



# SAFETY DATA SHEET

Product Name: Aluminum Tube products

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## Section 1: Product and Company Identification

**Product Names:** 1100 Aluminum tube  
1435 Aluminum tube  
3003 Aluminum tube  
6061 Aluminum tube

**Product Use:** Metal tube products – various consumer, construction and manufacturing uses

**Chemical Family:** Aluminum alloy

**Product Codes:** Aluminum alloys 1100, 1435, 3003, 6061

**Supplier:** Small Tube Products  
200 Oliphant Drive,  
PO Box 1017,  
Duncansville, PA, USA  
16635  
Tel: 814-693-6000 (8 am – 5 pm; Mon-Fri; Eastern time zone)  
[www.smalltubeproducts.com](http://www.smalltubeproducts.com)

## Section 2: Hazards Identification

Personal Protection	OSHA (USA)	WHMIS (Canada)	Transport Symbol
	Manufactured article Not hazardous	 Manufactured Article Not controlled	Not Regulated for Transport

**Emergency Overview:** Solid aluminum tube products do not present an inhalation, ingestion, or contact health hazard. Metallic dust and fumes generated from processing operations such as cutting, grinding, polishing, high temperature processes may be readily ignitable. Fine particles and molten aluminum metal are highly reactive with water, strong oxidizers, acids and alkalis, halogenated compounds and some metal oxides. Exposures to dusts may have health hazards which are listed in this section.

**Appearance, Color and Odor:** Solid metal tubes and shapes, silver-color, odorless.

USA: As sold, the solid manufactured article is not considered hazardous. Metallic dust or fume, which may be generated during use of these products, is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Canada: As sold, the solid manufactured article is not controlled. Exposure to metallic dust or fume, which may be generated during use of these products, is controlled under WHMIS.

**Potential Health Effects** **ACUTE (short term): see Section 8 for exposure controls**

**Relevant Route(s) of Exposure:** Over-exposures to dust or fume by inhalation, skin and eye contact.

**Inhalation:** Overexposure to dust or fume may cause coughing, shortness of breath, respiratory tract irritation, congestion of the mucous membranes, lung damage and/or metal fume fever. The symptoms of metal fume fever typically appear several hours after exposure and are associated with any combination of the following symptoms; dry throat, cough, chills, fever, headache, chest tightening, shortness of breath, metallic taste, vomiting and fatigue.

**Ingestion:** Acute oral toxicity is low. Ingestion of large amounts of metallic dust may cause a metallic taste, gastrointestinal discomfort with nausea, vomiting and diarrhea.

**Skin:** Overexposure to this material in the form of dust may cause irritation with dermatitis. May cause an allergic skin reaction due to presence of Chromium or Nickel in metal dust. Contact with the heated product will cause thermal burns to the skin.

**Eye:** Overexposure to this material in the form of dust may cause irritation as a "foreign object". Fumes may be irritating to the eyes. Repeated occupational exposures to dust and fumes may cause conjunctivitis.



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## Section 2: Hazards Identification, continued

### CHRONIC (long term): see Section 11 for additional toxicological data

Long-term over-exposures to high concentrations of airborne dust or fumes may cause increased mucous flow in the nose and respiratory system. This condition usually disappears after exposure ceases.

Long-term over-exposure by inhalation of metallic dusts and fumes may cause chronic obstructive lung disease, rhinitis and/or bronchitis. Long-term over-exposure by inhalation of dusts may lead to fibrosis.

Exposure to dust and fumes from welding, mechanical or elevated temperature processing may present a cancer hazard (Hexavalent chromium [Cr VI], Lead, Nickel, Welding fumes).

Exposure to dust and fumes from welding, mechanical processing or elevated temperature processing may present a reproductive hazard (inorganic Lead).

### Medical Conditions Aggravated by Exposure:

Overexposure to this material in the form of metallurgical dust is hazardous to health. Pre-existing pulmonary and skin conditions such as emphysema, asthma, bronchitis and dermatitis may be aggravated by exposure to this material.

**Interactions With Other Chemicals:** See Section 10

**Potential Environmental Effects:** Prevent the release of waste metals into the environment.

## Section 3: Composition / Information on Ingredients

### Hazardous Ingredients:

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Wt.%</u>
Aluminum (Al)	7429-90-5	90.0 - 99.0
Manganese (Mn)	7439-96-5	0.5 - 1.5
Magnesium (Mg)	7439-95-4	0.5 - 1.2
Silicon (Si)	7440-21-3	0.1 - 1
Iron (Fe)	7439-89-6	0.1 - 0.7
Chromium (Cr)	7440-47-3	0 - 0.35
Copper (Cu)	7440-50-8	0 - 0.4
Zinc (Zn)	7440-66-6	0 - 0.25
Titanium (Ti)	7440-32-6	0 - 0.15
*Lead	7439-92-1	0 - 0.4
*Nickel	7440-02-0	0 - 0.2

\* Possible impurities, not intentionally added to the alloy mixture. These metals could potentially enter through the recycle stream.

## Section 4: First Aid Measures

**Inhalation:** If high airborne concentrations are present, take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). If symptoms are experienced, remove source of contamination or move victim to fresh air. Obtain medical advice.

**Eye Contact:** Do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. Have victim look right and left, and then up and down. If particle does not dislodge, flush with lukewarm, gently flowing water for 15 minutes or until particle is removed, while holding the eyelid(s) open. If irritation persists, obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye(s).

**Skin Contact:** No health effects expected. If irritation occurs, gently brush away dust particles quickly. Wash gently and thoroughly with lukewarm water and non-abrasive soap for 5 minutes. If irritation persists, obtain medical advice.

**Ingestion:** If dust is swallowed, obtain medical advice or contact a Poison Control Center.



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### Section 5: Fire Fighting Measures

<b>Flammable Properties:</b>	Bulk aluminum metal is not flammable. Aluminum powder can form explosive dust-air mixture, which can be ignited by a spark or flame. Explosions of aluminum dusts have occurred in industry. For safe handling information refer to NFPA 654, <i>Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids</i> .
<b>Suitable extinguishing Media:</b>	For aluminum fines or molten aluminum, smother fire with dry sand, dry clay, dry ground limestone, dry sodium chloride based extinguishers or use approved Class D dry powder extinguishers.
<b>Unsuitable extinguishing Media:</b>	For aluminum fines or molten aluminum, DO NOT use carbon dioxide, sodium bicarbonate, halogenated extinguishing agents, foam or water. Contact of burning aluminum with water forms flammable hydrogen gas, an extremely dangerous explosion hazard, particularly if the fire is in a confined area.
<b>Explosion Data</b>	
<b>Sensitivity to Mechanical Impact:</b>	Not sensitive
<b>Sensitivity to Static Discharge:</b>	Aluminum dust suspended in air may be ignited by a static discharge of sufficient energy.
<b>Specific Hazards arising from the Chemical:</b>	During a fire, the product may release fumes of the component metals and aluminum oxide fumes. Moist, finely divided aluminum powder may ignite in air, with the formation of flammable hydrogen gas.
<b>Protective Equipment and precautions for firefighters:</b>	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance.

### Section 6: Accidental Release Measures

<b>Personal Precautions:</b>	Wear proper personal protective equipment as indicated in Section 8.
<b>Environmental Precautions:</b>	Prevent material from contaminating soil and from entering sewers or waterways.
<b>Methods for Containment:</b>	No special methods required.
<b>Methods for Clean-up:</b>	Scoop or shovel spilled material into an appropriate waste container for recycling or disposal. For dust, use a vacuum with appropriate filters or a wet method to reduce airborne dust during clean-up; do not dry sweep. Collect scrap metal pieces for recycling.

### Section 7: Handling and Storage

<b>Storage Conditions:</b>	Product should be stored in a clean, dry area.
<b>Handling Precautions:</b>	Workers should be properly trained in safety procedures for cutting, grinding, polishing and other machining operations where these products are used. Wear appropriate personal protective equipment suitable for the type of operation and conforming to workplace requirements. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot aluminum does not present a warning color change. If processing of this product generates dust or if extremely fine particulate is generated, obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and NFPA 654, <i>Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids</i> . Workers involved in welding operations must be properly trained and certified.



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## Section 8: Exposure Controls/Personal Protection

### Exposure Guidelines

Consult local authorities for acceptable exposure limits.

<u>Ingredient</u>	<u>ACGIH TLV (8-hr. TWA) (mg/m<sup>3</sup>)</u>	<u>U.S. OSHA PEL (8-hr. TWA) (mg/m<sup>3</sup>)</u>
Aluminum	1 (respirable)	15 (total dust) 5 (respirable)
Manganese (Mn)	0.2 (Inhalable)	5 (fume as Mn); Ceiling limit
Chromium	0.5 (metal and Cr III compounds)	1 (metal and insoluble salts as Cr) 0.5 (Cr II and Cr III compounds as Cr)
Chromium (Cr VI) compounds	0.01 (insoluble Cr VI compounds) 0.05 (water soluble Cr VI compounds)	2.5 µg/m <sup>3</sup> Action Level (as Cr.); 5 µg/m <sup>3</sup> TWA (as Cr, Cancer hazard - see 29 CFR 1910.1026)
Silicon	Not established	5 (respirable) 15 (total dust)
Copper (Cu)	0.2 (fume) 1 (dust and mist, as Cu)	0.1 (fume as Cu) 1 (dust and mist, as Cu)
Lead (Pb)	0.05; BEI	30 µg/m <sup>3</sup> Action level (as Pb); 0.05 TWA (see 29 CFR 1910.1025)
Nickel (Ni)	1.5 (Inhalable)	1
Other Exposure controls: NIOSH REL Aluminum dust = TWA 10 mg/m <sup>3</sup> (total) TWA 5 mg/m <sup>3</sup> (respirable)		

### Exposure Controls

#### Engineering Controls:

Provide local exhaust ventilation or general dilution to maintain exposure levels below the exposure limits. Evaluate the need for explosion-proof ventilation systems where finely divided aluminum dust is generated.

Monitor noise levels to determine the hearing protection requirements.

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

#### Personal Protection

**Eye/Face Protection:** Wear equipment appropriate for the type of operation being performed, (e.g. safety glasses with side shields or goggles or a face-shield).

**Skin Protection:** Wear protective gloves and clean body-covering clothing when necessary to prevent exposure to this product. Wear protective equipment appropriate for the type of operation being performed.

**Respiratory Protection:** When metal dust concentrations in air exceed the occupational exposure guidelines, always wear respiratory protection. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or Canadian Standards Association (CSA) Standard Z94.4-2002 must be followed whenever workplace conditions warrant a respirator's use.

**Other Protective Equipment:** Wear hearing protection appropriate to the noise levels generated during all machine operations.

**General Hygiene Measures:** Launder contaminated clothing before re-wearing, or discard. Do not eat, drink or smoke in work areas. Wash hands thoroughly after working with this material and before eating, drinking, smoking or using the toilet. Maintain good housekeeping, keep the workplace clean and minimize the generation of airborne dust.



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### Section 9: Physical and Chemical Properties

<b>Physical State:</b>	Solid	<b>Flash Point &amp; method:</b>	Not applicable
<b>Appearance, Color and Odor:</b>	Metal tube or shaped piece, lustrous silver-color, odorless.	<b>Autoignition Temperature:</b>	Not applicable
<b>Odor Threshold:</b>	Not applicable	<b>Flammability Limits in Air:</b>	Not applicable
<b>pH:</b>	Not applicable	<b>Vapour Pressure:</b>	Not applicable
<b>Relative Density:</b>	2.5 – 2.9 at 25°C (77°F)	<b>Vapour Density:</b>	Not applicable
<b>Partition coefficient:</b>	Not applicable	<b>Evaporation Rate:</b>	Not applicable
<b>Solubility:</b>	Insoluble	<b>Boiling Point/Range:</b>	Not applicable
<b>Viscosity:</b>	Not applicable	<b>Melting Point:</b>	480 - 660°C (896-1220°F)
<b>Decomposition Temperature:</b>	Not available		

### Section 10: Stability and Reactivity

<b>Chemical Stability:</b>	Product, as sold, is a bulk metal article which is stable and non-reactive under normal conditions of use, storage and transport. Molten aluminum may explode on contact with water.
<b>Conditions to Avoid:</b>	Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas.
<b>Incompatible Materials:</b>	Aluminum chips, fines, dust and molten metal are reactive with the following: <ul style="list-style-type: none"><li>• Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.</li><li>• Heat: Oxidizes at a rate dependent upon temperature and particle size.</li><li>• Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.</li><li>• Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).</li><li>• Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum.</li><li>• Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.</li><li>• Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).</li></ul>
<b>Hazardous Decomposition Products:</b>	Thermal decomposition may release metal oxide fumes when product is heated above its melting point.
<b>Hazardous Reactions:</b>	Not applicable to bulk metal articles. In the form of fine particles, aluminum may explode when mixed with incompatible materials listed above.



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### Section 11: Toxicological Information

#### Acute Toxicity Data

Acute Toxicity Data is not available for this article.

Aluminum in its insoluble forms has been found to have low toxicity in acute toxicity tests.

#### Other Toxicity Data

##### **Carcinogenicity:**

Aluminum metal is not considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA or NTP (National Toxicology Program). ACGIH has designated metallic Aluminum as A4 – Not Classifiable as a Human Carcinogen.

ACGIH has designated metallic Copper as A4 – Not Classifiable as a Human Carcinogen.

Lead carcinogenicity: IARC Group 2B probably carcinogenic to humans. This conclusion is based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals. ACGIH A3 - confirmed animal carcinogen.

Nickel metal is suspected of causing cancer by inhalation (Inhalable size particles only). Nickel is an IARC Group 2B carcinogen (possible human carcinogen). Long-term occupational exposures to high concentrations of airborne nickel have been associated with lung and nasal cancers in epidemiological studies.

Chromium metal is designated as ACGIH A4 and IARC Group 3: Not classifiable as a human carcinogen. Chromium metal may be converted to the hexavalent state under strongly oxidizing conditions such as welding. Chromium Hexavalent Compounds are known to be human carcinogens.

##### **Irritation:**

Exposure to fine particulate may cause eye, skin and lung irritation and discomfort.

##### **Corrosivity:**

Not applicable

##### **Sensitization:**

Exposures to dusts of metallic nickel and chromium are known to cause allergic skin reactions in sensitized individuals.

##### **Neurological Effects:**

Limited evidence of adverse neurological effects associated with occupational exposures to Aluminum powders.

Long-term exposures, by inhalation or ingestion, to high concentrations of dusts containing manganese or lead may cause nervous system effects including muscle weakness, tremors and behavioral changes.

##### **Genetic Effects:**

Not available

##### **Reproductive Effects:**

Inorganic lead compounds are considered to cause reproductive toxicity based on human and animal information.

##### **Developmental Effects:**

Inorganic lead compounds are considered to cause developmental toxicity based on human and animal information.

##### **Target Organ Effects:**

From exposures to dust and fume: Upper respiratory system, Eyes, Skin.

### Section 12: Ecological Information

##### **Ecotoxicity:**

Due to the poor solubility of the product, no harmful effects on plants and/or aquatic organisms are to be expected when handled with due care and attention. Do not release wastes of this product to drains, sewers or natural waterways.

##### **Persistence/Degradability:**

Not applicable

##### **Bioaccumulation/Accumulation:**

Not available

##### **Mobility:**

Not available



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### Section 13: Disposal Considerations

**Waste Disposal Method:** It is the responsibility of the user to dispose of, or send for metal reclamation, any unused material, residues and containers in accordance with local, regional, national and international regulations. Prevent releases of this material into the environment. Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal or recycling as indicated in Section 7 Handling and Storage.

### Section 14: Transport Information

**U.S. Hazardous Materials Regulation (DOT 49CFR):** As sold, not regulated for transport.

**Canadian Transportation of Dangerous Goods (TDG):** Not regulated for transport.

**ICAO/IATA:** Not regulated for transport.

### Section 15: Regulatory Information

#### USA

**TSCA Status:** All substances are listed in the TSCA inventory.

**SARA Title III:**

Sec: 311/312: For dust and fume: Acute; Chronic; Flammable; Reactivity  
Sec. 313: Aluminum (fume or dust), Zinc (fume or dust) (and Zn compounds), Manganese compounds, Chromium (and Cr compounds), Copper (and Cu compounds), Lead (and Pb compounds), Nickel (and Ni compounds)

CERCLA RQ: Applicable to Aluminum, Manganese compounds, Zinc, Chromium, Copper, Lead, Nickel. The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm.

#### Canada

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

**WHMIS Classification:** As sold, this product is considered a manufactured article and is not controlled by WHMIS. In some workplaces, operations with this product may lead to generation of metallic dust or fume. Exposure to metallic dusts and fumes may have occupational health hazards and is controlled under WHMIS.

B6 - Flammable and combustible material - Reactive flammable material – molten metal and dust.

D2A – Materials causing other toxic effects. – Irritation and chronic health effects with repeated exposure by inhalation, to dust and fumes.

**New Substance Notification Regulations:** All substances in this product are listed on Canada's Domestic Substances List (DSL).

**National Pollutant Release Inventory:** Aluminum (fume or dust), Manganese (and its compounds), Zinc (and its compounds), Chromium (and its compounds), Copper (and its compounds), Lead (and its compounds), Nickel (and its compounds) are NPRI reportable substances.



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### Section 16: Other Information

#### Preparation Information:

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**Supplier Note:** This Safety Data Sheet has been prepared for the guidance of plant engineering, operations and management and for persons working with or handling this product.

To the best of The Supplier's knowledge and belief, the information within this document is accurate and reliable as of the date of preparation of this document. However, no warranty or guarantee, express or implied, is made as to the accuracy or reliability. The Supplier shall not be liable for any loss or damage arising out of the use thereof, including abnormal use or failure to adhere to recommended practices with respect to any hazards inherent in the nature of the product.

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