



Safety Data Sheet

Material Name: Steel

*** Section 1 - Chemical Product and Company Identification ***

Supplier Information

SIVACO QUÉBEC division of Sivaco Wire Group 2004 LP

A Heico Company

800, rue Ouellette

MARIEVILLE (Québec) Canada, J3M 1P5

Emergency # (450) 658-8741

Manufacturer Information

IVACO ROLLING MILLS LP

A Heico Company

Highway No. 17, P.O. Box 322

L'ORIGINAL, Ontario, Canada, K0B 1K0

Emergency # (613) 675-4671

*** Section 2 - Hazards Identification ***

Emergency Overview

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. These operations should be performed in well-ventilated areas. Avoid inhalation of metal dusts and fumes. Iron or steel foreign bodies imbedded in the cornea of the eye will produce rust stains unless removed promptly. If appropriate, respiratory protection and other personal protective equipment should be used.

Potential Health Effects: Eyes

Overexposure to dust or fume formed when further processing the product may be an irritant to eyes.

Potential Health Effects: Skin

Overexposure to dust or fume formed when further processing the product may be an irritant to skin.

Potential Health Effects: Ingestion

Not considered a likely route of exposure under normal product use conditions.

Potential Health Effects: Inhalation

Overexposure to dust or fume formed when further processing the product may be an irritant to respiratory tract.

An overexposure by inhalation to decomposition products may cause metal fume fever characterized by fever and chills.

HMIS Ratings: Health: 0 Fire: 0 HMIS Reactivity 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 3 - Composition / Information on Ingredients ***

CAS #	Component	Percent
7439-89-6	Iron	91-99
7439-96-5	Manganese	0.25-5
7440-21-3	Silicon	<2
7440-47-3	Chromium	<2
7440-02-0	Nickel	<1
7440-44-0	Carbon	<1
7439-98-7	Molybdenum	<0.5

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7440-42-8	Boron	<0.3
7429-90-5	Aluminum	<0.3
7440-32-6	Titanium	<0.3
7440-62-2	Vanadium	<0.3
7440-50-8	Copper	<0.3
7723-14-0	Phosphorus	<0.3
7440-31-5	Tin	<0.3
7704-34-9	Sulfur	<0.3

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Treat for foreign body in the eye. Seek medical attention.

First Aid: Skin

Wash with mild soap and maintain good personal hygiene. Seek medical attention if conditions persist.

First Aid: Ingestion

Seek medical attention.

First Aid: Inhalation

For overexposure to dust/fumes, remove to fresh air. Seek medical attention if necessary.

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards

See Section 9 for Flammability Properties.

None

Hazardous Combustion Products

Metal oxides of hazardous ingredients listed in Section 3, are stable unless the steel is brought to its melting point upon which certain elements can begin to thermodynamically separate from steel. In addition carbon monoxide can be exposed at this temperature.

Extinguishing Media

Use appropriate extinguishing media for surrounding fire.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective gear.

NFPA Ratings: Health: 0 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

*** Section 6 - Accidental Release Measures ***

Containment Procedures

None needed.

Clean-Up Procedures

Not applicable to metal in solid state. For spills involving finely divided particles, 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.

Evacuation Procedures

None

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Special Procedures

None

*** Section 7 - Handling and Storage ***

Handling Procedures

Use lifting and work devices with rated capacities and in accordance with manufacturers' instructions.

Storage Procedures

Not applicable.

*** Section 8 - Exposure Controls / Personal Protection ***

A: Component Exposure Limits

Manganese (7439-96-5)

ACGIH: 0.2 mg/m³ TWA
OSHA: 1 mg/m³ TWA (fume)
3 mg/m³ STEL (fume)
5 mg/m³ Ceiling
NIOSH: 1 mg/m³ TWA (fume)
3 mg/m³ STEL

Silicon (7440-21-3)

OSHA: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)

Chromium (7440-47-3)

ACGIH: 0.5 mg/m³ TWA
OSHA: 1 mg/m³ TWA
NIOSH: 0.5 mg/m³ TWA

Nickel (7440-02-0)

ACGIH: 1.5 mg/m³ TWA (inhalable fraction)
OSHA: 1 mg/m³ TWA
NIOSH: 0.015 mg/m³ TWA

Molybdenum (7439-98-7)

ACGIH: 10 mg/m³ TWA (inhalable fraction); 3 mg/m³ TWA (respirable fraction)
OSHA: 10 mg/m³ TWA

Aluminum (7429-90-5)

ACGIH: 1 mg/m³ TWA (respirable fraction)
OSHA: 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)
NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)

Tin (7440-31-5)

ACGIH: 2 mg/m³ TWA
OSHA: 2 mg/m³ TWA
NIOSH: 2 mg/m³ TWA

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Copper (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (fume)
OSHA: 0.1 mg/m³ TWA (dust, fume, mist, as Cu)
NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ TWA (fume)

Vanadium (7440-62-2)

OSHA: 0.05 mg/m³ TWA (respirable dust, as V₂O₅); 0.05 mg/m³ TWA (fume, as V₂O₅)
NIOSH: 1 mg/m³ TWA (listed under Ferrovandium dust)
3 mg/m³ STEL (listed under Ferrovandium dust)

Phosphorus (7723-14-0)

OSHA: 0.1 mg/m³ TWA
NIOSH: 0.1 mg/m³ TWA

Engineering Controls

Avoid creating dust/fumes. General or local exhaust ventilation is recommended near source when fumes or dusts are emitted.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Use safety glasses and/or other protective eyewear when exposure to eye or face hazards exists, such as flying objects, molten metal and injurious light radiation (e.g., welding and burning).

Personal Protective Equipment: Skin

Use protective gloves and/or other personal protective equipment when welding, burning or handling.

Personal Protective Equipment: Respiratory

When engineering controls are not feasible or sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator which protects against dusts and metal fume in accordance with manufacturers' instructions and use limitations.

Personal Protective Equipment: General

Eye wash fountain is recommended.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Steel Metal	Odor:	None
Physical State:	Solid	pH:	NA
Vapor Pressure:	NA	Vapor Density:	NA
Boiling Point:	2750°C	Melting Point:	1530°C
Solubility (H₂O):	Insoluble	Specific Gravity:	7.86
Evaporation Rate:	NA	VOC:	NA
Octanol/H₂O Coeff.:	ND	Flash Point:	NA
Flash Point Method:	NA	Upper Flammability Limit (UFL):	NA
Lower Flammability Limit (LFL):	NA	Burning Rate:	NA
Auto Ignition:	NA		

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

When exposed to humidity or water (rust) or air at elevated temperatures (decarburization)

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Chemical Stability: Conditions to Avoid

When in molten state, contact with water or ice can result in violent splashes (release of flammable hydrogen gas).

Incompatibility

Acids.

Hazardous Decomposition

Metal oxides of hazardous ingredients listed in Section 3, are stable unless the steel is brought to its melting point upon which certain elements can begin to thermodynamically separate from steel. In addition carbon monoxide can be exposed at this temperature.

Possibility of Hazardous Reactions

Will not occur.

*** Section 11 - Toxicological Information ***

Acute Dose Effects

A: General Product Information

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

B: Component Analysis - LD50/LC50

Iron (7439-89-6)

Oral LD50 Rat 984 mg/kg

Manganese (7439-96-5)

Oral LD50 Rat 9 g/kg

Silicon (7440-21-3)

Oral LD50 Rat 3160 mg/kg

Carbon (7440-44-0)

Oral LD50 Rat >10000 mg/kg

Nickel (7440-02-0)

Oral LD50 Rat >9000 mg/kg

Boron (7440-42-8)

Oral LD50 Rat 650 mg/kg

Sulfur (7704-34-9)

Inhalation LC50 Rat >9.23 mg/L 4 h; Oral LD50 Rat >3000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

Phosphorus (7723-14-0)

Inhalation LC50 Rat 4.3 mg/L 1 h; Oral LD50 Rat 3.03 mg/kg; Dermal LD50 Rat 100 mg/kg

Repeated Dose Effects

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

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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
Phosphorous: 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

Carcinogenicity

Component Carcinogenicity

Chromium (7440-47-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 49 [1990] (listed under Chromium and Chromium compounds); Supplement 7 [1987] (Group 3 (not classifiable))

Nickel (7440-02-0)

ACGIH: A5 - Not Suspected as a Human Carcinogen
NIOSH: potential occupational carcinogen
NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)
IARC: Monograph 49 [1990]; Supplement 7 [1987] (Group 2B (possibly carcinogenic to humans))

Aluminum (7429-90-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

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.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Iron (7439-89-6)

Test & Species		Conditions
96 Hr LC50 Morone saxatilis	13.6 mg/L [static]	
96 Hr LC50 Cyprinus carpio	0.56 mg/L [semi-static]	

Nickel (7440-02-0)

Test & Species		Conditions
96 Hr LC50 Brachydanio rerio	>100 mg/L	
96 Hr LC50 Cyprinus carpio	1.3 mg/L [semi-static]	
96 Hr LC50 Cyprinus carpio	10.4 mg/L [static]	

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72 Hr EC50 Pseudokirchneriella subcapitata	0.18 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	0.174 - 0.311 mg/L [static]
48 Hr EC50 Daphnia magna	>100 mg/L
48 Hr EC50 Daphnia magna	1 mg/L [Static]

Copper (7440-50-8)

Test & Species

96 Hr LC50 Pimephales promelas	0.0068 - 0.0156 mg/L
96 Hr LC50 Pimephales promelas	<0.3 mg/L [static]
96 Hr LC50 Pimephales promelas	0.2 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	0.052 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	1.25 mg/L [static]
96 Hr LC50 Cyprinus carpio	0.3 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	0.8 mg/L [static]
96 Hr LC50 Poecilia reticulata	0.112 mg/L [flow-through]
72 Hr EC50 Pseudokirchneriella subcapitata	0.0426 - 0.0535 mg/L [static]
96 Hr EC50 Pseudokirchneriella subcapitata	0.031 - 0.054 mg/L [static]
48 Hr EC50 Daphnia magna	0.03 mg/L [Static]

Conditions

Sulfur (7704-34-9)

Test & Species

96 Hr LC50 Brachydanio rerio	866 mg/L [static]
96 Hr LC50 Lepomis macrochirus	<14 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	>180 mg/L [static]

Conditions

Phosphorus (7723-14-0)

Test & Species

96 Hr LC50 Lepomis macrochirus	0.0017-0.0035 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	0.001-0.004 mg/L [static]
96 Hr LC50 Brachydanio rerio	>100 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	0.015-0.032 mg/L [static]
96 Hr LC50 Pimephales promelas	0.011-0.028 mg/L [static]
48 Hr EC50 Daphnia magna	0.03 mg/L
48 Hr EC50 Daphnia magna	0.025 - 0.037 mg/L [Static]

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*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

Component Waste Numbers

Chromium (7440-47-3)

RCRA: 5.0 mg/L regulatory level

Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Not Regulated

TDG Information

Shipping Name: Not Regulated

*** Section 15 - Regulatory Information ***

US Federal Regulations

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Manganese (7439-96-5)

SARA 313: 1.0 % de minimis concentration

Chromium (7440-47-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

Nickel (7440-02-0)

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

Copper (7440-50-8)

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

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Phosphorus (7723-14-0)

SARA 302: 100 lb TPQ (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)

CERCLA: 1 lb final RQ; 0.454 kg final RQ

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Iron	7439-89-6	Yes	No	No	No	No	No
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	No
Silicon	7440-21-3	No	Yes	Yes	Yes	Yes	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	No
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	No
Molybdenum	7439-98-7	Yes	Yes	Yes	Yes	Yes	No
Titanium	7440-32-6	Yes	No	No	Yes	No	No
Boron	7440-42-8	No	No	No	Yes	No	No
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	No
Tin	7440-31-5	Yes	Yes	Yes	Yes	Yes	No
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	No
Vanadium	7440-62-2	Yes	Yes	No	Yes	Yes	No
Sulfur	7704-34-9	Yes	Yes	No	Yes	Yes	No
Phosphorus	7723-14-0	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Manganese	7439-96-5	1 %
Chromium	7440-47-3	0.1 %
Nickel	7440-02-0	0.1 %

Additional Regulatory Information

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Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Iron	7439-89-6	Yes	DSL	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Silicon	7440-21-3	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Carbon	7440-44-0	Yes	DSL	EINECS
Nickel	7440-02-0	Yes	DSL	EINECS
Molybdenum	7439-98-7	Yes	DSL	EINECS
Titanium	7440-32-6	Yes	DSL	EINECS
Boron	7440-42-8	Yes	DSL	EINECS
Aluminum	7429-90-5	Yes	DSL	EINECS
Tin	7440-31-5	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Vanadium	7440-62-2	Yes	DSL	EINECS
Sulfur	7704-34-9	Yes	DSL	EINECS
Phosphorus	7723-14-0	Yes	DSL	EINECS

*** Section 16 - Other Information ***

Other Information

The information contained in this material safety data sheet is based on information available to Sivaco Québec and is believed to be accurate. Where this information is based on data developed by third parties, Sivaco Québec expressly denies liability. Sivaco Québec makes no warranty, expressed or implied, regarding the accuracy of 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 Sivaco Québec's control. Sivaco Québec assumes no responsibility for any damages resulting from the use of this product described herein. Please consult Sivaco Québec for further information.

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

End of Sheet