	7440-50-8	0.20 max
Manganese	7439-96-5	0.30-1.65
Molybdenum	7439-98-7	0.060-0.160
Nickel	7440-02-0	0.20 max
Niobium	7440-03-1	0.005-0.008
Phosphorus	8049-19-2	0.020-0.040
Silicon	7440-21-3	0.050 max
Sulfur	7704-34-9	0.015-0.050
Titanium	7440-32-6	0.001-0.025
Vanadium	7440-62-2	0.001-0.010

Notes:

- * Percent weight of metallic coating is a percent of the total product.
- Hot Rolled Pickled & Oiled Steel Sheet surface may be treated with small amounts (<0.05%) of corrosion-inhibiting oil.
- Niobium (Nb) was previously known as Columbium (Cb).
- 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 4 - First Aid Measures

Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention.

Inhalation: This product as sold/shipped is not a likely form of exposure. However during further processing (welding, melting, grinding, burning, etc.), potential exposure may occur. If inhaled: Remove person to fresh air and keep comfortable for breathing.

Eye Contact: This product as sold/shipped is not a likely form of exposure. However during further processing (welding, melting, grinding, burning, etc.), potential exposure may occur. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing. Seek medical attention if irritation persists.

Skin Contact: If on skin: Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Remove and wash contaminated clothing before reuse.

Ingestion: This product as sold/shipped is not a likely form of exposure. However during further processing (welding, melting, grinding, burning, etc.), potential exposure may occur. However, if ingested, seek medical attention immediately.

Most Important Symptoms/Effects, Acute and Delayed (chronic):

Inhalation: This product as sold/shipped is not likely to present an acute or chronic health effect. Breathing or swallowing dusts or fumes from welding, grinding, sawing and burning may cause irritation of the nose, throat and digestive tract.

Eye: This product as sold/shipped is not likely to present an acute or chronic health effect.

Skin: This product as sold/shipped is not likely to present an acute or chronic health effect.

Ingestion: This product as sold/shipped is not likely to present an acute or chronic health effect. Breathing or swallowing dusts or fumes from welding, melting, grinding, sawing and burning may cause irritation of the nose, throat and digestive tract.

Immediate Medical Attention and Special Treatment: None Known

Section 5 - Fire-Fighting Measures

Suitable extinguishing media: Not applicable for this product as sold/shipped. Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None.

Hazardous Combustion Products: Not applicable for this product as sold/shipped. Metal will begin to melt around 1510°C (2750°F). This product will proceed to a liquid and will form irritating and toxic gaseous metallic oxides at extremely high temperatures.

Unusual Fire or Explosion Hazards: Not applicable for solid product. Do not use water on molten metal.

Special protective equipment and precautions for firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions: Use standard firefighting procedures and consider the hazards of other involved materials.

Section 6 - Accidental Release Measures

Spill /Leak Procedures: Not applicable for this product as sold/shipped. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120 and Cal-OSHA 8CCR 5192) and all other pertinent state and federal requirements.

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state and local regulations.

Section 7 - Handling and Storage

Handling Precautions: Not applicable for this product as sold/shipped, however further processing (welding, melting, grinding, burning, etc.) with the potential for generating high concentrations of airborne particulates or fumes should be evaluated and controlled as necessary. Practice good housekeeping.

Storage Requirements: Store away from acids and incompatible materials.

Section 8 - Exposure Controls / Personal Protection

Occupational Exposure Limits (OELs): This product as sold/shipped in its physical form does not present an inhalation, ingestion or contact hazard, nor would any of the following exposure data apply. However, operations such as high temperature (burning, welding, melting), sawing, brazing, machining and grinding may produce fumes and/or particulates. The following exposure limits are offered as reference, for an experience industrial hygienist to review.

Ingredient Name	CAS Number	Cal-OSHA PEL ¹	OSHA PEL ¹	ACGIH TLV ²
Base Metal				
Iron	7439-89-6	5 mg/m ³ - Iron oxide fume	10 mg/m ³ - Iron oxide fume	5 mg/m ³ - Iron oxide dust and fume
Alloying Elements				
Boron	7440-42-8	10 mg/m ³ - Total dust (as Boron oxide)	15 mg/m ³ - Total dust (as Boron oxide)	10 mg/m ³ - Boron oxide
Carbon	7440-44-0	10 mg/m ³ -Total dust (PNOR) ³ 5 mg/m ³ - Respirable fraction (PNOR)	15 mg/m ³ -Total dust (PNOR) ³ 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction ⁴ (PNOS) ⁵ 3 mg/m ³ - Respirable fraction ⁶ (PNOS)
Chromium	7440-47-3	0.5 mg/m ³ - Chromium metal 0.5 mg/m ³ - Cr(III) compounds (as Cr) 0.005 mg/m ³ ; 0.1 mg/m ³ (C) Cr(VI) compounds (as Cr)	1 mg/m ³ - Chromium metal	0.5 mg/m ³ - Cr metal & Cr III compounds
Niobium	7440-03-1	10 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction (PNOS) 3 mg/m ³ - Respirable fraction (PNOS)
Copper	7440-50-8	0.1 mg/m ³ - Fume (as Cu) 1 mg/m ³ - Dusts & mists (as Cu)	0.1 mg/m ³ - Fume (as Cu) 1 mg/m ³ - Dusts & mists (as Cu)	0.2 mg/m ³ - Fume 1 mg/m ³ - Dusts & mists (as Cu)
Manganese	7439-96-5	0.2 mg/m ³ (C) - Fume & Mn compounds	5 mg/m ³ (C) - Fume & Mn compounds	0.2 mg/m ³

Ingredient Name	CAS Number	Cal-OSHA PEL ¹	OSHA PEL ¹	ACGIH TLV ²
Molybdenum	7439-98-7	10 mg/m ³ - Metal & insoluble compounds (Inhalable fraction) 3 mg/m ³ - Metal & insoluble fraction (Respirable fraction)	15 mg/m ³ - Total dust (as Mo)	10 mg/m ³ - Metal & insoluble compounds (Inhalable fraction) 3 mg/m ³ - Metal & insoluble fraction (Respirable fraction)
Nickel	7440-02-0	0.5 mg/m ³ - Elemental nickel (as Ni) 0.1 mg/m ³ - Insoluble compounds (as Ni)	1 mg/m ³ - Metal & insol. compounds (as Ni)	1.5 mg/m ³ - Elemental nickel (as Ni) 0.2 mg/m ³ - Insoluble compounds (NOS) ⁷
Phosphorus	8049-19-2	10 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction (PNOS) 3 mg/m ³ - Respirable fraction (PNOS)
Silicon	7440-21-3	10 mg/m ³ - Total dust 5 mg/m ³ - Respirable fraction	15 mg/m ³ - Total dust 5 mg/m ³ - Respirable fraction	10 mg/m ³
Sulfur	7704-34-9	10 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ - Inhalable fraction (PNOS) 3 mg/m ³ - Respirable fraction (PNOS)
Titanium	7440-32-6	10 mg/m ³ - Titanium oxide 5 mg/m ³ - Respirable fraction (PNOR)	15 mg/m ³ - Total dust (PNOR) 5 mg/m ³ - Respirable fraction (PNOR)	10 mg/m ³ (Titanium dioxide)
Vanadium	7440-62-2	0.05 mg/m ³ (C) – Respirable dust and fume (as V ₂ O ₅)	0.5 mg/m ³ (C) – Respirable fraction as V ₂ O ₅ 0.1 mg/m ³ (C) – Fume (as V ₂ O ₅)	0.05 mg/m ³ - Dust or fume (as V ₂ O ₅)

Notes:

- Niobium (Nb) was previously known as Columbium (Cb).

¹ Cal-OSHA and OSHA Permissible Exposure Limits (PELs) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A (“C”) designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. A Short Term Exposure Limit (STEL) is defined as a 15-minute exposure, which should not be exceeded at any time during a workday.

² Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted.

³ PNOR (Particulates Not Otherwise Regulated). All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the PNOR limit which is the same as the inert or nuisance dust limit of 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction.

⁴ Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix D, paragraph A.

⁵ PNOS (Particulates Not Otherwise Specified). Particulates identified under the PNOS heading are “nuisance dusts” containing no asbestos and <1% crystalline silica. A TWA-TLV of 10 mg/m³ for inhalable particulate and 3 mg/m³ for respirable particulate has been recommended.

⁶ Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs and BEIs Appendix D, paragraph C.

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering Controls: Use local exhaust when welding, burning, melting, sawing, brazing, grinding or machining to prevent excessive dust or fume exposure.

Administrative Controls: Do not use compressed air to clean-up dust or particles generated by grinding, sawing, cutting or machining operations.

Biological limit values: No biological exposure limits noted for the ingredient(s).

Chemical Surface Treatments/Coatings: The possible presence of chemical surface treatments and oil coatings should be considered when evaluating potential employee health hazards and exposures during handling and welding or other fume generating activities. Removal of surface coatings should be considered prior to such activities. Repeated or prolonged contact with chemical surface treatments or oil residue may cause skin irritation, dermatitis, ulceration or allergic reactions in sensitized individuals. Torch or burning operations on steel products with surface treatments, oil coatings or acrylic films may produce emissions that can be irritating to the eyes and respiratory tract. Inhalation of hexavalent chromium compounds

may cause ulceration of the mucous membranes of the nasal septum and has been related to an increased incidence of lung cancer.

Personal protective equipment

Eye/face protection: Use of safety glasses or goggles is required for welding, burning, melting, sawing, brazing, grinding or machining operations. Depending on conditions, use of a face shield may be necessary.

Skin/Hand protection: Wear suitable protective gloves to prevent contact, cuts and abrasions.

Other Risk of contact: Wear suitable protective clothing.

Respiratory protection: Not normally needed. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Seek professional advice prior to respirator selection and use. Follow Cal-OSHA and Federal OSHA respirator regulations (8CCR Section 5144; 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.

Thermal hazards: When material is heated, wear gloves to protect against thermal burns. Thermally protective apron and long sleeves are recommended when volume of hot material is significant.

General hygiene considerations: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance and Odor: Metallic Gray, Odorless

Odor Threshold: Not applicable

Formula Weight: Not applicable

Density: 7.85 g/cc

Specific Gravity (H₂O=1, at 4 °C): 7.85

Flash Point: Not applicable

Flash Point Method: Not applicable

Burning Rate: Not applicable

Flammability Classification: Non-flammable, non-combustible

LEL: Not applicable

UEL: Not applicable

Auto-ignition Temperature: Not applicable

Water Solubility: Insoluble

Other Solubilities: Not applicable

Boiling Point: Not applicable

Viscosity: Not applicable

Refractive Index: Not applicable

Surface Tension: Not applicable

Vapor Pressure: Not applicable

Vapor Density (Air=1) : Not applicable

pH: Not applicable

% Volatile: Not applicable

Evaporation Rate: Not applicable

Freezing/Melting Point: ~ 2750 °F

Section 10 - Stability and Reactivity

Stability: Steel products are stable under normal storage and handling conditions.

Polymerization: Hazardous polymerization cannot occur.

Chemical Incompatibilities: Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

Conditions to Avoid: Storage with strong acids or calcium hypochlorite.

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 11 - Toxicological Information

Note: Hot Rolled Pickled & Oiled steel sheet, under normal conditions, does not present an inhalation, ingestion or skin hazard. However, operations such as welding, grinding, melting, sawing and burning, which may cause airborne particulates or fume formation, may present a health hazard. The possible presence of chemical surface treatments and coatings should be considered when evaluating potential employee health hazards and exposures during handling and welding or other fume generating activities.

Information on likely routes of exposure

Ingestion: Solid steel: Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting.

Inhalation: No inhalation hazard under normal conditions. Welding, burning, melting, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Typical symptoms 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.

Skin contact: Under normal conditions of intended use, this material does not pose a risk to health. Dust may irritate skin. Contact with hot material can cause thermal burns which may result in permanent damage. Repeated or prolonged contact with chemical surface treatments or oil residue may cause skin irritation, dermatitis, ulceration or allergic reactions in sensitized individuals.

Eye contact: Under normal conditions of intended use, this material does not pose a risk to health. Contact with hot material can cause thermal burns which may result in permanent damage. Grinding and sanding this product may generate dust. Dust may irritate the eyes. Torching, burning or melting operations on steel products with surface treatments, oil coatings, or acrylic films may produce emissions that can be irritating to the eyes.

Symptoms related to the physical, chemical and toxicological characteristics: Symptoms include itching, burning, redness, and tearing of eyes. Mechanical irritation of skin. Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.

Information on toxicological effects

Acute toxicity: Welding, cutting and metalizing can generate ozone. Ozone can cause irritation of eyes, nose and respiratory tract.

<u>Components</u>	<u>Species</u>	<u>Test Results</u>
Chromium (CAS 7440-47-3)		
Acute		
Oral		
LD ₅₀	Human	71 mg/kg
Iron (CAS 7439-89-6)		
Acute		
Oral		
LD ₅₀	Rat	30 g/kg
Manganese (CAS 7439-96-5)		
Acute		
Oral		
LD ₅₀	Rat	9 g/kg
Nickel (CAS 7440-02-0)		
Acute		
Oral		
LD ₅₀	Rat	>9 g/kg

Vanadium (CAS 7440-62-2)

Acute

Subcutaneous

LD50

Rabbit

59 mg/kg

Skin Corrosion / Irritation: Contact with dusts or particulates produced by cutting, welding, melting or grinding may be abrasive and mildly irritation to the skin. Particulates may cause a red-brown pigmentation of the skin following repeated exposure.

Serious Eye Damage / Irritation: Contact with dusts or particulates produced by cutting, welding, melting or grinding may be abrasive and irritation to the eyes and cause stinging, watering and redness.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat and digestive tract.

Skin Sensitization: Not expected to be a skin sensitizer.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

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 nickel compounds as Group 1 (sufficient evidence for carcinogenicity in humans) and metallic nickel as Group 2B (possibly carcinogenic for humans). NTP lists nickel as Group 2 (reasonably anticipated to be a human carcinogen). The American Conference of Governmental Industrial Hygienists (ACGIH) lists insoluble nickel compounds as A1 (confirmed human carcinogen) and elemental/metallic nickel as A5 (not suspected as a human carcinogen). NTP lists certain hexavalent chromium compounds as Group 1 (known to be carcinogenic). The American Conference of Governmental Industrial Hygienists (ACGIH) lists hexavalent chromium compounds as A1 (confirmed human carcinogen).

Mutagenicity: No data available

Teratogenicity: No data available

Reproductive Toxicity: No information available on the reproductive hazard of this material. However, manganese, a component, has demonstrated some effects on the male reproductive system. These effects are not sufficient enough to classify the material as a reproductive hazard (see below).

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Aspiration Hazard: Not applicable.

Chronic effects: Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Exposure to manganese fume/dust can affect the central nervous system (apathy, drowsiness, weakness and other chronic symptoms such as postural tremors).

Medical Conditions Aggravated by Long-Term Exposure: Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure.

Further information: The ingredients of the alloy are bound within the product and release is not expected under normal conditions. In its manufactured and shipped state, this product is considered non-hazardous. Processing may generate hazardous fumes and dusts.

Chromium CAS# 7440-47-3

The health hazards associated with exposure to chromium are dependent upon its oxidation state. The metal form (chromium as it exists in this product) is of relatively low toxicity. Long term excessive inhalation of ferrochromium dusts and fumes may cause lung changes in exposed workers. Exposure to chromium metal does not give rise to pulmonary fibrosis or pneumoconiosis. The hexavalent form is very toxic. Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of respiratory cancer.

Manganese CAS# 7439-96-5

Repeated administration of manganese resulted in limited evidence of male reproductive effects in laboratory animals. The adverse effects included decreased spermatids, spermatocytes and degeneration of seminiferous tubules. Chronic administration of certain inorganic manganese salts has resulted in limited evidence of central nervous system effects in laboratory animals. The effects included degenerative changes in basal ganglionic cells. These effects do not meet the criteria for classifying it as a reproductive toxicant.

Nickel CAS# 7440-02-0

There is limited evidence in animals for the carcinogenicity of metallic nickel, nickel monoxides, nickel hydroxides and crystalline nickel sulfides, and limited evidence in animals for other nickel compounds (e.g.- alloys, arsenides and nickel carbonyl). Occupational exposure has been associated with cancer of the lung and nasal cavity. Nickel and nickel compounds have been identified as carcinogens by NTP and IARC.

Welding Fumes

Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual component metals (see above), and welding fumes as a general category have been listed by IARC as a carcinogen. There is also limited evidence that welding fumes may cause adverse reproductive and fetal effects. Evidence is stronger where welding materials contain known reproductive toxicants.

SARA Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard.

Section 12 - Ecological Information

Ecotoxicity (aquatic & terrestrial): No Data Available for Hot Rolled Pickled & Oiled steel as sold/shipped, components greater than or equal to 1% are not classified as hazardous. However, individual components of the product when tested have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

Components		Species	Test Results
Iron (CAS 7439-89-6)			
Aquatic			
Fish	LC50	Channel catfish (<i>Ictalurus punctatus</i>)	> 500 mg/l, 96 hours

Environmental Fate: No data available.

Environmental Degradation: No data available.

Bioaccumulative potential: No data available on bioaccumulation.

Soil Absorption/Mobility: No data available for cold rolled high strength steel as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

Mobility in general: Not relevant, due to the form of the product.

Other adverse effects: None known.

Section 13 - Disposal Considerations

Disposal: Steel scrap should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable federal, state or local regulations.

Container Cleaning and Disposal: Follow applicable Federal, state and local regulations. Observe safe handling precautions.

Please note this information is for Hot Rolled Pickled & Oiled steel in its original form. Any alterations can void this information.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101): Hot rolled pickled & oiled steel is not listed as hazardous substances under 49 CFR 172.101. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Section 15 - Regulatory Information

Regulatory Information: *The following listing of regulations relating to a USS-POSCO Industries product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.*

This product and/or its constituents are subject to the following regulations:

OSHA Regulations:

Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.

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.

OSHA Specifically Regulated Substance: Chromium (VI) (8CCR 5206; 29 CFR 1910.1026).

This material has not been identified as a carcinogen by NTP, IARC or OSHA.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

The product as a whole is not listed. However, individual components of the product are listed:

Chromium (CAS 7440-47-3) LISTED

Copper (CAS 7440-50-8) LISTED

Manganese (CAS 7439-96-5) LISTED

Nickel (CAS 7440-02-0) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

- Immediate Hazard - No
- Delayed Hazard - No
- Fire Hazard - No
- Pressure Hazard - No
- Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed

SARA 311/312 Hazardous chemical

Not listed

SARA 313 (TRI reporting)

<u>Chemical name</u>	<u>CAS number</u>	<u>% by wt.</u>
Chromium	7440-47-3	1.25 max.
Copper	7440-50-8	0.60 max.
Manganese	7439-96-5	2.40 max.
Nickel	7440-02-0	0.65 max.
Phosphorus	8049-19-2	0.15 max.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Chromium (CAS 7440-47-3)

Manganese (CAS 7439-96-5)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Chromium (CAS 7440-47-3)

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.

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.

Massachusetts Right-to-Know - Substance List

Chromium (CAS 7440-47-3)

Copper (CAS 7440-50-8)

Manganese (CAS 7439-96-5)

Nickel (CAS 7440-02-0)

New Jersey Worker and Community Right-to-Know Act

Chromium (CAS 7440-47-3)

Copper (CAS 7440-50-8)

Manganese (CAS 7439-96-5)

Molybdenum (CAS 7439-98-7)

Nickel (CAS 7440-02-0)

Silicon (CAS 7440-21-3)

Sulfur (CAS 7704-34-9)

Titanium (CAS 7440-32-6)

Vanadium (CAS 7440-62-2)

Pennsylvania Worker and Community Right-to-Know Law

Chromium (CAS 7440-47-3)

Copper (CAS 7440-50-8)

Manganese (CAS 7439-96-5)

Molybdenum (CAS 7439-98-7)

Nickel (CAS 7440-02-0)

Silicon (CAS 7440-21-3)

Sulfur (CAS 7704-34-9)

Vanadium (CAS 7440-62-2)

Rhode Island Right-to-Know

Chromium (CAS 7440-47-3)
 Copper (CAS 7440-50-8)
 Manganese (CAS 7439-96-5)
 Nickel (CAS 7440-02-0)
 Phosphorus (CAS 8049-19-2)
 Vanadium (CAS 7440-62-2)

California Proposition 65 Carcinogens & Reproductive Toxicity (CRT):

⚠ WARNING: This product can expose you to chemicals including nickel (metallic), which is known to the State of California to cause cancer, and lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
 A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Other Regulations:

WHMIS Classification (Canadian): The product, **Cold Rolled High Strength Steel** is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Manganese	B4, D2A
Molybdenum	B4, D2B
Nickel	D2B
Silicon	B4

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Prepared By: USS-POSCO Industries

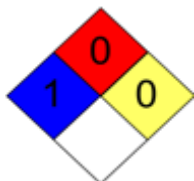
Original Issue Date: 02/10/04

Revised: 8/28/18

Hazard Rating Systems:

HMIS Code: 1*-0-0 PPE: See Section 8

* Denotes possible chronic hazard if airborne dusts or fumes are generated.

NFPA Ratings

Disclaimer: All information, recommendations, and suggestions appearing herein concerning this product are taken from sources or based upon data believed to be reliable. Although reasonable care has been taken in the preparation of this information, USS-POSCO Industries extends no warranties or guarantees, express or implied, makes no representations, and assumes no responsibility as to the accuracy, reliability or completeness of the information presented. Since the actual use of the product described herein is beyond our control, USS-POSCO Industries assumes no liability arising out of the use of the product by others. It is the user's responsibility to determine the suitability of the information presented herein, to assess the safety and toxicity of the product under their own conditions of use, and to comply with all applicable laws and regulations. Appropriate warnings and safe handling procedures should be provided to handlers and users.