

Section 1: Identification of the Material and Company

GHS Product Name:

STEEL

Recommended use of the product and restrictions on use: Manufacture of steel products

Manufacturer/Supplier IVACO Rolling Mills LP
A HEICO Company
1040 County Road 17, P.O. Box 322
L'Orignal, Ontario, Canada, K0B 1K0

Emergency Telephone No.: (613)675-4671

Section 2: Hazards Identification

Classification: Steel is not classified as hazardous in its solid form according to 29 CFR 1910, 1915 or 1926. However, certain processes such as cutting, milling, grinding, welding, melting or similar processes may result in the emission of fumes and airborne particulate that may be hazardous. This is what hazards are described below:

Hazard Statement: **Danger**

<u>GHS Classification:</u> Carcinogenicity	category 2	May cause cancer
Toxic to reproduction	category 2	May affect fertility or fetus
Repeated exposure (STOT)	category 1	May affect organs through prolonged or repeated exposure to vapors and particulate
Acute oral toxicity	category 4	Harmful if swallowed
Skin sensitization	category 1	May cause an allergic skin reaction
STOT Single exposure	category 3	May cause respiratory system irritation
Eye	category 2	Dust or fumes may cause irritation or mechanical irritation from scratching

Pictograms:



Precautionary statements:

Do not handle until all safety precautions have been read and understood
Do not breathe fumes or dust
Use proper personal protective equipment as required
Wash exposed areas thoroughly after use
Use in a well ventilated area

First Aid:

Inhalation	Remove the person to fresh air
Eyes	Flush eyes until irritation subsides
Skin	Wash thoroughly with mild soap and rinse with water
Ingestion	Dust may cause irritation to the gastric system

If any symptoms persist or if concerned, consult a physician

Section 3: Hazardous Ingredients

Hazardous Ingredient	CAS Number	Maximum Concentration % (weight/weight)	LD50/LC50 (Species and route)	Exposure Limits TLV ACGIH (mg/M3)
Iron (Fe)	7439-89-6	91-99	LD50 rat-oral:30g/kg; guinea pig-oral 20 g/kg LC50 n/av	TWA: 5 (iron oxide dust and fume as Fe) STEL: n/av
Manganese (Mn)	7439-96-5	1.0-5.0	LD50 rat oral:9g/kg; LC50 n/av	TWA: 5(dust and compounds) 1(fume) STEL: n/av (dust and compounds) 3 (fume)
Chromium (Cr)	7440-47-3	1.0-5.0	n/av	TWA: 0.5 (metal and inorganic compounds, as Cr; metal and Cr III compounds) 0.05 (water soluble Cr VI compounds, NOC 0.01) insoluble Cr VI compounds, NOC STEL: n/av
Silicon (Si)	7440-21-3	0.5-1.5	LD50 rat-oral: 3160 mg/kg LC50 n/av	TWA: 10 STEL: n/av
Carbon (C)	7440-44-0	0.1-1.0	LD50 mouse-iv: 440 mg/kg LC50 n/av	TWA: n/av STEL: n/av
Nickel (Ni)	7440-02-0	0.1-1.0	n/av	TWA: 1 (metal; insoluble compounds, as Ni) 0.1 (soluble compounds as NI). STEL: n/av
Molybdenum (Mo)	7439-98-7	0.1-1.0	n/av	TWA: 5 (soluble compounds) 10 (insoluble compounds) STEL: n/av
Sulphur (S)	7704-34-9	0.1-1.0	n/av	TWA: n/av STEL: n/av
Tin (Sn)	7440-31-5	0.1-1.0	n/av	TWA: 2 STEL: n/av
Phosphorus (P)	7723-14-0	0.1-1.0	n/av	TWA: 0.1 STEL: n/av
Copper (Cu)	7440-50-8	0.1-1.0	LD50 mouse-ip: 3500 ug/kg LC50 n/av	TWA: 0.2 (fume) 1 (dusts & mists, as Cu) STEL: n/av
Vanadium (V)	7440-62-2	0.1-1.0	LD50 rabbit-sub-cutaneous: 59 mg/kg LC50 n/av	TWA: 0.05 (respirable dust/fume, as V2O5) STEL: n/av
Aluminum (Al)	7429-90-5	<0.10	n/av	TWA: 10 (metal dust) 5 (welding fume, as Al) STEL: n/av
Titanium (Ti)	7440-32-6	<0.10	n/av	TWA: n/av STEL: n/av
Boron (B)	7440-42-8	<0.10	LD50 rat-oral: 650 mg/kg; mouse-oral: 560 mg/kg; rabbit & guinea pig - oral: 310 mg/kg LC50 n/av	TWA: n/av STEL: n/av

n/ap = not applicable
n/av = not available

Section 4: First Aid Measures

Inhalation	It is unlikely that this product can be inhaled in the supplied form. If dust is inhaled remove the person to fresh air.
Eyes	It is unlikely that this product will enter the eye (s) in the supplied form. If splinters enter the eye, seek immediate medical attention.
Skin	It is unlikely that this product will cause irritation to the skin in the supplied form. wash thoroughly with mild soap and rinse with water.
Ingestion	It is unlikely that this product will be ingested in the supplied form. Dust may cause irritation to the gastric system. In which case, seek medical attention.
Note to physician:	this product may cause sensitization by skin contact or inhalation. Treatment is symptomatic.

Section 5: Fire or Explosion Hazard

Suitable extinguishing media:	Not applicable for wire rod in supplied state. Use appropriate fire extinguisher for surrounding environment.
Hazards from combustion of product:	Do not use water on molten steel. At temperatures above melting point, toxic fumes may be emitted.
Special personal protective equipment:	Firefighters should wear self-contained NIOSH/MSHA approved breathing apparatus (SCBA) and full protective clothing
Explosion Data:	Steel wire does not present an explosion hazard under normal conditions.

Section 6: Accidental Release Measures

Emergency procedures and special protective equipment:	Not applicable for steel in its solid state. If the material has been cut, burned, ground or machined The shavings and/or chips should be swept or vacuumed Avoid breathing the dust
Environmental considerations:	Not applicable to steel in its solid form.

Section 7: Handling and storage

Precautions in handling and storing:	Not applicable in solid state. Store away from acid and strong oxidizers. Further processing of the steel generating a high concentration of dust should be tested to determine if there is potential for fire or explosion and controlled as necessary. Do not handle unless all safety precautions have been read and understood.
---	---

Section 8: Exposure Controls / Personal Protection

Exposure standards:	Refer to section 3 for TLV ACGIH, TWA and STEL of the components that might be released by further processing steel from its solid state.
Engineering controls:	Provide good general ventilation. No special ventilation is required if the product is in its supplied solid state. If further processing is required provide suitable controls to ensure concentrations of generated dust or fumes remain below current exposure limits for the elements that might be liberated.
<u>Individual Protection Measures:</u>	
Eyes:	Use safety glasses with side shields or goggles to protect against dust that might be generated by grinding, sanding or cutting steel. A face shield is recommended when welding or cutting.
Respiratory protection:	If dust levels exceed the established limits seek professional advice for proper respiratory protection. Consult section 3 for allowable limits.
Skin:	Limit skin contact. Wear appropriate protective gloves. Maintain good personal hygiene

Section 9: Physical and Chemical Properties

Physical state	Solid	Evaporation Rate	n/ap
Odor and appearance	No odor, metallic luster	Boiling Point	n/ap
Odor Threshold	n/ap	Freezing Point	1530°C (approx.)
Specific Gravity	7.86	pH	n/ap
Vapor Pressure	n/ap	Flammability	n/ap
Vapor Density	n/ap	Solubility	n/ap

Section 10: Stability and Reactivity

Conditions under which the product is Chemically unstable:	Stable
Name of substance or class of substances with which the product is incompatible:	Strong Acids or Calcium Hypochlorite
Conditions of reactivity:	When in molten state, contact with water or ice can result in violent splashes (release of flammable hydrogen gas)
Hazardous decomposition products:	Metal oxides of hazardous ingredients listed in Section 3, carbon monoxide

Section 11: Toxicological Information

Routes of Entry:	None in its supplied solid form
Skin contact:	Yes May cause skin irritation
Skin absorption:	No Not in the supplied solid form
Eye contact:	Yes May cause eye irritation if there is a high dust concentration
Inhalation:	Yes Fumes and/or dusts may be generated from further processing of the product by the user, such as welding, burning, cutting, grinding, machining, melting, crushing, screening or handling activities. The residues of this processing may cause chronic health effects
Ingestion:	No Unlikely in the supplied solid form

Effects of acute exposure to product:

Overexposure to dust or fume formed when further processing the product may be an irritant to eyes, skin and respiratory tract. Overexposure by inhalation to decomposition products may cause metal fume fever characterized by fever and chills.

Effects of chronic exposure to product:

Iron:	Siderosis
Manganese:	May adversely affect central nervous system (CNS) and respiratory system (e.g., asthma)
Chromium:	Dermatitis, skin ulcerations, allergic reactions, respiratory symptoms (e.g., asthma), lung cancer
Silicon:	Considered a nuisance particulate
Carbon:	Eye and respiratory tract irritant
Nickel:	Allergic dermatitis ("nickel itch"), lung inflammation, asthma, cancer of the respiratory system
Molybdenum:	Weight loss, diarrhea, loss of coordination, pneumoconiosis, breathing difficulties
Sulphur:	Mucous membranes irritation
Tin:	Stannosis
Phosphorus:	Cough, bronchitis, pneumonia
Copper:	Skin and hair discoloration, metallic or sweet taste
Vanadium:	Inflammation of respiratory passages, asthma, cardiac palpitations, gastrointestinal discomfort, renal damage, nervous depression
Aluminum:	Shaver's disease (fibrotic lung)
Titanium:	Mucous membranes irritation
Boron:	Conjunctivitis

Exposure Limits: Refer to Section 3,

Irritancy of Product: n/ap

Sensitization to Product: n/ap

Carcinogenicity: The National Toxicology Program (NTP) and the International Agency of Research on Cancer (IARC) list certain chromium and nickel compounds under the category "confirmed human carcinogen".

Section 11: Toxicological Information (cont'd)

Reproductive Toxicity:	n/av
Teratogenicity:	n/av
Mutagenicity:	n/av
Name of toxicologically synergistic products:	n/av

Section 12: Ecological Information

Ecotoxicity:	No ecological data available for steel in its solid state although some of its components, when processed, have been found to have a toxic effect on the environment.	
Iron	LC ₅₀ Common Carp 96 hr.	0.56 mg/l
Hexavalent Chromium	EU RAR Category 1	
	EC ₅₀ and LD ₅₀ to algae and invertebrates	< 1 mg
	LC ₅₀ Fathead minnow 96 hr.	10-100 mg/l
Nickel	LC ₅₀ Common Carp 96 hr.	1.3 mg/l
	LC ₅₀ Freshwater algae 72 hr.	0.18 mg/l
Lead	LC ₅₀ Common Carp 96 hr.	0.44 mg/l

No other known adverse effects

Section 13: Disposal Information

Disposal:	Recover and reuse the material whenever possible
Container Cleaning and Disposal:	Follow applicable State, Federal and local regulations

Section 14: Transportation Information

Steel is not regulated as a hazardous material under the U.S. DOT nor Canada TDG for shipping.

Section 15: Regulatory Information

Regulatory Information: Steel is not hazardous under OSHA Hazard Communication Standard 29 CFR 1910.1200. However, some of its individual component materials require protection to comply with applicable State, Federal and Local regulations

Additional U.S. Regulations:

SARA (Superfund Amendments and Reauthorization Act of 2006, Title III:

Section 313 Emergency Planning and Community Right to Know Act of 1986 (40 CFR 372)

Component	% by Weight
Chrome	1
Copper	1
Manganese	2.5
Nickel	1

Canada WHMIS lists components of the material:

Component	Classification
Copper	D2B, B4
Manganese	B4, D2A
Molybdenum	B4, D2B
Nickel	D2B
Silicon	B4

This is a list of some of the regulations to be followed and may not be complete. Ensure you verify compliance with all applicable Local, State or Federal Laws and Regulations

Section 16: Other Information

Prepared by: Ivaco Rolling Mills LP

Date: February 2017

Telephone: 613-675-4671

Hazardous Material Identification System (HMIS):

Health Hazards	1
Fire Hazard	0
Physical Hazard	0

H = 1 denotes possible chronic hazard if airborne dust or fumes are generated

National Fire Protection Association (NFPA)



H = 1 denotes exposure to airborne dust or fumes could cause irritation but only minor residual injury even if not treated

Disclaimer

The information contained in this material safety data sheet is based on information available to Ivaco Rolling Mills Limited Partnership ("IRM") and is believed to be accurate. Where this information is based on data developed by third parties, IRM expressly denies liability. IRM makes no warranty, expressed or implied, regarding the accuracy this information or data or the results obtained from its use. All recommendations are made without guarantee, since the conditions of use of this product are beyond IRM's control. IRM assumes no responsibility for any damages resulting from the use of this product described herein.

Please consult IRM for further information.