

# Hot-Rolled, Cold-Rolled & Coated Carbon Steels

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations



## SECTION 1: IDENTIFICATION

### 1.1. Product Identifier

**Product Form:** Mixture

**Product Name:** Hot-Rolled, Cold-Rolled & Galvanized Carbon Steel

**Additional Information:** As shipped this product is a sheet, is physiologically inert in its solid form, and does not pose a hazard as defined under the competent authority regulations. However, under normal conditions of use and installation user-generated dust may pose health and physical hazards. The hazards denoted in this SDS are for the downstream processing of these products when dust is generated .

### 1.2. Intended Use of the Product

**Use of the Substance/Mixture:** Steel Fabrication - For professional use only.

### 1.3. Name, Address, and Telephone of the Responsible Party

Feralloy Corporation  
8755 West Higgins Road  
Ste 970  
Chicago, IL 60631  
773-380-1500

[www.feralloy.com](http://www.feralloy.com)

### 1.4. Emergency Telephone Number

**Emergency Number** : 773-380-1500

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the Substance or Mixture

#### GHS-US Classification

Acute Tox. 3 (Oral)	H301
Repr. 2	H361
Aquatic Acute 1	H400
Comb. Dust	

Full text of hazard classes and H-statements : see section 16

### 2.2. Label Elements

#### GHS-US Labeling

**Hazard Pictograms (GHS-US)**



**Signal Word (GHS-US)**

: Danger

**Hazard Statements (GHS-US)**

: May form combustible dust concentrations in air.  
H301 - Toxic if swallowed.  
H361 - Suspected of damaging fertility or the unborn child.  
H400 - Very toxic to aquatic life.

**Precautionary Statements (GHS-US)**

: P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P273 - Avoid release to the environment.  
P280 - Wear protective gloves, protective clothing, and eye protection.  
P301+P310 - If swallowed: Immediately call a poison center or doctor.  
P308+P313 - If exposed or concerned: Get medical advice/attention.  
P321 - Specific treatment (see section 4 on this SDS).  
P330 - Rinse mouth.  
P391 - Collect spillage.  
P405 - Store locked up.  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

**Supplemental Information**

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Proper grounding procedures to avoid static electricity should be followed. Prevent dust accumulation (to minimize explosion hazard). Avoid generating dust.

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## 2.3. Other Hazards

During normal operation and usage, this product does not present inhalation, ingestion, or other chemical hazards. However, operations such as grinding, cutting, burning, and welding may release dusts, fumes, or vapors which may present health hazards. The health hazards described below relate to these non-routine operations, as well as exposure to component materials. Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

## 2.4. Unknown Acute Toxicity (GHS-US)

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Synonyms	Product Identifier	%	GHS US classification
Iron	Iron, elemental	(CAS-No.) 7439-89-6	90 – 100	Comb. Dust
Zinc	C.I. Pigment Metal 6 / Zinc (metallic)	(CAS-No.) 7440-66-6	≤ 100	Comb. Dust
Manganese	Manganese, elemental	(CAS-No.) 7439-96-5	0.01 – 3	Comb. Dust
Silicon	Silicon powder	(CAS-No.) 7440-21-3	≤ 2	Comb. Dust
Chromium	Chromium metal	(CAS-No.) 7440-47-3	0.01 – 1	Comb. Dust
Molybdenum	Molybdenum metal	(CAS-No.) 7439-98-7	0.01 – 0.5	Repr. 2, H361 Comb. Dust
Phosphorus elemental	Phosphorus	(CAS-No.) 7723-14-0	≤ 0.5	Pyr. Sol. 1, H250 Acute Tox. 1 (Oral), H300 Acute Tox. 2 (Dermal), H310 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
Vanadium	Vanadium, elemental	(CAS-No.) 7440-62-2	≤ 0.5	Comb. Dust
Calcium oxide	Lime / Quicklime	(CAS-No.) 1305-78-8	≤ 0.1	Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
Copper	C.I. 77400	(CAS-No.) 7440-50-8	0.04 – 0.1	Comb. Dust
Nickel	Nickel metal	(CAS-No.) 7440-02-0	0.01 – 0.1	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 3, H412 Comb. Dust
Zirconium	Zirconium, elemental	(CAS-No.) 7440-67-7	< 0.1	Flam. Sol. 1, H228 Comb. Dust
Aluminum	Aluminium metal	(CAS-No.) 7429-90-5	≤ 0.08	Comb. Dust
Nitrogen	Nitrogen gas	(CAS-No.) 7727-37-9	≤ 0.05	Simple Asphy, SIAS
Tin	Tin metal	(CAS-No.) 7440-31-5	≤ 0.05	Comb. Dust
Sulfur dioxide	Sulphur dioxide	(CAS-No.) 7446-09-5	≤ 0.04	Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318

Full text of H-phrases: see section 16

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## SECTION 4: FIRST AID MEASURES

### 4.1. Description of First-aid Measures

**First-aid Measures General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**First-aid Measures After Inhalation:** Using proper respiratory protection, move the exposed person to fresh air at once. Encourage exposed person to cough, spit out, and blow nose to remove dust. Immediately call a poison center, physician, or emergency medical service.

**First-aid Measures After Skin Contact:** Remove contaminated clothing. Wash affected area with soap and water for at least 15 minutes. Obtain medical attention if irritation/rash develops or persists. Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance. If exposed or concerned: Get medical advice/attention.

**First-aid Measures After Eye Contact:** Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for at least 15 minutes. Obtain medical attention. Removal of solidified molten material from the eyes requires medical assistance. Remove contact lenses, if present and easy to do. Continue rinsing.

**First-aid Measures After Ingestion:** Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor.

### 4.2. Most Important Symptoms and Effects Both Acute and Delayed

**Symptoms/Injuries:** Under normal conditions of use not expected to present a significant hazard. During processing or physical alteration, flakes or powder cause irritation of the respiratory tract, eyes, skin, and are harmful. Molten material may release toxic, and irritating fumes. For particulates and dust: Suspected of damaging fertility or the unborn child. Toxic if swallowed.

**Symptoms/Injuries After Inhalation:** Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. May cause an allergic reaction in sensitive individuals. Dust may be harmful or cause irritation.

**Symptoms/Injuries After Skin Contact:** May cause an allergic reaction in sensitive individuals. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns.

**Symptoms/Injuries After Eye Contact:** During metal processing: Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. Mechanical damage via flying particles and chipped slag is possible. May cause slight irritation to eyes.

**Symptoms/Injuries After Ingestion:** During metal processing: This material is toxic in small amounts orally, and can cause adverse health effects or death.

**Chronic Symptoms:** None expected under normal conditions of use. In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Suspected of damaging fertility or the unborn child. Repeated inhalation of iron oxide dust can cause siderosis a benign condition.

Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism.

Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Dust, fines, or molten metal: Use Class D extinguishing agents. As shipped: Water spray, fog, carbon dioxide (CO<sub>2</sub>), alcohol-resistant foam, or dry chemical. Use extinguishing media appropriate for surrounding fire.

**Unsuitable Extinguishing Media:** Do not use water when molten material is involved, may react violently or explosively on contact with water.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** As shipped this product is not flammable, but contains substances that are flammable solids. If significant dust is generated under normal use, the dust may exhibit these characteristics. Combustible Dust.

**Explosion Hazard:** For dust formation during installation the following applies: Dust explosion hazard in air.

**Reactivity:** Hazardous reactions will not occur under normal conditions.

### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** Use water spray or fog for cooling exposed containers.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

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**Hazardous Combustion Products:** Metal oxide fumes. Sulfur oxides. Carbon oxides (CO, CO<sub>2</sub>). Nitrogen oxides.

**Other Information:** Do not allow run-off from fire fighting to enter drains or water courses. Risk of dust explosion.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Do not get in eyes, on skin, or on clothing. Do not breathe dust. Avoid generating dust. Remove ignition sources. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Cool molten material to limit spreading.

#### 6.1.1. For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protective equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### 6.1.2. For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection.

**Emergency Procedures:** Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment. Collect spillage.

### 6.3. Methods and Materials for Containment and Cleaning Up

**For Containment:** Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Avoid generation of dust during clean-up of spills.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Vacuum clean-up is preferred. If sweeping is required use a dust suppressant. Use only non-sparking tools.

### 6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Iron oxide present in this product may become unstable at temperatures above 120°F (49°C) and slowly auto-oxide to Fe<sub>2</sub>O<sub>3</sub> to release additional heat which could be sufficient to cause combustible materials to ignite. Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations.

**Precautions for Safe Handling:** Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Avoid contact with eyes, skin and clothing. Handle empty containers with care because they may still present a hazard. Avoid creating or spreading dust. Keep away from heat, sparks, open flames, and hot surfaces. No smoking.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations. Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, lighting equipment. Proper grounding procedures to avoid static electricity should be followed.

**Storage Conditions:** Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from extremely high or low temperatures and incompatible materials. Store locked up/in a secure area.

**Incompatible Materials:** Corrosive substances in contact with metals may produce flammable hydrogen gas. Strong acids, strong bases, strong oxidizers.

### 7.3. Specific End Use(s)

Steel Fabrication - For professional use only.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

Aluminum (7429-90-5)		
USA ACGIH	ACGIH OEL TWA	1 mg/m <sup>3</sup> (respirable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA)	10 mg/m <sup>3</sup> (total dust)
		5 mg/m <sup>3</sup> (respirable dust)

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<b>USA OSHA</b>	OSHA PEL (TWA) [1]	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
<b>Calcium oxide (1305-78-8)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	2 mg/m <sup>3</sup>
<b>USA NIOSH</b>	NIOSH REL (TWA)	2 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	25 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	5 mg/m <sup>3</sup>
<b>Chromium (7440-47-3)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	0.5 mg/m <sup>3</sup> (inhalable particulate matter)
<b>USA ACGIH</b>	BEI (BLV)	0.7 µg/l Parameter: Total chromium - Medium: urine - Sampling time: end of shift at end of workweek (population based)
<b>USA NIOSH</b>	NIOSH REL (TWA)	0.5 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	250 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	1 mg/m <sup>3</sup>
<b>Copper (7440-50-8)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	0.2 mg/m <sup>3</sup> (fume)
<b>USA NIOSH</b>	NIOSH REL (TWA)	1 mg/m <sup>3</sup> (dust and mist) 0.1 mg/m <sup>3</sup> (fume)
<b>USA IDLH</b>	IDLH	100 mg/m <sup>3</sup> (dust, fume and mist)
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	0.1 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist)
<b>Manganese (7439-96-5)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	0.02 mg/m <sup>3</sup> (respirable particulate matter) 0.1 mg/m <sup>3</sup> (inhalable particulate matter)
<b>USA ACGIH</b>	ACGIH chemical category	Not Classifiable as a Human Carcinogen
<b>USA NIOSH</b>	NIOSH REL (TWA)	1 mg/m <sup>3</sup> (fume)
<b>USA NIOSH</b>	NIOSH REL (STEL)	3 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	500 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (Ceiling)	5 mg/m <sup>3</sup> (fume)
<b>Molybdenum (7439-98-7)</b>		
	Internal OEL Value(s)	5 mg/m <sup>3</sup> (Molybdenum (as Mo), Soluble Compounds)
<b>USA ACGIH</b>	ACGIH OEL TWA	10 mg/m <sup>3</sup> (inhalable particulate matter) 3 mg/m <sup>3</sup> (respirable particulate matter)
<b>USA NIOSH</b>	NIOSH REL (TWA)	5 mg/m <sup>3</sup> (Molybdenum (as Mo), Soluble Compounds)
<b>USA IDLH</b>	IDLH	5000 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	5 mg/m <sup>3</sup> (Molybdenum (as Mo), Soluble Compounds) 15 mg/m <sup>3</sup> (Molybdenum (as Mo), Insoluble Compounds (Total dust))
<b>Nickel (7440-02-0)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	1.5 mg/m <sup>3</sup> (inhalable particulate matter)
<b>USA ACGIH</b>	ACGIH chemical category	Not Suspected as a Human Carcinogen
<b>USA ACGIH</b>	BEI (BLV)	5 µg/l Parameter: Nickel - Medium: urine - Sampling time: post-shift at end of workweek (background)
<b>USA NIOSH</b>	NIOSH REL (TWA)	0.015 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	10 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	1 mg/m <sup>3</sup>
<b>Nitrogen (7727-37-9)</b>		
<b>USA ACGIH</b>	ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
<b>Silicon (7440-21-3)</b>		
<b>USA NIOSH</b>	NIOSH REL (TWA)	10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)
<b>Sulfur dioxide (7446-09-5)</b>		
<b>USA ACGIH</b>	ACGIH OEL STEL [ppm]	0.25 ppm

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<b>USA ACGIH</b>	ACGIH chemical category	Not Classifiable as a Human Carcinogen
<b>USA NIOSH</b>	NIOSH REL (TWA)	5 mg/m <sup>3</sup>
<b>USA NIOSH</b>	NIOSH REL TWA [ppm]	2 ppm
<b>USA NIOSH</b>	NIOSH REL (STEL)	13 mg/m <sup>3</sup>
<b>USA NIOSH</b>	NIOSH REL STEL [ppm]	5 ppm
<b>USA IDLH</b>	IDLH [ppm]	100 ppm
<b>USA OSHA</b>	OSHA PEL (TWA) [1]	13 mg/m <sup>3</sup>
<b>USA OSHA</b>	OSHA PEL (TWA) [2]	5 ppm
<b>Vanadium (7440-62-2)</b>		
<b>USA NIOSH</b>	NIOSH REL (TWA)	1 mg/m <sup>3</sup> (Ferrovanadium dust)
<b>USA NIOSH</b>	NIOSH REL (STEL)	3 mg/m <sup>3</sup> (Ferrovanadium dust)
<b>USA OSHA</b>	OSHA PEL (Ceiling)	0.5 mg/m <sup>3</sup> (respirable dust) 0.1 mg/m <sup>3</sup> (fume)
<b>Zirconium (7440-67-7)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	5 mg/m <sup>3</sup>
<b>USA ACGIH</b>	ACGIH OEL STEL	10 mg/m <sup>3</sup>
<b>USA ACGIH</b>	ACGIH chemical category	Not Classifiable as a Human Carcinogen
<b>USA NIOSH</b>	NIOSH REL (TWA)	5 mg/m <sup>3</sup>
<b>USA NIOSH</b>	NIOSH REL (STEL)	10 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	50 mg/m <sup>3</sup>
<b>Tin (7440-31-5)</b>		
<b>USA ACGIH</b>	ACGIH OEL TWA	2 mg/m <sup>3</sup> (inhalable particulate matter)
<b>USA NIOSH</b>	NIOSH REL (TWA)	2 mg/m <sup>3</sup>
<b>USA IDLH</b>	IDLH	100 mg/m <sup>3</sup>

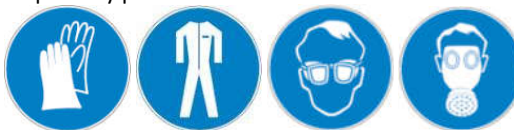
### 8.2. Exposure Controls

#### Appropriate Engineering Controls

- : Suitable eye/body wash equipment should be available in the vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof equipment. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.

#### Personal Protective Equipment

- : Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



#### Materials for Protective Clothing

##### Hand Protection

##### Eye and Face Protection

##### Skin and Body Protection

##### Respiratory Protection

- : Chemically resistant materials and fabrics.
- : Wear protective gloves.
- : Chemical safety goggles.
- : Wear suitable protective clothing.
- : If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

#### Other Information

- : When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

- Physical State** : Solid
- Appearance** : Black, grey, or silver sheet
- Odor** : No data available

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Odor Threshold	: No data available
pH	: Neutral
Evaporation Rate	: No data available
Melting Point	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20°C	: No data available
Relative Density	: No data available
Solubility	: No data available
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity	: No data available

### 9.2. Other Information

No additional information available

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Hazardous reactions will not occur under normal conditions.

### 10.2. Chemical Stability

Stable under recommended handling and storage conditions (see section 7).

### 10.3. Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to Avoid

Extremely high or low temperatures, and incompatible materials. Sparks, heat, open flame and other sources of ignition. Dust accumulation (to minimize explosion hazard).

### 10.5. Incompatible Materials

Corrosive substances in contact with metals may produce flammable hydrogen gas. Strong acids, strong bases, strong oxidizers.

### 10.6. Hazardous Decomposition Products

Thermal decomposition may produce: Sulfur oxides. Carbon oxides (CO, CO<sub>2</sub>). Nitrogen oxides. Metal oxides.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on Toxicological Effects

Acute Toxicity (Oral): Toxic if swallowed.

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

Hot-Rolled, Cold-Rolled & Galvanized Carbon Steel	
ATE (Oral)	99.94 mg/kg body weight
Iron (7439-89-6)	
LD50 Oral Rat	98.6 g/kg
Aluminum (7429-90-5)	
LC50 Inhalation Rat	> 0.888 mg/l/4h
Calcium oxide (1305-78-8)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rabbit	> 2500 mg/kg
LC50 Inhalation Rat	> 6.04 mg/l/4h
Chromium (7440-47-3)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 5.41 mg/l/4h
Copper (7440-50-8)	
LC50 Inhalation Rat	> 5.11 mg/l/4h
Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg

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LC50 Inhalation Rat	> 5.14 mg/l/4h
<b>Molybdenum (7439-98-7)</b>	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 3.92 mg/l/4h
<b>Nickel (7440-02-0)</b>	
LD50 Oral Rat	> 9000 mg/kg
LC50 Inhalation Rat	> 10.2 mg/l (Exposure time: 1 h)
<b>Phosphorus elemental (7723-14-0)</b>	
LD50 Oral Rat	> 15000 mg/kg
LC50 Inhalation Rat	4.3 mg/l (Exposure time: 1 h)
ATE (Oral)	0.50 mg/kg body weight
<b>Silicon (7440-21-3)</b>	
LD50 Oral Rat	3160 mg/kg
<b>Sulfur dioxide (7446-09-5)</b>	
LC50 Inhalation Rat	965 – 1168 ppm/4h
<b>Vanadium (7440-62-2)</b>	
LD50 Oral Rat	> 2000 mg/kg
<b>Zinc (7440-66-6)</b>	
LD50 Oral Rat	> 2000 mg/kg
<b>Tin (7440-31-5)</b>	
LD50 Dermal Rat	> 2000 mg/kg

**Skin Corrosion/Irritation:** Not classified

**pH:** Neutral

**Serious Eye Damage/Irritation:** Not classified

**pH:** Neutral

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Carcinogenicity:** Not classified

<b>Chromium (7440-47-3)</b>	
IARC group	3
<b>Nickel (7440-02-0)</b>	
IARC group	2B
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
<b>Sulfur dioxide (7446-09-5)</b>	
IARC group	3

**Reproductive Toxicity:** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur. . May cause an allergic reaction in sensitive individuals. Dust may be harmful or cause irritation.

**Symptoms/Injuries After Skin Contact:** May cause an allergic reaction in sensitive individuals. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns.

**Symptoms/Injuries After Eye Contact:** During metal processing. Dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. . Mechanical damage via flying particles and chipped slag is possible. May cause slight irritation to eyes.

**Symptoms/Injuries After Ingestion:** This material is toxic in small amounts orally, and can cause adverse health effects or death.

. ----- TO BE COMPLETED -----



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**Chronic Symptoms:** None expected under normal conditions of use. In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Suspected of damaging fertility or the unborn child. Repeated inhalation of iron oxide dust can cause siderosis a benign condition.  
Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism.  
Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

**Ecology - General** : Very toxic to aquatic life.

<b>Calcium oxide (1305-78-8)</b>	
LC50 Fish 1	50.6 mg/l
<b>Manganese (7439-96-5)</b>	
LC50 Fish 1	> 3.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static])
NOEC Chronic Fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)
<b>Molybdenum (7439-98-7)</b>	
LC50 Fish 1	800 – 1320 mg/l
<b>Nickel (7440-02-0)</b>	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 - Crustacea [1]	100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	15.3 mg/l
EC50 - Crustacea [2]	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
<b>Phosphorus elemental (7723-14-0)</b>	
LC50 Fish 1	33.2 mg/l Red Phosphorous (Exposure time: 96 h - Species Danio rerio [static])
EC50 - Crustacea [1]	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	0.001 – 0.004 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 - Crustacea [2]	0.025 – 0.037 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

### 12.2. Persistence and Degradability

<b>Hot-Rolled, Cold-Rolled &amp; Galvanized Carbon Steel</b>	
Persistence and Degradability	Not established.
<b>Copper (7440-50-8)</b>	
Persistence and Degradability	Not readily biodegradable.

### 12.3. Bioaccumulative Potential

<b>Hot-Rolled, Cold-Rolled &amp; Galvanized Carbon Steel</b>	
Bioaccumulative Potential	Not established.
<b>Calcium oxide (1305-78-8)</b>	
BCF Fish 1	(no bioaccumulation)
<b>Phosphorus elemental (7723-14-0)</b>	
BCF Fish 1	< 200
<b>Sulfur dioxide (7446-09-5)</b>	
BCF Fish 1	(no bioaccumulation expected)

### 12.4. Mobility in Soil

No additional information available

### 12.5. Other Adverse Effects

**Other Information** : Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste Treatment Methods

**Waste Disposal Recommendations:** Dispose of contents/container in accordance with local, regional, national, and international regulations.

**Additional Information:** Container may remain hazardous when empty. Continue to observe all precautions.

**Ecology - Waste Materials:** Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

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## SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

### 14.1. In Accordance with DOT

Not regulated for transport

### 14.2. In Accordance with IMDG

Not regulated for transport

### 14.3. In Accordance with IATA

Not regulated for transport

## SECTION 15: REGULATORY INFORMATION

### 15.1. US Federal Regulations

<b>Hot-Rolled, Cold-Rolled &amp; Galvanized Carbon Steel</b>	
<b>SARA Section 311/312 Hazard Classes</b>	Health hazard - Reproductive toxicity Health hazard - Specific target organ toxicity (single or repeated exposure) Health hazard - Respiratory or skin sensitization Health hazard - Carcinogenicity Health hazard - Acute toxicity (any route of exposure) Physical hazard - Combustible dust
<b>Iron (7439-89-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Aluminum (7429-90-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1 % (dust or fume only)
<b>Calcium oxide (1305-78-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Chromium (7440-47-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>CERCLA RQ</b>	5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
<b>SARA Section 313 - Emission Reporting</b>	1 %
<b>Copper (7440-50-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>CERCLA RQ</b>	5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
<b>SARA Section 313 - Emission Reporting</b>	1 %
<b>Manganese (7439-96-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1 %
<b>Molybdenum (7439-98-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Nickel (7440-02-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>CERCLA RQ</b>	100 lb (only applicable if particles are < 100 µm)
<b>SARA Section 313 - Emission Reporting</b>	0.1 %
<b>Nitrogen (7727-37-9)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	

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<b>Phosphorus elemental (7723-14-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Subject to reporting requirements of United States SARA Section 313	
<b>CERCLA RQ</b>	1 lb
<b>SARA Section 302 Threshold Planning Quantity (TPQ)</b>	100 lb (this material is a reactive solid, the TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)
<b>SARA Section 313 - Emission Reporting</b>	1 % (yellow or white)
<b>Silicon (7440-21-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Sulfur dioxide (7446-09-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Listed on the United States SARA Section 302	
<b>SARA Section 302 Threshold Planning Quantity (TPQ)</b>	500 lb
<b>Vanadium (7440-62-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>SARA Section 313 - Emission Reporting</b>	1 % (except when contained in an alloy)
<b>Zinc (7440-66-6)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
<b>CERCLA RQ</b>	454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
<b>SARA Section 313 - Emission Reporting</b>	1 % (dust or fume only)
<b>Zirconium (7440-67-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Tin (7440-31-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	

### 15.2. US State Regulations

<b>Aluminum (7429-90-5)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Calcium oxide (1305-78-8)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Chromium (7440-47-3)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Copper (7440-50-8)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Manganese (7439-96-5)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

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U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Molybdenum (7439-98-7)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Nickel (7440-02-0)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Nitrogen (7727-37-9)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Phosphorus elemental (7723-14-0)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Silicon (7440-21-3)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Sulfur dioxide (7446-09-5)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Vanadium (7440-62-2)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Zinc (7440-66-6)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
<b>Zirconium (7440-67-7)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Tin (7440-31-5)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List

### California Proposition 65



**WARNING:** This product can expose you to Nickel, which is known to the State of California to cause cancer, and Sulfur dioxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Chemical Name (CAS No.)	Carcinogenicity	Developmental Toxicity	Female Reproductive Toxicity	Male Reproductive Toxicity
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Nickel (7440-02-0)	X		
Sulfur dioxide (7446-09-5)		X	

### SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Date of Preparation or Latest Revision** : 11/01/2021  
**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

#### GHS Full Text Phrases:

Acute Tox. 1 (Oral)	Acute toxicity (oral) Category 1
Acute Tox. 2 (Dermal)	Acute toxicity (dermal) Category 2
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Flam. Sol. 1	Flammable solids Category 1
Pyr. Sol. 1	Pyrophoric solids Category 1
Repr. 2	Reproductive toxicity Category 2
Simple Asphy	Simple Asphyxiant
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization, Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H228	Flammable solid
H250	Catches fire spontaneously if exposed to air
H300	Fatal if swallowed
H301	Toxic if swallowed
H310	Fatal in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H331	Toxic if inhaled
H332	Harmful if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H402	Harmful to aquatic life
H412	Harmful to aquatic life with long lasting effects

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

SDS US (GHS HazCom)