ALASKAN COPPER COMPANIES, INC.
Stainless Steel Aluminum

Brass 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: Brass Alloys
Synonyms: Bar, Sheet, Plate, Pipe, Tubing, and Structurals

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
Copper	(CAS No) 7440-50-8	55 - 96	Comb. Dust
Aquatic Acute 1, H400			
Aquatic Chronic 3, H412			
Zinc	(CAS No) 7440-66-6	<= 45	Comb. Dust
Lead	(CAS No) 7439-92-1	< 5	Carc. 1B, H350
Repr. 1A, H360			
STOT RE 1, H372			
Aquatic Acute 1, H400			
Aquatic Chronic 1, H410			
Nickel	(CAS No) 7440-02-0	< 1.2	Comb. Dust

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: 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. Tin: Has been shown to increase incidence of sarcoma in animal tests. Chronic exposure to tin dusts and fume may result in "stannosis", a mild form of

pneumoconiosis. 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. Nickel: May caus e a form of dermatitis known as nickel itch and intestinal irritation, which may cause disorders, convulsions and asphyxia. . Lead: Exposure can result in lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; encephalopathy; kidney disease; hypertension.

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

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

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. Product itself is not explosive but if dust in generated, dust clouds suspended in the air can be explosive.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: A non-combustible material, not considered flammable but will melt above 1700F (927C).

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.

<u>Reference to Other Sections</u>

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 under stood. 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.

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**
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)		
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)**
Silver (7440-22-4)		
USA ACGIH	**ACGIH TWA (mg/m)**	**0.1 mg/m (dust and fume)**

USA OSHA	**OSHA PEL (TWA) (mg/m)**	**0.01 mg/m**
USA NIOSH	**NIOSH REL (TWA) (mg/m)**	**0.01 mg/m (dust)**
USA IDLH	**US IDLH (mg/m)**	**10 mg/m (dust)**
Alberta	**OEL TWA (mg/m)**	**0.1 mg/m**
British Columbia	**OEL STEL (mg/m)**	**0.03 mg/m**
British Columbia	**OEL TWA (mg/m)**	**0.01 mg/m**
Manitoba	**OEL TWA (mg/m)**	**0.1 mg/m (dust and fume)**
New Brunswick	**OEL TWA (mg/m)**	**0.1 mg/m**
Newfoundland & Labrador	**OEL TWA (mg/m)**	**0.1 mg/m (dust and fume)**
Nova Scotia	**OEL TWA (mg/m)**	**0.1 mg/m (dust and fume)**
Nunavut	**OEL STEL (mg/m)**	**0.3 mg/m**
Nunavut	**OEL TWA (mg/m)**	**0.1 mg/m**
Northwest Territories	**OEL STEL (mg/m)**	**0.3 mg/m (metal)**
Northwest Territories	**OEL TWA (mg/m)**	**0.1 mg/m (metal)**
Ontario	**OEL TWA (mg/m)**	**0.1 mg/m (dust and fume)**
Prince Edward Island	**OEL TWA (mg/m)**	**0.1 mg/m (dust and fume)**
Québec	**VEMP (mg/m)**	**0.1 mg/m**
Saskatchewan	**OEL STEL (mg/m)**	**0.3 mg/m**
Saskatchewan	**OEL TWA (mg/m)**	**0.1 mg/m**
Yukon	**OEL STEL (mg/m)**	**0.03 mg/m**
Yukon	**OEL TWA (mg/m)**	**0.01 mg/m**
Tin (7440-31-5)		
USA ACGIH	**ACGIH TWA (mg/m)**	**2 mg/m**
USA NIOSH	**NIOSH REL (TWA) (mg/m)**	**2 mg/m**
USA IDLH	**US IDLH (mg/m)**	**100 mg/m**
Alberta	**OEL TWA (mg/m)**	**2 mg/m**
British Columbia	**OEL TWA (mg/m)**	**2 mg/m**
Manitoba	**OEL TWA (mg/m)**	**2 mg/m**
New Brunswick	**OEL TWA (mg/m)**	**2 mg/m**
Newfoundland & Labrador	**OEL TWA (mg/m)**	**2 mg/m**
Nova Scotia	**OEL TWA (mg/m)**	**2 mg/m**
Northwest Territories	**OEL STEL (mg/m)**	**4 mg/m (metal)**
Northwest Territories	**OEL TWA (mg/m)**	**2 mg/m (metal)**
Ontario	**OEL TWA (mg/m)**	**2 mg/m**
Prince Edward Island	**OEL TWA (mg/m)**	**2 mg/m**
Québec	**VEMP (mg/m)**	**2 mg/m**
Saskatchewan	**OEL STEL (mg/m)**	**4 mg/m**
Saskatchewan	**OEL TWA (mg/m)**	**2 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)

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.

Thermal Hazard Protection: If material is hot, wear thermally resistant protective

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	Solid
Appearance	Reddish-brown
Odor	None
Odor Threshold	Not available
pH	Not available

Evaporation Rate	**Not available**
Melting Point	**866 - 1038 C (1590.8 - 1900.4 F)**
Freezing Point	**Not available**
Boiling Point	**Not available**
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/ in^3	**.397**
Specific Gravity Kg/m^3	**8.94**
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.**
VOC content	**0%**

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Dust and other forms of product formed from processing might react with water producing a flammable/explosive.

10.2. Chemical Stability: Stable under recommended handling and storage conditions (see section 7). Dust, chips or ribbons can be ignited more easily.

10.3. Possibility of Hazardous Reactions: Molten metal and water may be explosive.

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: Thermal decomposition generates: Metal oxides, fume, carbon monoxide, carbon dioxide.

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 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.**

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Nickel (7440-02-0)	
LD50 Oral Rat	**> 9000 mg/kg**

Silver (7440-22-4)	
LD50 Oral Rat	**> 2000 mg/kg**
Tin (7440-31-5)	
LD50 Oral Rat	**700 mg/kg**
Iron (7439-89-6)	
LD50 Oral Rat	**984 mg/kg**
ATE US (oral)	**984.00 mg/kg body weight**
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.**
Lead (7439-92-1)	
IARC Group	**2A**
National Toxicology Program (NTP) Status	**Reasonably anticipated to be Human Carcinogen.**
OSHA Hazard Communication Carcinogen List	**In OSHA Hazard Communication Carcinogen list.**

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

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])	
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])	
Lead (7439-92-1)	
LC50 Fish 1	**0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])**
EC50 Daphnia 1	**600 g/l (Exposure time: 48 h - Species: water flea)**

LC 50 Fish 2	1.17 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
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

12.2. Persistence and Degradability

Brass Alloys	Persistence and Degradability	May cause long-term adverse effects in the environment	
Copper (7440-50-8)		Persistence and Degradability	Not readily biodegradable

12.3. Bioaccumulative Potential Not established

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

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 %**
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 %**
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 %**
Silver (7440-22-4)	
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):	**1000 lb < 100 um**
CERCLA/SARA RQ CHANGE TITLE	
SARA Section 313 - Emission Reporting	**1.0 %**
Tin (7440-31-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Zinc (7440-66-6)	
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 % (dust or fume only)**
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)**
Iron (7439-89-6)	

Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. US State Regulations

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.**
Lead (7439-92-1)	
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 -	
Female	**WARNING: This product contains chemicals known to the State of California to cause (Female) reproductive harm.**
U.S. - California - Proposition 65 - Reproductive Toxicity -	
Male	**WARNING: This product contains chemicals known to the State of California to cause (Male) reproductive harm.**

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
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
Lead (7439-92-1)
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
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
Tin (7440-31-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) 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
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

15.3. Canadian Regulations

Brass Alloys	
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	
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**
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	
Silver (7440-22-4)	
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**
Tin (7440-31-5)	

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**
Zinc (7440-66-6)	
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	
Iron (7439-89-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	**Uncontrolled product according to WHMIS classification criteria**

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

Revision Date : 08/24/2016

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:

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**
Flam. Sol. 1	**Flammable solids Category 1**
Repr. 1A	**Reproductive toxicity Category 1A**
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 Category 2**
H228	**Flammable solid May form combustible dust concentrations in air**

H261	**In contact with water releases flammable gases**
H317	**May cause an allergic skin reaction**
H350	**May cause cancer**
H351	**Suspected of causing cancer**
H360	**May damage fertility or the unborn child**
H372	**Causes damage to organs through prolonged or repeated exposure**
H400	**Very toxic to aquatic life**
H410	**Very toxic to aquatic life with long lasting effects**
H412	**Harmful to aquatic life with long lasting effects**

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
H228	Flammable solid
	May form combustible dust concentrations in air
H251	Self-heating: may catch fire
H261	In contact with water releases flammable gases
H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer
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
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

Party Responsible for the Preparation of This Document