

# Safety Data Sheet

## 1. Supplier and Manufacturer

Aufhauser Corporation  
 39 West Mall  
 Plainview NY 11803 USA  
 Telephone: 516-694-8696 [www.brazing.com](http://www.brazing.com)  
 Emergency Phone Number: 516-694-8696 or 212-246-0205  
 CHEMTREC 24-hour Emergency Response: 800-424-9300 or 703-527-3887  
 SDS Number: Aluminum ER 201606  
 Product Codes: **Aluminum Welding/Metallizing Wires/Rods: Alloy 1100, 1188, 1350, 2319, 4009, 4010, 4043, 4047, 4145, 4643, 5154, 5180, 5183, 5356, 5554, 5556, 5654, Al<sub>2</sub>O<sub>3</sub>; AL-43; Flux Cored**  
 Product Use(s): Alloys for welding and other metallurgical processes.



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## 2. Hazards identification

### Classification(s)

**GHS Classified:** STOT SE 3 (H336, H335), STOT RE 1 (H372), Aquatic Acute 1 (H400)

**GHS Label Symbol(s):** Health, Exclamation, Environment



**GHS Label Signal Word(s):** Danger

**GHS Label Hazard Statement(s):** May cause respiratory irritation. May cause drowsiness or dizziness. Causes damage to organs through prolonged or repeated exposure. Very toxic to aquatic life.

**GHS Precautionary statements:** Do not breathe dust/fume/gas/mist/vapors/spray. Avoid breathing dust/fume/gas/mist/vapor/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. Get medical advice and attention if you feel unwell. Collect spillage. Store in a well-ventilated place; Keep container tightly closed. Store locked up. Dispose of contents/container in accordance with local/ regional/ national/ international regulations.

### Label Precautionary Statement(s):

WARNING: PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

ARC RAYS can injure your eyes and burn skin.

- Before Use, read and understand the manufacturer's instructions. Safety Data Sheets (SDSs), and your employer's safety policies.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch live electrical parts.

**Other Hazards:** This product as shipped in massive form is inert and not hazardous to human health. Under normal conditions of use during welding, this product and its fumes pose separate hazards, outlined in this document. Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. 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. Overexposure to manganese (component) fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible. Electric shock from welding equipment or electrodes may be fatal. Hot metal spatter and heat from electric arcs and welding flames may cause burns to the hands and body or may cause fire if it comes into contact with combustible materials. UV, IR and light radiation from an electric arc or welding flame process may cause damage to unprotected eyes. Fumes and gases

generated during the welding process can be harmful to your health. If dust is generated, the dust may be flammable solid, water reactive, and self-heating. Take appropriate precautions if dust is generated and ensure proper engineering controls.

### 3. Composition/information on ingredients

Ingredient	CAS Number	% wt.	GHS note
Aluminum	7429-90-5	> 80	
Aluminum Oxide	1344-28-1	< 12	
Silicon	7440-21-3	< 13	
Iron	7439-89-6	< 1	Acute Tox 4 (oral): H302
Copper	7440-50-8	< 7	Aquatic Acute 1: H400
Zinc	7440-66-6	< 3	
Magnesium	7439-95-4	< 6	
Manganese	7439-96-5	< 1	
Chromium	7440-47-3	< 0.5	
Zirconium	7440-67-7	< 0.5	
Titanium	7440-32-6	< 0.5	
Vanadium	7440-62-2	< 0.5	
Beryllium	7440-41-7	0 < 0.0008	Acute Tox 3 (oral): H301; Acute Tox 2(inhale): H330; Skin Irrit 2: H315; Eye Irrit 2A: H319; Carc 1: H350; STOT RE 1: H372; STOT SE 3: H335

Note: The percentage by weight values for the ingredients in this product represent approximate formulation values.

#### Other components which may be present: FLUX CORE or COATING

	CAS Number	% Ingredients	OSHA PEL	ACGIH-TLV
Aluminum Fluoride	7784-18-1	1-5	2.5 (as F)	2.5 (as F)
Lithium Fluoride	7789-24-4	1-5	2.5 (as F)	2.5 (as F)
Potassium Hexafluoraluminate	133775-52-5	1-5	2.5 (as F)	2.5 (as F)
Potassium Chloride	7447-40-7	1-30	N/A	N/A
Sodium Chloride	7647-14-5	1-30	N/A	N/A
Sodium Hexafluoraluminate	15096-52-3	1-5	2.5 (as F)	2.5 (as F)
Lithium Hexafluoraluminate	13821-20-0	2-10	2.5 (as F)	2.5 (as F)

### 4. First aid measures

#### Description of First Aid Measures

**General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label and this SDS if possible).

**Inhalation:** Remove to fresh air and keep at rest in a position comfortable for breathing. Ventilate the area. Call a POISON CENTER/doctor/physician if you feel unwell.

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

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

**Ingestion:** Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if conscious. Call a physician or poison control center immediately.

**Note to Physician:** Treat symptoms and eliminate overexposure.

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

**General:** Welding, cutting, or processing this material may release dust or fumes that are hazardous. During processing, inhalation of fumes may cause dizziness and/or irritation to the eyes, nose, and throat. Hot molten product will cause thermal burns to the skin.

**Inhalation:** The primary acute health hazard associated with this product would be the potential for exposure to fumes during metal processing operations. During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; 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.

**Skin Contact:** Contact with hot, molten metal will cause thermal burns.

**Eye Contact:** Fumes from thermal decomposition may cause eye irritation. Risk of thermal burns on contact with molten product. Arc rays and sparks can burn eyes.

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

**Chronic Symptoms:** This product is intended for use in ARC welding. During this process UV rays irritate the superficial corneal epithelium, causing inhibition of mitosis, production of nuclear fragmentation, and loosening of the epithelial layer. Under experimental conditions in animals, phototoxic effects have been demonstrated at all levels of the cornea, including the stroma and endothelium. **Aluminum:** Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. **Silicon:** Can cause chronic bronchitis and narrowing of the airways. **Manganese:** Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). **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. **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. **Fluorides:** Overexposure can cause serious bone erosion.

#### **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/SDS at hand.

### **5. Firefighting measures**

Products as shipped are non-hazardous, nonflammable, non-explosive, and nonreactive.

#### **Extinguishing Media**

**Suitable Extinguishing Media:** Class D Extinguishing Agent (for metal powder fires). Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO<sub>2</sub>), dry sand.

**Unsuitable Extinguishing Media:** Do not use a high powered water stream. Use of a high powered stream may spread fire. Do not use water on molten metal.

#### **Special Hazards Arising From the Substance or Mixture**

**Fire Hazard:** Not considered flammable. Will burn at high temperatures. (Welding arcs and sparks can ignite combustible and flammable materials.)

**Explosion Hazard:** Product is not explosive. Ensure proper welding procedures to avoid welding explosions.

**Reactivity:** None under normal conditions. Metallic dusts may ignite or explode.

#### **Advice for Firefighters**

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

**Firefighting Instructions:** Use water spray or fog for cooling exposed containers. Do not breathe fumes from fires or vapors from decomposition. Do not allow run-off from firefighting to enter drains or water sources. Avoid raising dust.

**Protection During Firefighting:** Use proper protective equipment, including respiratory protection.

**Hazardous Combustion Products:** Carbon oxides (CO, CO<sub>2</sub>). Metal oxides. Aluminum oxides, silicon oxides, hydrogen fluoride, potassium oxides. Aluminum (component) can react with many alcohols or sodium hydroxide and produce flammable hydrogen gas. Finely divided forms (dust) of product may be reactive and combustible.

### **6. Accidental release measures**

#### **Personal Precautions, Protective Equipment and Emergency Procedures**

**General Measures:** Do not breathe vapors from molten product. Avoid all contact with skin, eyes, or clothing. Avoid breathing vapor, mist, gas.

#### **For Non-Emergency Personnel**

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

**Emergency Procedures:** Evacuate unnecessary personnel.

#### **For Emergency Personnel**

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

**Emergency Procedures:** Evacuate unnecessary personnel. Eliminate ignition sources. Ventilate area.

#### **Environmental Precautions**

Prevent entry to sewers and public waters.

#### **Methods and Material for Containment and Cleaning Up**

**For Containment:** Where possible allow molten material to solidify naturally. Contain and collect as any solid.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Avoid generation of dust during clean-up of spills. Ventilate area. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Use only non-sparking tools. Transfer spilled material to a suitable container for disposal.

**7. Handling and storage**

**Precautions for Safe Handling**

Use proper ventilation and respiration apparatus; eye, hand, and body protection as necessary.

**Additional Hazards When Processed:** Risk of electric shock when welding. Arc rays and sparks can burn skin. Fumes from welding, or processing of this material can be harmful if inhaled. See ANSI Z49.1-1967 Safety in Welding and Cutting published by the American Welding Society and OSHA Hazard Communication Standard 1910.1200 for additional details regarding the handling and storage of this material.

**Precautions for Safe Handling:** Avoid contact with skin and eyes. Do not breathe dust. Use appropriate personal protective equipment when handling and observe good personal hygiene measures after handling. Do not handle until all safety precautions have been read and understood.

**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.

**Conditions for Safe Storage, Including Any Incompatibilities**

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

**Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Halogens. Nitric oxide/nitrogen dioxide. Hydrogen peroxide. Phosphorus.

**8. Exposure controls/personal protection.**

**Ingredients – Exposure Limits**

Aluminum	ACGIH TWA (mg/m <sup>3</sup> ); 1 mg/m <sup>3</sup> (respirable fraction) ACGIH chemical category; Not Classifiable as a Human Carcinogen OSHA PEL (TWA) (mg/m <sup>3</sup> ); 15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction) NIOSH REL (TWA) (mg/m <sup>3</sup> ); 10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)
Silicon	OSHA PEL (TWA) (mg/m <sup>3</sup> ); 15 mg/m <sup>3</sup> (total dust), 5 mg/m <sup>3</sup> (respirable fraction) NIOSH REL (TWA) (mg/m <sup>3</sup> ); 10 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable dust)
Manganese	ACGIH TWA (mg/m <sup>3</sup> ); 0.02 mg/m <sup>3</sup> (respirable fraction), 0.1 mg/m <sup>3</sup> (inhalable fraction) ACGIH chemical category; Not Classifiable as a Human Carcinogen OSHA PEL (Ceiling) (mg/m <sup>3</sup> ); 5 mg/m <sup>3</sup> (fume) NIOSH REL (TWA) (mg/m <sup>3</sup> ); 1 mg/m <sup>3</sup> (fume) NIOSH REL (STEL) (mg/m <sup>3</sup> ); 3 mg/m <sup>3</sup> US IDLH (mg/m <sup>3</sup> ); 500 mg/m <sup>3</sup>
Iron	ACGIH TWA: 5 mg/m <sup>3</sup> (fume) OSHA PEL (TWA): 10 mg/m <sup>3</sup> (fume) NIOSH REL (TWA): 5 mg/m <sup>3</sup> (fume)
Copper	ACGIH TWA (mg/m <sup>3</sup> ); 0.2 mg/m <sup>3</sup> (fume) OSHA PEL (TWA) (mg/m <sup>3</sup> ); 0.1 mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dust and mist) NIOSH REL (TWA) (mg/m <sup>3</sup> ); 1 mg/m <sup>3</sup> (dust and mist) 0.1 mg/m <sup>3</sup> (fume) US IDLH (mg/m <sup>3</sup> ); 100 mg/m <sup>3</sup> (dust, fume and mist)
Magnesium	ACGIH TWA: 10 mg/m <sup>3</sup> (fume, total dust) OSHA PEL TWA: 15 mg/m <sup>3</sup> (fume, total dust) NIOSH REL TWA: 10 mg/m <sup>3</sup> (total dust)
Chromium	ACGIH TWA (mg/m <sup>3</sup> ); 0.5 mg/m <sup>3</sup> ACGIH chemical category; Not Classifiable as a Human Carcinogen OSHA PEL (TWA) (mg/m <sup>3</sup> ); 1 mg/m <sup>3</sup> NIOSH REL (TWA) (mg/m <sup>3</sup> ); 0.5 mg/m <sup>3</sup> US IDLH (mg/m <sup>3</sup> ); 250 mg/m <sup>3</sup>
Zirconium	ACGIH TWA (mg/m <sup>3</sup> ); 5 mg/m <sup>3</sup> ACGIH STEL (mg/m <sup>3</sup> ); 10 mg/m <sup>3</sup> ACGIH chemical category; Not Classifiable as a Human Carcinogen NIOSH REL (TWA) (mg/m <sup>3</sup> ); 5 mg/m <sup>3</sup> NIOSH REL (STEL) (mg/m <sup>3</sup> ); 10 mg/m <sup>3</sup> US IDLH (mg/m <sup>3</sup> ); 50 mg/m <sup>3</sup>
Titanium (as dioxide)	ACGIH TWA: 10 mg/m <sup>3</sup> OSHA PEL TWA: 15 mg/m <sup>3</sup>
Vanadium	OSHA PEL (Ceiling) (mg/m <sup>3</sup> ); 0.5 mg/m <sup>3</sup> (respirable dust), 0.1 mg/m <sup>3</sup> (fume) NIOSH REL (TWA) (mg/m <sup>3</sup> ); 1 mg/m <sup>3</sup> NIOSH REL (STEL) (mg/m <sup>3</sup> ); 3 mg/m <sup>3</sup>
Beryllium	OSHA PEL TWA: 0.002 mg/m <sup>3</sup> ACGIH TWA: 0.00005 mg/m <sup>3</sup>

Aluminum, welding fumes	NIOSH REL (TWA) (mg/m <sup>3</sup> ); 5 mg/m <sup>3</sup>
Zinc (as oxide)	ACGIH TWA (mg/m <sup>3</sup> ): 2 (resp) OSHA PEL (TWA) (mg/m <sup>3</sup> ): 5

### Exposure Controls

**Appropriate Engineering Controls:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. All equipment should comply with the National Electric Code. When cutting, grinding, crushing, or drilling, provide general or local ventilation systems, as needed, to maintain airborne dust concentrations below the regulatory limits. Local vacuum collection is preferred since it prevents release of contaminants into the work area by controlling it at the source. Other technologies that may aid in controlling airborne respirable dust include wet suppression, ventilation, process enclosure, and enclosed employee work stations. Dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product should contain explosion relief vents, explosion suppression system, or an oxygen-deficient environment. Prevent dust accumulation (to minimize explosion hazard).

**Personal Protective Equipment:** Gloves. Protective clothing. Face shield. Insufficient ventilation: wear respiratory protection.

**Materials for Protective Clothing:** With molten material wear thermally protective clothing.

**Hand Protection:** Leather gloves. Heat resistant gloves.

**Eye Protection:** Chemical goggles or safety glasses. Welders should wear goggles or safety glasses with side shields that comply with ANSI Z87.1 under welding helmets and always wear goggles or other suitable eye protection when gas welding or oxygen cutting.

**Skin and Body Protection:** Wear fire/flammable resistant/retardant clothing appropriate for task.

**Respiratory Protection:** Wear approved respiratory apparatus appropriate for task.

**Thermal Hazard Protection:** Fire retardant clothing and gloves, as well as safety shoes are required for safe furnace work.

**Consumer Exposure Controls:** Do not eat, drink or smoke during use.

## 9. Physical and chemical properties

Physical state: Solid	Appearance: silver, gray, metallic luster; rod or wire
Odor: none	Odor threshold: n/a
pH: n/a	Evaporation rate: n/a
Melting point: 660 C (1220 F)	Freezing point: n/a
Boiling point (@ 24 mm Hg): 2494 C (4521 F)	Flash point: n/a
Auto-ignition temperature: n/a	Decomposition temperature: n/a
Flammability (solid, gas): n/a	Lower flammable limit: n/a
Upper flammable limit: n/a	Vapor pressure (mm Hg @ 1284C): 1
Relative vapor density at 20C: n/a	Relative density (flux-cored rod): 6g/cm <sup>3</sup>
Specific gravity @ 20C (water = 1): 2.70	Solubility in water: Insoluble
Partition coefficient (N-octanol/water): n/a	Viscosity: n/a
Explosion - sensitivity to mechanical impact: not expected to present an explosion hazard due to mechanical impact	Explosion - sensitivity to static discharge: not expected to present an explosion hazard due to static discharge

## 10. Stability and reactivity

Products as shipped are non-hazardous, nonflammable, non-explosive, and nonreactive.

**Reactivity:** None under normal conditions. If dust is formed: Metallic dusts may ignite or explode.

**Chemical Stability:** Stable under normal conditions.

**Possibility of Hazardous Reactions:** Will not occur.

**Conditions to Avoid:** Incompatible materials. Uncontrolled exposure to extreme temperatures.

**Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Halogens. Nitrogen oxides. Nitrogen dioxide. Hydrogen peroxide. Alcohols. Halogenated hydrocarbons.

**Hazardous Decomposition Products:** Metal oxides. Oxides of aluminum. Oxides of magnesium. Oxides of manganese. Oxides of copper. Oxides of zirconium. Oxides of titanium. Chromium oxides. Silicon oxides. Vanadium oxides. (From flux: fluorides).

## 11. Toxicological information

### Information on Toxicological Effects - Product

Acute Toxicity: Not classified	LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified	Serious Eye Damage/Irritation: Not classified
Respiratory or Skin Sensitization: Not classified	Germ Cell Mutagenicity: Not classified
Teratogenicity: Not available	Carcinogenicity: Not classified.
Specific Target Organ Toxicity (Repeated Exposure): Not classified	Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified.	Aspiration Hazard: Not classified

**Symptoms/Injuries After Inhalation:** The primary acute health hazard associated with this product would be the potential for exposure to fumes during metal processing operations. During processing, the most significant route of exposure is by the inhalation (breathing) of fumes. Fumes, inhaled, can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. 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.

**Symptoms/Injuries After Skin Contact:** Contact with hot, molten metal will cause thermal burns.

**Symptoms/Injuries After Eye Contact:** Fumes from thermal decomposition may cause eye irritation. Risk of thermal burns on contact with molten product. Arc rays and sparks can burn eyes.

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

**Chronic Symptoms:** This product is intended for use in ARC welding. During this process UV rays irritate the superficial corneal epithelium, causing inhibition of mitosis, production of nuclear fragmentation, and loosening of the epithelial layer. Under experimental conditions in animals, phototoxic effects have been demonstrated at all levels of the cornea, including the stroma and endothelium.

Aluminum	Inhalation of finely divided aluminum powder may cause pulmonary fibrosis.
Silicon	Can cause chronic bronchitis and narrowing of the airways.
Manganese	Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis).
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.
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.

### Information on Toxicological Effects - Ingredient(s)

Silicon	LD50 oral rat 3160 mg/kg
Manganese	LD50 oral rat > 2000 mg/kg TCLo (inhalation human) = 2300 $\mu$ g/m <sup>3</sup> ; BRN, central nervous system effects US EPA-D (Not classifiable as to human carcinogenicity)
Chromium	LD50 oral rat > 5000 mg/kg; IARC Group 3 ACGIH TLV- A4 (Not classifiable as a human carcinogen) US EPA-D (Not classifiable as to human carcinogenicity) IARC Group 3 (Unclassifiable as to carcinogenicity in humans)
Copper	TDLo (oral human) = 0.12 mg/kg; gastrointestinal effects US EPA-D (Not classifiable as to human carcinogenicity)
Iron	TDLo (oral child) = 77 mg/kg; BAH, gastrointestinal tract, blood effects ACGIH TLV- A4 (Not classifiable as a human carcinogen) IARC Group 3 (Unclassifiable as to carcinogenicity in humans)
Zinc	TCLo (inhalation human) = 124 mg/m <sup>3</sup> /50 mins.; pulmonary system effects, skin Skin irritancy (human) = 300 mg/3 days/intermittent; mild US EPA-D (Not classifiable as to human carcinogenicity)
Beryllium	IARC Group 1 (Carcinogenic to humans) ACGIH - A1 (Confirmed human carcinogen)
Welding fumes	IARC Group 2B; OSHA Hazard Communication Carcinogen listed
Lithium fluoride	LD50 (oral rat) = 143 mg/kg
Potassium chloride	LD50 (oral rat) = 2600 mg/kg
Sodium chloride	LD50 (oral rat) = 3000 mg/kg

## 12. Ecological information

**Toxicity:** Very toxic to aquatic life.

Manganese	NOEC chronic fish: 3.6 mg/L (96h - <i>Oncorhynchus mykiss</i> )
Copper	LC50 Fish 1: $\leq$ 0.0068 (0.0068 - 0.0156) mg/L (96h - <i>Pimephales promelas</i> ) EC50 Daphnia 1: 0.03 mg/L (48 h - <i>Daphnia magna</i> [Static]) EC50 Other Aquatic Organisms 1: 0.0426 (0.0426 - 0.0535) mg/L (72h - <i>Pseudokirchneriella subcapitata</i> [static]) LC 50 Fish 2: 0.3 mg/L (96 h - <i>Pimephales promelas</i> [static]) EC50 Other Aquatic Organisms 2: 0.031 (0.031 - 0.054) mg/L (96 h - <i>Pseudokirchneriella subcapitata</i> [static])
Iron	LC50 Fish: 0.56 mg/L (Exposure time: 96h - Species: <i>Cyprinus carpio</i> )
Zinc	LC50 Fish 1: 2.16 - 3.05 mg/L (96h - <i>Pimephales promelas</i> ) EC50 Daphnia 1: 0.139 - 0.908 mg/L (48h - <i>Daphnia magna</i> ) EC50 other aquatic organisms 1: 0.11 - 0.271 mg/L (96h - <i>Pseudokirchneriella subcapitata</i> ) LC50 Fish 2: 0.211 - 0.269 mg/L (96h - <i>Pimephales promelas</i> ) EC50 other aquatic organisms 2: 0.09 - 0.125 mg/L (72h - <i>Pseudokirchneriella subcapitata</i> )

**Persistence and Degradability:** Copper: Not readily biodegradable.

**Environmental Stability:** Components of product will react with water and air to form a variety of metal oxides.

**Bioaccumulative:** Potential Not available

**Mobility in Soil:** Not available

**Other Adverse Effects:** Not available

### 13. Disposal considerations

**Sewage Disposal Recommendations:** Do not empty into drains; dispose of this material and its container in a safe way.

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

**Additional Information:** Recycle where possible and/or dispose of spent material such as metals & metal-bearing waste and submerged arc welding (SAW) flux/slag appropriately.

**EPA Waste Number:** D007 Chromium (5.0 mg/L regulated level)

### 14. Transport information

Transport is not regulated in accordance with: USDOT, TDG (Canada), IATA, or IMDG.

### 15. Regulatory information

	US Federal Regulations	Canadian
Aluminum	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on 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)	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
Silicon	Listed on the United States TSCA (Toxic Substances Control Act) inventory	Listed on the Canadian DSL (Domestic Substances List)  WHMIS Classification: Uncontrolled product according to WHMIS classification criteria
Magnesium	Listed on the United States TSCA (Toxic Substances Control Act) inventory	Listed on the Canadian DSL (Domestic Substances List)  WHMIS Classification: Class B Division 4 - Flammable Solid; Class B Division 6 - Reactive Flammable Material
Manganese	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313  SARA Section 313 - Emission Reporting: 1.0%	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	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313 SARA Section 313 - Emission Reporting: 1.0% (dust or fume only)	Listed on the Canadian DSL (Domestic Substances List); Listed on the Canadian IDL (Ingredient Disclosure List)
Copper	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313  SARA Section 313 - Emission Reporting: 1.0%	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
Chromium	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313  SARA Section 313 - Emission Reporting: 1.0%	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
Zirconium	Listed on the United States TSCA (Toxic Substances Control Act) inventory	Listed on the Canadian DSL (Domestic Substances List); Listed on the Canadian IDL (Ingredient Disclosure List)  IDL Concentration 1 %

		WHMIS Classification: Class B Division 4 - Flammable Solid
Vanadium	Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313  SARA Section 313 - Emission Reporting: 1.0% (except when contained in an alloy)	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	Listed on United States TSCA (Toxic Substances Control Act) inventory	WHMIS Class B-4
Beryllium	Listed on United States TSCA inventory SARA Section 313.	Listed on the Canadian DSL WHMIS Class D2A, D2B

**State Regulatory Information:**

Some components are listed.

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

**WARNING:** This product may contain chemicals, and when used for welding or brazing may produce fumes or gases containing chemicals known to the state of California to cause cancer, and/or birth defects (or other reproductive harm).

**Proposition 65 (California):**

- Chemicals known to cause cancer: 7440-41-7 Beryllium.
- Chemicals known to cause reproductive toxicity for females none.
- Chemicals known to cause reproductive toxicity for males: none.
- Chemicals known to cause developmental toxicity: none

**State Right to Know (RTK) Listings**

**US. Massachusetts RTK – Substance List:** chromium, copper, manganese, silicon, beryllium, zinc, aluminum, magnesium

**US. Minnesota – Hazardous Substance List:** chromium, copper, manganese, silicon, beryllium, aluminum

**US. New Jersey – RTK Hazardous Substance List:** chromium, copper, manganese, silicon, titanium, beryllium, zinc, aluminum, magnesium

**US. Pennsylvania RTK List:** chromium, copper, manganese, silicon, beryllium, zinc, aluminum, magnesium

**16. Other information including information on preparation and revision of the SDS**

<p><u>NFPA Health Hazard:</u> 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.</p> <p><u>NFPA Fire Hazard:</u> 0 - Materials that will not burn.</p> <p><u>NFPA Reactivity:</u> 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.</p>	<p><u>HMIS III Rating</u></p> <p><u>Health:</u> 2 Moderate Hazard – Temporary or minor injury may occur; (Product containing flux: 3 - Major injury likely unless prompt action taken)</p> <p><u>Flammability:</u> 0 Minimal Hazard</p> <p><u>Physical:</u> 0 Minimal Hazard</p>
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Date of Preparation: 2016-Jun

*Disclaimer*

*Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).*

**Aufhauser Corporation**