



Stainless Steel Alloys

Safety Data Sheet

Date of issue: 8/10/22 Version: 2.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Stainless Steels

Synonyms: Bar, Sheet, Plate, Pipe, Tubing, and Structural

1.2. Intended Use of the Product

Solid product, various forms and uses

1.3. Name, Address, Telephone of the Responsible Party

Alaskan Copper Companies, Inc.

27402 72nd Avenue South

Kent, Washington 98032

T (206) 623-5800; (800) 552-7661

acbsea@alaskancopper.com

http://alaskancopper.com

1.4. Emergency Telephone Number

Emergency Number: (800) 552-7661

In the case of fire, explosion or spill, call 911

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US classification Not classified

2.2. Label Elements

GHS-US Labeling

No labeling applicable

2.3. Other Hazards

Solid metal products are generally classified as "articles" and do not constitute hazards in solid form. The materials present in this product in their powdered forms present aquatic toxicity to the environment, pyrophoricity, flammability, self-heating capabilities, carcinogenicity, water reactivity, and acute toxicity. When processed or where dust is generated a combustible dust hazard may be present. Avoid generating dust, generating sparks, ignition sources, and take all precautions. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath. Under normal use and handling of the solid form of this material there are few health hazards. Cutting, welding, melting, grinding etc. of these materials will produce dust, fume or particulate containing the component elements of these materials. Exposure to the dust, fume or particulate of these materials may present significant health hazards. Exposure to dust or fume may cause irritation of the eyes, skin and respiratory tract. Fine particulates dispersed in air may present an explosion hazard.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

*** GHS - Globally Harmonized System of Classification and Labeling of Chemicals**

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Mixture

Name	Product Identifier	% (w/w)	GHS-US classification
Iron	(CAS No) 7439-89-6	45-90	Comb. Dust Flam. Sol. 1, H228 Self-heat. 1, H251
Nickel	(CAS No) 7440-02-0	46	Comb. Dust SkinSens. 1, H317 Carc. 2, H351 STOT RE 1, H351 Aquatic Chronic 3, H412
Chromium	(CAS No) 7440-47-3	10-30	Comb. Dust
Manganese	(CAS No) 7439-96-5	15	Comb. Dust
Molybdenum	(CAS No) 7439-98-7	7	Comb. Dust
Silicon	(CAS No) 7440-21-3	6.5	Comb. Dust
Copper	(CAS No) 7440-50-8	5	Comb. Dust Acute Tox 4 (Oral), H302 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Carc. 18, H350 Repr. 2, H361 Aquatic Chronic 1, H410
Cobalt	(CAS No) 7440-48-4	0.25	Comb. Dust Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319 Resp. Sens. 1B, H334 Skin Sens. 1, H317 Carc. 1B, H350 Repr. 2, H361 Aquatic Chronic 1, H410
Tungsten	(CAS No) 7440-48-4	4	Comb. Dust Flam. Sol. 1, H228 Self-heat. 2, H261
Aluminum	(CAS No) 7429-90-5	0.5	Comb. Dust Flam. Sol. 1, H228 Water-react. 2, H261
Carbon	(CAS No) 7440-44-0	2	Comb. Dust
Vanadium	(CAS No) 7440-62-2	1.1	Comb. Dust
Tantalum	(CAS No) 7440-25-7	1	Comb. Dust Flam. Sol. 1, H228
Niobium	(CAS No) 7440-03-1	1	Comb. Dust Flam. Sol. 1, H228
Lead	(CAS No) 7439-92-1	<0.1	Carc. 1B, H350 Repr. !A, H360 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Paraffin oils	(CAS No) 8012-95-1	<0.1	Acute Tox. 4 (inhalation;dust;mist) Asp. Tox. 1, H304 Aquatic Chronic 4, H413
Nitrogen	(CAS No) 7727-37-9	0.06	Simple Asphy, H380 Compressed gas, H280

Sulfur	(CAS No) 7704-34-9	0.06	Comb. Dust Skin Irrit. 2, H315 Aquatic Acute 3, H402
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Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

General: IF exposed or concerned: Get medical advice/attention. Never give anything by mouth to an unconscious person. **Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Keep at rest and in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Wash with plenty of soap and water. Wash contaminated clothing before reuse. Obtain medical attention if irritation persists.

Eye Contact: Removal of solidified molten material from the eyes requires medical assistance. Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Welding, cutting, or processing this material may release dust or fumes that are hazardous.

Inhalation: Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Skin Contact: May cause an allergic skin reaction. Dust from physical alteration of this product causes skin irritation. Causes severe skin burns. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.

Eye Contact: Dust may cause mechanical irritation to eyes, nose, throat, and lungs.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In solid form, no hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: **Aluminum:** Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. **Inhalation of Nickel compounds** has been shown in studies to provide an increased incidence of cancer of the nasal cavity, lung and possibly larynx in nickel refinery workers. **Nickel:** May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. **Copper:** Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure. **Silicon:** Can cause chronic bronchitis and narrowing of the airways. **Zinc:** Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. **Silver:** Chronic skin contact or ingestion of silver dust, salts or fume can result in a condition known as Argyria, a condition with bluish pigmentation of the skin and eyes. **Inhalation of iron oxide fumes** undergoing decomposition may cause irritation and flu-like symptoms, otherwise iron oxide is not hazardous. **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. **Chromium:** Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have

been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed If exposed or concerned, get medical advice and attention.

SECTION 5 FIRE FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Dry sand; Class D Extinguishing Agent (for metal powder fires).

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. 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: A non-combustible material, not considered flammable but will melt above 1470F (800C).

Explosion Hazard: In molten state: reacts violently with water (moisture).

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Exercise caution when fighting any chemical fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. **Hazardous Combustion Products:** Oxides of tin. Oxides of nickel. Oxides of copper. Oxides of silicone and carbon. Oxides of lead. Oxides of aluminum. Oxides of silver.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not handle until all safety precautions have been read and understood. Do not breathe vapors from molten product.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain and collect as any solid.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely.

For particulates and dust: Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see item 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: May generate flammable/explosive dusts or turnings when brushed, machined or ground. Use care during processing to minimize generation of dust. Where excessive dust may result, use approved respiratory protection

equipment. Heating of product can release toxic or irritating fumes; ensure proper ventilation is employed, proper precautions are enforced, and applicable regulations are followed. Inhalation of fumes may cause metal fume fever.

Precautions for Safe Handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fumes.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a dry, cool and well-ventilated place.

Incompatible Materials: Strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Water, humidity. Corrosive substances in contact with metals may produce flammable hydrogen gas.

7.3. Specific End Use(s)

No use is specified.

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), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Chromium (7440-47-3)		
USA ACGIH	ACGIH TWA (mg/m)	0.5 mg/m
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m)	1 mg/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	0.5 mg/m
USA IDLH	US IDLH (mg/m)	250 mg/m
Alberta	OEL TWA (mg/m)	0.5 mg/m
British Columbia	OEL TWA (mg/m)	0.5 mg/m
Manitoba	OEL TWA (mg/m)	0.5 mg/m
New Brunswick	OEL TWA (mg/m)	0.5 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	0.5 mg/m
Nova Scotia	OEL TWA (mg/m)	0.5 mg/m
Nunavut	OEL STEL (mg/m)	1.5 mg/m
Nunavut	OEL TWA (mg/m)	0.5 mg/m
Northwest Territories	OEL STEL (mg/m)	1.5 mg/m (metal)
Northwest Territories	OEL TWA (mg/m)	0.5 mg/m (metal)
Ontario	OEL TWA (mg/m)	0.5 mg/m
Prince Edward Island	OEL TWA (mg/m)	0.5 mg/m
Québec	VEMP (mg/m)	0.5 mg/m
Saskatchewan	OEL STEL (mg/m)	1.5 mg/m
Saskatchewan	OEL TWA (mg/m)	0.5 mg/m
Yukon	OEL STEL (mg/m)	3.0 mg/m
Yukon	OEL TWA (mg/m)	0.1 mg/m
Nickel (7440-02-0)		
USA ACGIH	ACGIH TWA (mg/m)	1.5 mg/m (inhalable fraction)

USA ACGIH	ACGIH chemical category	Not Suspected as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m)	1 mg/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	0.015 mg/m
USA IDLH	US IDLH (mg/m)	10 mg/m
Alberta	OEL TWA (mg/m)	1.5 mg/m
British Columbia	OEL TWA (mg/m)	0.05 mg/m
Manitoba	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
New Brunswick	OEL TWA (mg/m)	1 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
Nova Scotia	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
Nunavut	OEL STEL (mg/m)	2 mg/m
Nunavut	OEL TWA (mg/m)	1 mg/m
Northwest Territories	OEL STEL (mg/m)	3 mg/m (inhalable fraction)
Northwest Territories	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
Ontario	OEL TWA (mg/m)	1 mg/m (inhalable)
Prince Edward Island	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
Québec	VEMP (mg/m)	1 mg/m
Saskatchewan	OEL STEL (mg/m)	3 mg/m (inhalable fraction)
Saskatchewan	OEL TWA (mg/m)	1.5 mg/m (inhalable fraction)
Yukon	OEL STEL (mg/m)	3 mg/m
Yukon	OEL TWA (mg/m)	1 mg/m
Manganese (7439-96-5)		
USA ACGIH	ACGIH TWA (mg/m)	0.02 mg/m (respirable fraction) 0.1 mg/m (inhalable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (Ceiling) (mg/m)	5 mg/m (fume)
USA NIOSH	NIOSH REL (TWA) (mg/m)	1 mg/m (fume)
USA NIOSH	NIOSH REL (STEL) (mg/m)	3 mg/m
USA IDLH	US IDLH (mg/m)	500 mg/m
Alberta	OEL TWA (mg/m)	0.2 mg/m
British Columbia	OEL TWA (mg/m)	0.2 mg/m
Manitoba	OEL TWA (mg/m)	0.02 mg/m (respirable fraction) 0.1 mg/m (inhalable fraction)
New Brunswick	OEL TWA (mg/m)	0.2 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	0.02 mg/m (respirable fraction) 0.1 mg/m (inhalable fraction)
Nova Scotia	OEL TWA (mg/m)	0.02 mg/m (respirable fraction) 0.1 mg/m (inhalable fraction)
Nunavut	OEL Ceiling (mg/m)	5 mg/m
Nunavut	OEL STEL (mg/m)	3 mg/m (fume)
Nunavut	OEL TWA (mg/m)	1 mg/m (fume)
Northwest Territories	OEL STEL (mg/m)	0.6 mg/m
Northwest Territories	OEL TWA (mg/m)	0.2 mg/m
Ontario	OEL TWA (mg/m)	0.2 mg/m

Prince Edward Island	OEL TWA (mg/m)	0.02 mg/m (respirable fraction) 0.1 mg/m (inhalable fraction)
Québec	VEMP (mg/m)	0.2 mg/m (total dust and fume)
Saskatchewan	OEL STEL (mg/m)	0.6 mg/m
Saskatchewan	OEL TWA (mg/m)	0.2 mg/m
Yukon	OEL Ceiling (mg/m)	5 mg/m
Molybdenum (7439-98-7)		
	Internal TWA (mg/m ³)	5 mg/m (Molybdenum (as Mo), Soluble Compounds)
USA ACGIH	ACGIH TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
USA OSHA	OSHA PEL (TWA) (mg/m)	5 mg/m (Molybdenum (as Mo), Soluble Compounds) 15 mg/m (Molybdenum (as Mo), Insoluble Compounds) (Total Dust)
USA NIOSH	NIOSH REL (TWA) (mg/m)	5 mg/m (Molybdenum (as Mo), Soluble Compounds)
USA IDLH	US IDLH (mg/m)	5000 mg/m
Alberta	OEL TWA (mg/m)	10 mg/m (total) 3 mg/m (respirable)
British Columbia	OEL TWA (mg/m)	3 mg/m (respirable) 10 mg/m (inhalable)
Manitoba	OEL TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
Newfoundland & Labrador	OEL TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
Nova Scotia	OEL TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
Northwest Territories	OEL STEL (mg/m)	20 mg/m (metal-inhalable fraction) 6 mg/m (metal-respirable fraction)
Northwest Territories	OEL TWA (mg/m)	10 mg/m (metal-inhalable fraction) 3 mg/m (metal-respirable fraction)
Ontario	OEL TWA (mg/m)	10 mg/m (metal-inhalable) 3 mg/m (metal-respirable)
Prince Edward Island	OEL TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
Saskatchewan	OEL STEL (mg/m)	20 mg/m (inhalable fraction) 6 mg/m (respirable fraction)
Saskatchewan	OEL TWA (mg/m)	10 mg/m (inhalable fraction) 3 mg/m (respirable fraction)
Silicon (7440-21-3)		
USA OSHA	OSHA PEL (TWA) (mg/m)	15 mg/m (total dust) 5 mg/m (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m)	10 mg/m (total dust) 5 mg/m (respirable dust)
British Columbia	OEL TWA (mg/m)	10 mg/m (total dust) 3 mg/m (respirable fraction)
New Brunswick	OEL TWA (mg/m)	10 mg/m
Nunavut	OEL TWA (mg/m)	5 mg/m (respirable mass) 10 mg/m (total mass)

Northwest Territories	OEL STEL (mg/m)	20 mg/m
Northwest Territories	OEL TWA (mg/m)	10 mg/m
Québec	VEMP (mg/m)	10 mg/m (containing no Asbestos and <1% Crystalline silica-total dust)
Saskatchewan	OEL STEL (mg/m)	20 mg/m
Saskatchewan	OEL TWA (mg/m)	10 mg/m
Yukon	OEL STEL (mg/m)	20 mg/m
Yukon	OEL TWA (mg/m)	30 mppcf 10 mg/m Tungsten (7440-33-7)
USA ACGIH	ACGIH TWA (mg/m)	5 mg/m
USA ACGIH	ACGIH STEL (mg/m)	10 mg/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	5 mg/m
USA NIOSH	NIOSH REL (STEL) (mg/m)	10 mg/m
Alberta	OEL STEL (mg/m)	10 mg/m
Alberta	OEL TWA (mg/m)	5 mg/m
British Columbia	OEL STEL (mg/m)	10 mg/m
British Columbia	OEL TWA (mg/m)	5 mg/m
Manitoba	OEL STEL (mg/m)	10 mg/m
Manitoba	OEL TWA (mg/m)	5 mg/m
Newfoundland & Labrador	OEL STEL (mg/m)	10 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	5 mg/m
Nova Scotia	OEL STEL (mg/m)	10 mg/m
Nova Scotia	OEL TWA (mg/m)	5 mg/m
Nunavut	OEL STEL (mg/m)	10 mg/m
Nunavut	OEL TWA (mg/m)	5 mg/m
Northwest Territories	OEL STEL (mg/m)	10 mg/m
Northwest Territories	OEL TWA (mg/m)	5 mg/m
Ontario	OEL STEL (mg/m)	10 mg/m
Ontario	OEL TWA (mg/m)	5 mg/m
Prince Edward Island	OEL STEL (mg/m)	10 mg/m
Prince Edward Island	OEL TWA (mg/m)	5 mg/m
Saskatchewan	OEL STEL (mg/m)	10 mg/m
Saskatchewan	OEL TWA (mg/m)	5 mg/m
Yukon	OEL STEL (mg/m)	10 mg/m
Yukon	OEL TWA (mg/m)	5 mg/m
Aluminum (7429-90-5)		
USA ACGIH	ACGIH TWA (mg/m)	1 mg/m (respirable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m)	15 mg/m (total dust) 5 mg/m (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m)	10 mg/m (total dust) 5 mg/m (respirable dust)
Alberta	OEL TWA (mg/m)	10 mg/m (dust)
British Columbia	OEL TWA (mg/m)	1.0 mg/m (respirable)
Manitoba	OEL TWA (mg/m)	1 mg/m (respirable fraction)

New Brunswick	OEL TWA (mg/m)	10 mg/m (metal dust)
Newfoundland & Labrador	OEL TWA (mg/m)	1 mg/m (respirable fraction)
Nova Scotia	OEL TWA (mg/m)	1 mg/m (respirable fraction)
Nunavut	OEL STEL (mg/m)	20 mg/m
Nunavut	OEL TWA (mg/m)	10 mg/m
Northwest Territories	OEL STEL (mg/m)	20 mg/m (metal-dust)
Northwest Territories	OEL TWA (mg/m)	10 mg/m (metal-dust)
Ontario	OEL TWA (mg/m)	1 mg/m (respirable)
Prince Edward Island	OEL TWA (mg/m)	1 mg/m (respirable fraction)
Québec	VEMP (mg/m)	10 mg/m
Saskatchewan	OEL STEL (mg/m)	20 mg/m (dust)
Saskatchewan	OEL TWA (mg/m)	10 mg/m (dust)
Copper (7440-50-8)		
USA ACGIH	ACGIH TWA (mg/m)	0.2 mg/m (fume)
USA OSHA	OSHA PEL (TWA) (mg/m)	0.1 mg/m (fume) 1 mg/m (dust and mist)
USA NIOSH	NIOSH REL (TWA) (mg/m)	1 mg/m (dust and mist) 0.1 mg/m (fume)
USA IDLH	US IDLH (mg/m)	100 mg/m (dust, fume and mist)
Alberta	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
British Columbia	OEL TWA (mg/m)	1 mg/m (dust and mist) 0.2 mg/m (fume)
Manitoba	OEL TWA (mg/m)	0.2 mg/m (fume)
New Brunswick	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Newfoundland & Labrador	OEL TWA (mg/m)	0.2 mg/m (fume)
Nova Scotia	OEL TWA (mg/m)	0.2 mg/m (fume)
Nunavut	OEL STEL (mg/m)	0.6 mg/m (fume) 2 mg/m (dust and mist)
Nunavut	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Northwest Territories	OEL STEL (mg/m)	3 mg/m (dust and mist) 0.6 mg/m (fume)
Northwest Territories	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Ontario	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Prince Edward Island	OEL TWA (mg/m)	0.2 mg/m (fume)
Québec	VEMP (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Saskatchewan	OEL STEL (mg/m)	0.6 mg/m (fume) 3 mg/m (dust and mist)
Saskatchewan	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)
Yukon	OEL STEL (mg/m)	0.2 mg/m (fume) 2 mg/m (dust and mist)
Yukon	OEL TWA (mg/m)	0.2 mg/m (fume) 1 mg/m (dust and mist)

Nitrogen (7727-37-9)		
USA ACGIH	ACGIH chemical category	Simple asphyxiant See Appendix F: Minimal Oxygen Content
Sulfur (7704-34-9)		
Alberta	OEL TWA (mg/m)	10 mg/m
Vanadium (7440-62-2)		
USA OSHA	OSHA PEL (Ceiling) (mg/m)	0.5 mg/m (respirable dust) 0.1 mg/m (fume)
USA NIOSH	NIOSH REL (TWA) (mg/m)	1 mg/m
USA NIOSH	NIOSH REL (STEL) (mg/m)	3 mg/m
Lead (7439-92-1)		
USA ACGIH	ACGIH TWA (mg/m)	0.05 mg/m
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	Biological Exposure Indices (BEI)	30 g/100ml (Medium: blood - Time: not critical - Parameter: Lead (Note: Women of child bearing potential, whose blood Pb exceeds 10 g/dL, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 g/dL. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead)
USA OSHA	OSHA PEL (TWA) (mg/m)	50 g/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	0.050 mg/m
USA IDLH	US IDLH (mg/m)	100 mg/m
Alberta	OEL TWA (mg/m)	0.05 mg/m
British Columbia	OEL TWA (mg/m)	0.05 mg/m
Manitoba	OEL TWA (mg/m)	0.05 mg/m
New Brunswick	OEL TWA (mg/m)	0.05 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	0.05 mg/m
Nova Scotia	OEL TWA (mg/m)	0.05 mg/m
Nunavut	OEL STEL (mg/m)	0.45 mg/m
Nunavut	OEL TWA (mg/m)	0.15 mg/m
Northwest Territories	OEL STEL (mg/m)	0.15 mg/m
Northwest Territories	OEL TWA (mg/m)	0.05 mg/m
Ontario	OEL TWA (mg/m)	0.05 mg/m (designated substances regulation) 0.05 mg/m (applies to workplaces to which the designated substances regulation does not apply)
Prince Edward Island	OEL TWA (mg/m)	0.05 mg/m
Québec	VEMP (mg/m)	0.05 mg/m
Saskatchewan	OEL STEL (mg/m)	0.15 mg/m
Saskatchewan	OEL TWA (mg/m)	0.05 mg/m

Yukon	OEL STEL (mg/m)	0.45 mg/m (dust and fume)
Yukon	OEL TWA (mg/m)	0.15 mg/m (dust and fume)
Cobalt (7440-48-4)		
USA ACGIH	ACGIH TWA (mg/m)	0.02 mg/m
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	Biological Exposure Indices (BEI)	15 g/l (Medium: urine - Time: end of shift at end of workweek - Parameter: Cobalt (nonspecific))
USA OSHA	OSHA PEL (TWA) (mg/m)	0.1 mg/m (dust and fume)
USA NIOSH	NIOSH REL (TWA) (mg/m)	0.05 mg/m (dust and fume)
USA IDLH	US IDLH (mg/m)	20 mg/m (dust and fume)
Alberta	OEL TWA (mg/m)	0.02 mg/m
British Columbia	OEL TWA (mg/m)	0.02 mg/m
Manitoba	OEL TWA (mg/m)	0.02 mg/m
New Brunswick	OEL TWA (mg/m)	0.02 mg/m
Newfoundland & Labrador	OEL TWA (mg/m)	0.02 mg/m
Nova Scotia	OEL TWA (mg/m)	0.02 mg/m
Nunavut	OEL STEL (mg/m)	0.3 mg/m (dust and fume)
Nunavut	OEL TWA (mg/m)	0.1 mg/m (metal-dust and fume)
Northwest Territories	OEL STEL (mg/m)	0.06 mg/m
Northwest Territories	OEL TWA (mg/m)	0.02 mg/m
Ontario	OEL TWA (mg/m)	0.02 mg/m
Prince Edward Island	OEL TWA (mg/m)	0.02 mg/m
Québec	VEMP (mg/m)	0.02 mg/m
Saskatchewan	OEL STEL (mg/m)	0.06 mg/m
Saskatchewan	OEL TWA (mg/m)	0.02 mg/m
Yukon	OEL STEL (mg/m)	0.15 mg/m (dust and fume)
Yukon	OEL TWA (mg/m)	0.05 mg/m (dust and fume)
Tantalum (7440-25-7)		
USA OSHA	OSHA PEL (TWA) (mg/m)	5 mg/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	5 mg/m (dust)
USA NIOSH	NIOSH REL (STEL) (mg/m)	10 mg/m (dust)
USA IDLH	US IDLH (mg/m)	2500 mg/m (dust)
Alberta	OEL TWA (mg/m)	5 mg/m (dust)
British Columbia	OEL TWA (mg/m)	5 mg/m
New Brunswick	OEL TWA (mg/m)	5 mg/m (dust)
Nunavut	OEL STEL (mg/m)	10 mg/m
Nunavut	OEL TWA (mg/m)	5 mg/m
Northwest Territories	OEL STEL (mg/m)	10 mg/m (metal)
Northwest Territories	OEL TWA (mg/m)	5 mg/m (metal)
Québec	VEMP (mg/m)	5 mg/m (dust)
Saskatchewan	OEL STEL (mg/m)	10 mg/m
Saskatchewan	OEL TWA (mg/m)	5 mg/m
Yukon	OEL STEL (mg/m)	10 mg/m
Yukon	OEL TWA (mg/m)	5 mg/m

Paraffin oils (8012-95-1)		
USA ACGIH	ACGIH TWA (mg/m)	5 mg/m (excluding metal working fluids, highly & severely refined-inhalable fraction)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen highly and severely refined,Suspected Human Carcinogen highly and severely refined
USA OSHA	OSHA PEL (TWA) (mg/m)	5 mg/m
USA NIOSH	NIOSH REL (TWA) (mg/m)	5 mg/m
USA NIOSH	NIOSH REL (STEL) (mg/m)	10 mg/m
USA IDLH	US IDLH (mg/m)	2500 mg/m
Alberta	OEL STEL (mg/m)	10 mg/m
Alberta	OEL TWA (mg/m)	5 mg/m
British Columbia	OEL TWA (mg/m)	0.2 mg/m (mildly refined) 1 mg/m (severely refined)
Manitoba	OEL TWA (mg/m)	5 mg/m (excluding metal working fluids, highly & severely refined-inhalable fraction)
New Brunswick	OEL STEL (mg/m)	10 mg/m
New Brunswick	OEL TWA (mg/m)	5 mg/m (as sampled by a method that does not collect vapor)
Newfoundland & Labrador	OEL TWA (mg/m)	5 mg/m (excluding metal working fluids, highly & severely refined-inhalable fraction)
Nova Scotia	OEL TWA (mg/m)	5 mg/m (excluding metal working fluids, highly & severely refined-inhalable fraction)
Nunavut	OEL STEL (mg/m)	10 mg/m
Nunavut	OEL TWA (mg/m)	5 mg/m
Northwest Territories	OEL STEL (mg/m)	10 mg/m
Northwest Territories	OEL TWA (mg/m)	5 mg/m
Ontario	OEL TWA (mg/m)	5 mg/m (pure, highly and severely refined, excluding metal working fluids-inhalable)
Prince Edward Island	OEL TWA (mg/m)	5 mg/m (excluding metal working fluids, highly & severely refined-inhalable fraction)
Québec	VECD (mg/m)	10 mg/m (mist)
Québec	VEMP (mg/m)	5 mg/m (mist)
Saskatchewan	OEL STEL (mg/m)	10 mg/m
Saskatchewan	OEL TWA (mg/m)	5 mg/m
Yukon	OEL STEL (mg/m)	10 mg/m
Yukon	OEL TWA (mg/m)	5 mg/m

8.2. Exposure Controls

Appropriate Engineering Controls: 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. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective clothing. Gloves. Safety glasses. Dust

formation: dust mask. Insufficient ventilation: wear respiratory protection. Materials for Protective Clothing: Chemically resistant materials and fabrics. With molten material wear thermally protective clothing.

Hand Protection: Wear chemically resistant protective gloves. If material is hot, wear thermally resistant protective gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing. Wash contaminated clothing before reuse.

Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	Solid
Appearance	Gray, metallic
Odor	None
Odor Threshold	Not available
pH	Not available
Evaporation Rate	Not available
Melting Point	1363 C (2550 F)
Freezing Point	Not available
Boiling Point	2450 C (4442 F)
Flash Point	Not applicable
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Flammability (solid, gas)	Not available
Lower Flammable Limit	Not available
Upper Flammable Limit	Not available
Vapor Pressure	Not available
Relative Vapor Density at 20 C	Not available
Relative Density	Not available
Specific gravity / density/lbs/in³	.278 - .290
Specific Gravity Kg/m³	7.480 - 8.000
Solubility	Insoluble in water
Partition Coefficient: N-Octanol/Water	Not available
Viscosity	Not available
Explosion Data –	
Sensitivity to Mechanical Impact	Not expected to present an explosion hazard due to mechanical impact.
Sensitivity to Static Discharge	Take precautions against static discharge where there is a risk of dust explosion.,Static discharge could act as an ignition source.

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: Avoid creating or spreading dust. Sparks, heat, open flame and other sources of ignition. Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.

10.5. Incompatible Materials: When molten: water. Strong acids, strong bases, strong oxidizers. Alkalis. Metal oxides. Moisture. Corrosive substances in contact with metals may produce flammable hydrogen gas.

10.6. Hazardous Decomposition Products: Under conditions of fire this material may produce: Metal oxides

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity: Oral: Not classified **Inhalation: dust,mist:** Not classified.

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified

Respiratory/Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction. Dust from physical alteration of this product causes skin irritation. Causes severe skin burns. Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns. Dust may cause irritation in skin folds or by contact in combination with tight clothing. Mechanical damage via flying particles and chipped slag is possible.

Symptoms/Injuries After Eye Contact: Dust may cause mechanical irritation to eyes, nose, throat, and lungs.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In massive form, no hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Nickel: May cause a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. Inhalation of Nickel compounds has been shown in studies to provide an increased incidence of cancer of the nasal cavity, lung and possibly larynx in nickel refinery workers. Copper: Overexposure to fumes may cause metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude); metallic or sweet taste; discoloration of skin and hair. Tissue damage of mucous membranes may follow chronic dust exposure. Silicon: Can cause chronic bronchitis and narrowing of the airways. Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Silver: Chronic skin contact or ingestion of silver dust, salts or fume can result in a condition known as Argyria, a condi-

tion with bluish pigmentation of the skin and eyes. Inhalation of iron oxide fumes undergoing decomposition may cause irritation and flu-like symptoms, otherwise iron oxide is not hazardous. 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. Chromium: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Silicon (7440-21-3)	
LD50 Oral Rat	3160 mg/kg
Cobalt (7440-48-4)	
LD50 Oral Rat	215.9 - 1140 mg/kg
LC50 Inhalation Rat	> 10 mg/l (Exposure time: 1 h)
Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.14 mg/l/4h
Nickel (7440-02-0)	
LD50 Oral Rat	> 9000 mg/kg
Silver (7440-22-4)	
LD50 Oral Rat	> 2000 mg/kg
Magnesium (7439-95-4)	
LD50 Oral Rat	230 mg/kg
Iron (7439-89-6)	
LD50 Oral Rat	98.6 g/kg
Chromium (7440-47-3)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 5.41 mg/l/4h
Cadmium (7440-43-9)	
LD50 Oral Rat	1140 mg/kg
LC50 Inhalation Rat	25 mg/m (Exposure time: 30 min)
LC50 Inhalation Rat	0.0031 mg/l/4h
ATE US (dust, mist)	0.05 mg/l/4h
Cobalt (7440-48-4)	
IARC Group	2B
National Toxicology Program (NTP) Status	Evidence of Carcinogenicity.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Nickel (7440-02-0)	
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.

Chromium (7440-47-3)	
IARC Group	3
Cadmium (7440-43-9)	
IARC Group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
OSHA Specifically Regulated Carcinogen List	In OSHA Specifically Regulated Carcinogen list.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

Copper (7440-50-8)	
LC50 Fish 1	0.0068 (0.0068 - 0.0156) mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	0.0426 (0.0426 - 0.0535) mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC 50 Fish 2	0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Other Aquatic Organisms 2	0.031 (0.031 - 0.054) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Cobalt (7440-48-4)	
LC50 Fish 1	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
Manganese (7439-96-5)	
NOEC chronic fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)
Nickel (7440-02-0)	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 Daphnia 1	121.6 g/l (Exposure time: 48h - Species: Ceriodaphnia dubia [static])
LC 50 Fish 2	15.3 mg/l
EC50 Daphnia 2	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 2	0.174 (0.174 - 0.311) mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])
Silver (7440-22-4)	
LC50 Fish 1	0.00155 (0.00155 - 0.00293) mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	0.00024 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC 50 Fish 2	0.0062 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
Zinc (7440-66-6)	
LC50 Fish 1	2.16 - 3.05 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

EC50 Daphnia 1	0.139 - 0.908 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC 50 Fish 2	0.211 - 0.269 mg/l (Exposure time: 96 h - Species: Pimephales promelas [semi-static])
ErC50 (algae)	0.15 mg/l
Cadmium (7440-43-9)	
LC50 Fish 1	0.003 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 1	0.0244 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC 50 Fish 2	0.006 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])

12.2. Persistence and Degradability

Stainless Steels	
Persistence and Degradability	Not readily biodegradable
Copper (7440-50-8)	
Persistence and Degradability	Not readily biodegradable

12.3. Bioaccumulative Potential

12.4. Mobility in Soil

Not available

12.5. Other Adverse Effects

Other Information:

Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Treatment Methods: Recycle product or dispose properly.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations.

SECTION 14: TRANSPORT INFORMATION

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
14.4. In Accordance with TDG	Not regulated for transport

SECTION 15: DISPOSAL INFORMATION

15.1. US Federal Regulations

Chromium (7440-47-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
Nickel (7440-02-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
RQ (Reportable Quantity, Section 304 of EPA's List of Lists):	100 lb (only applicable if particles are < 100 m)

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Delayed (chronic) health hazard	
SARA Section 313 - Emission Reporting	0.1 %
Manganese (7439-96-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
Molybdenum (7439-98-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Silicon (7440-21-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Tungsten (7440-33-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Carbon (7440-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 311/312 Hazard Classes	Fire hazard
	Reactive hazard
SARA Section 313 - Emission Reporting	1.0 % (dust or fume only)
Copper (7440-50-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 %
Iron (7439-89-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Fire hazard
Niobium (7440-03-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Nitrogen (7727-37-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Sudden release of pressure hazard	
Sulfur (7704-34-9)	

Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Titanium (7440-32-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Vanadium (7440-62-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1.0 % (except when contained in an alloy)
Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	0.1 %
Cobalt (7440-48-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Delayed (chronic) health hazard	
SARA Section 313 - Emission Reporting	0.1 %
Tantalum (7440-25-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Paraffin oils (8012-95-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. US State Regulations

Cobalt (7440-48-4)	
U.S. - California Proposition 65 Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
Nickel (7440-02-0)	
U.S. - California Proposition 65 Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
Cadmium (7440-43-9)	
U.S. - California Proposition 65 Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
U.S. - California Proposition 65 Developmental Toxicity	WARNING: This product contains chemicals known to the State of California to cause birth defects.
U.S. - California Proposition 65 Reproductive Toxicity - Male	WARNING: This product contains chemicals known to the State of California to cause (Male) reproductive harm.

Aluminum (7429-90-5)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	Silicon (7440-21-3)
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Copper (7440-50-8)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Cobalt (7440-48-4)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Manganese (7439-96-5)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Nickel (7440-02-0)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances	
U.S. - Pennsylvania - RTK (Right to Know) List	
Silver (7440-22-4)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	

Zinc (7440-66-6)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Magnesium (7439-95-4)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) List	
Chromium (7440-47-3)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances	
U.S. - Pennsylvania - RTK (Right to Know) List	
Cadmium (7440-43-9)	
U.S. - Massachusetts - Right To Know List	
U.S. - New Jersey - Right to Know Hazardous Substance List	
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances	
U.S. - Pennsylvania - RTK (Right to Know) List	

15.3. Canadian Regulations

Stainless Steels	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Chromium (7440-47-3)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 0.1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Nickel (7440-02-0)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 0.1 %	

WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Class D Division 2 Subdivision A - Very toxic material causing other toxic effects	
Manganese (7439-96-5)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Molybdenum (7439-98-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Silicon (7440-21-3)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Tungsten (7440-33-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Carbon (7440-44-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Aluminum (7429-90-5)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class B Division 6 - Reactive Flammable Material
Class B Division 4 - Flammable Solid	
Copper (7440-50-8)	
Listed on the Canadian DSL (Domestic Substances List) Listed on the Canadian IDL (Ingredient Disclosure List)	

IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Iron (7439-89-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid
Class B Division 6 - Reactive Flammable Material	
Niobium (7440-03-1)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid
Nitrogen (7727-37-9)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas
Sulfur (7704-34-9)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Titanium (7440-32-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 4 - Flammable Solid
Vanadium (7440-62-2)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Lead (7439-92-1)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 0.1 %	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
Class D Division 2 Subdivision B - Toxic material causing other toxic effects	
Cobalt (7440-48-4)	
Listed on the Canadian DSL (Domestic Substances List)	

Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 0.1 %	
WHMIS Classification	Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects
Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects	
Class D Division 2 Subdivision A - Very toxic material causing other toxic effects	
Class D Division 2 Subdivision B - Toxic material causing other toxic effects	
Tantalum (7440-25-7)	
Listed on the Canadian DSL (Domestic Substances List) Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Paraffin oils (8012-95-1)	
Listed on the Canadian DSL (Domestic Substances List)	
Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

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

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

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. 2 (Inhalation:	Acute toxicity (inhalation: dust,mist) Category 2
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Sol. 1	Flammable solids Category 1
Muta. 2	Germ cell mutagenicity Category 2
Repr. 2	Reproductive toxicity Category 2
Resp. Sens. 1B	Respiratory sensitisation Category 1B
Self-heat. 1	Self-heating substances and mixtures Category 1
Skin Sens. 1	Skin sensitization Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
Water-react. 2	Substances and mixtures which in contact with water emit flammable gases