



SAFETY DATA SHEET

1. Identification

Product identifier ALUMINUM ALLOYS WITH LEAD

Other means of identification

SDS number 390

Version # 09

Other means of identification

Revision date 08-29-2014

Issue date 08-29-2014

Synonym(s) Alloys: 2005 * 2007, 2011, 2011A, 2028A, 2028B, 2030, 5058, 6012, 6018, 6042, 6064, 6064A, 6068, 6262, C06N, C243, C278, C2011, C2011S, C2011V, C34J, C40A, C53J, C6262, C6262V, FJ62

Recommended use Screw machine stock and extrusions

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

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Website: For a current Safety Data Sheet, refer to Alcoa websites: www.alcoa.com
or internally at my.alcoa.com EHS Community

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Sensitization, respiratory	Category 1
Sensitization, skin	Category 1
Carcinogenicity	Category 2
Reproductive toxicity	Category 1A
Specific target organ toxicity, repeated exposure	Category 2

Environmental hazards Not classified.

OSHA defined hazards Combustible dust

Label elements



Signal word Danger

Hazard statement May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Suspected of causing cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure. May form combustible dust concentrations in air.

Precautionary statement

Prevention

In case of inadequate ventilation wear respiratory protection. Do not breathe dust/fume/gas/mist/vapors/spray. Obtain special instructions before use. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required.

Response

If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention.

Storage

Store in a dry place. Keep dry.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

Supplemental information

None.

Specific hazards

Small chips, fine turnings, and dust from processing may be readily ignitable.

Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information):

- Dust or fines are dispersed in air.
- Chips, dust or fines are in contact with water.
- Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
- Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

Health effects from mechanical processing (e.g., cutting, grinding): Dust: Can cause irritation of the eyes, skin and upper respiratory tract.

3. Composition/information on ingredients

Composition comments

Complete composition is provided below and may include some components classified as non-hazardous.

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Aluminum		7429-90-5	>83
Silicon		7440-21-3	<12.6
Copper		7440-50-8	<6.1
Magnesium		7439-95-4	<5.6
Manganese		7439-96-5	<2.1
Nickel		7440-02-0	<2.1
Lead, Elemental		7439-92-1	0.15 - 2
Iron		7439-89-6	<1.1
Chromium		7440-47-3	<0.4

Additional compounds which may be formed during processing are listed in Section 8.

4. First-aid measures

Eye contact

Dust and fumes from processing: Rinse eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

Skin contact

Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Inhalation

Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, and presence of pulse. If breathing is difficult, provide oxygen. Loosen any tight clothing on neck or chest. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult a physician.

Ingestion

Not likely, due to the form of the product.

Most important symptoms/effects, acute and delayed

See Section 11 of the SDS for additional information on health hazards.

Indication of immediate medical attention and special treatment needed

In case of shortness of breath, give oxygen. Symptoms may be delayed.

General information

Dust and fume from processing: If exposed or concerned: get medical attention/advice.

5. Fire-fighting measures

Suitable extinguishing media

Use Class D extinguishing agents on fines, dust or molten metal.
Use coarse water spray on chips and turnings.
Apply extinguishing media carefully to avoid creating airborne dust.

Unsuitable extinguishing media

DO NOT USE halogenated extinguishing agents on small chips/fines.
DO NOT USE water in fighting fires around molten metal.
These fire extinguishing agents will react with the burning material.

Specific hazards arising from the chemical

May be a potential hazard under the following conditions:

- Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
- Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
- Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
- Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.

Hazardous combustion products

Residual oil: Carbon monoxide and carbon dioxide.

Special protective equipment and precautions for firefighters

Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

Fire-fighting equipment/instructions

If impossible to extinguish, protect surroundings and allow fire to burn itself out. Apply extinguishing media carefully to avoid creating airborne dust. Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material.

General fire hazards

This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with sharp edges or heated metal. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold. Use personal protection recommended in Section 8 of the SDS.

Evacuation procedures

Molten metal: Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed.

Methods and materials for containment and cleaning up

Collect scrap for recycling. If molten: Use dry sand to contain the flow of material. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap. For waste disposal, see section 13 of the SDS.

Environmental precautions

Collect and dispose of spillage as indicated in section 13 of the SDS.

7. Handling and storage

Handling

Keep material dry. Minimize dust generation and accumulation. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red. When using, do not eat, drink or smoke. Use personal protection recommended in Section 8 of the SDS. Wash thoroughly after handling.

Storage

Store in a dry area.

Requirements for Processes Which Generate Dusts or Fines

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 National Fire Protection Association (NFPA) brochures listed in Section 16.

Use non-sparking handling equipment, tools and natural bristle brush. Cover and reseal partially empty containers. Provide grounding and bonding where necessary to prevent accumulation of static charges during metal dust handling and transfer operations (See Section 15).

Local ventilation and vacuum systems must be designed to handle explosive dusts. Dry vacuums and electrostatic precipitators must not be used, unless specifically approved for use with flammable/explosive dusts. Dust collection systems must be dedicated to aluminum dust only and should be clearly labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Avoid all ignition sources. Good housekeeping practices must be maintained. Do not use compressed air to remove settled material from floors, beams or equipment. Do not allow chips, fines or dust to contact water, particularly in enclosed areas.

Requirements for Remelting of Scrap Material or Ingot

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

All tooling, containers, molds and ladles which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Any surfaces that may contact molten metal (e.g., concrete) should be specially coated.

Drops of molten metal in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Vigorous circulation of the water and removal of the particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:

- Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
- Store materials in dry, heated areas with any cracks or cavities pointed downwards.
- Preheat and dry large items adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the metal temperature of the coldest item of the batch to 400°F (200°C) and then hold at that temperature for 6 hours.

Precautions for safe handling

Keep material dry. Minimize dust generation and accumulation. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red. When using, do not eat, drink or smoke. Use personal protection recommended in Section 8 of the SDS. Wash thoroughly after handling. No specific recommendations.

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA Components

U.S. - OSHA Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	5 mg/m ³	Respirable fraction
		15 mg/m ³	Total dust
Chromium (CAS 7440-47-3)	TWA	1 mg/m ³	
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0.1 mg/m ³	Fume.
Manganese (CAS 7439-96-5)	Ceiling	5 mg/m ³	Fume
Nickel (CAS 7440-02-0)	TWA	1 mg/m ³	
Silicon (CAS 7440-21-3)	TWA	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust

U.S. - OSHA Compounds Formed During Processing	Type	Value	Form
Aluminum oxide (non-fibrous) (CAS 1344-28-1)	TWA	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.
Chromium (II) compounds (CAS No. Not available)	TWA	0.5 mg/m ³	(as Cr)
Chromium (III) compounds (CAS No. Not available)	TWA	0.5 mg/m ³	(as Cr)
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	TWA	0.0025 mg/m ³	Action Level as Cr(VI)
Chromium (VI) compounds (CAS 18540-29-9)	TWA	0.0025 mg/m ³	Action Level as Cr(VI)
Iron oxide (CAS 1309-37-1)	TWA	10 mg/m ³	Fume.
Lead compounds, inorganic (CAS No. Not available)	TWA	0.05 mg/m ³	(as Pb)
		0.03 mg/m ³	Action Level (as Pb)
Nickel compounds, insoluble (CAS No. Not available)	TWA	1 mg/m ³	(as Ni)
Nitric oxide (CAS 10102-43-9)	TWA	30 mg/m ³	
		25 ppm	
Oil mist, mineral (CAS 8012-95-1)	TWA	5 mg/m ³	Mist.
Ozone (CAS 10028-15-6)	TWA	0.2 mg/m ³	
		0.1 ppm	

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value	
Lead, Elemental (CAS 7439-92-1)	TWA	0.05 mg/m ³	
Compounds Formed During Processing	Type	Value	Form
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	TWA	0.005 mg/m ³	as Cr(VI)
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	TWA	0.005 mg/m ³	
Chromium (VI) compounds (CAS 18540-29-9)	TWA	0.005 mg/m ³	as Cr(VI)

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Compounds Formed During Processing	Type	Value	Form
Magnesium oxide (CAS 1309-48-4)	PEL	15 mg/m ³	Total particulate.
Manganese oxide (CAS 1344-43-0)	Ceiling	5 mg/m ³	
Nitrogen dioxide (CAS 10102-44-0)	Ceiling	9 mg/m ³	
		5 ppm	
Oil mist, mineral (CAS 8012-95-1)	PEL	5 mg/m ³	Mist.

ACGIH**Compounds Formed During Processing**

	Type	Value	Form
Aluminum oxide (non-fibrous) (CAS 1344-28-1)	TWA	1 mg/m3	Respirable fraction, as Al
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	TWA	0.05 mg/m3	(as Cr)
Chromium (VI) compounds (CAS 18540-29-9)	TWA	0.05 mg/m3	Soluble compounds as Cr
Ozone (CAS 10028-15-6)	TWA	0.2 ppm	(Heavy, moderate or light workloads (≤2 hours))

US ACGIH Threshold Limit Values: Time Weighted Average (TWA): mg/m3 & ppm**Compounds Formed During Processing**

	Type	Value	
Nitric oxide (CAS 10102-43-9)	TWA	25 ppm	
Nitrogen dioxide (CAS 10102-44-0)	TWA	0.2 ppm	

US ACGIH Threshold Limit Values: Time Weighted Average (TWA): mg/m3, non-standard units**Components**

	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Chromium (CAS 7440-47-3)	TWA	0.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Lead, Elemental (CAS 7439-92-1)	TWA	0.05 mg/m3	
Manganese (CAS 7439-96-5)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.

Compounds Formed During Processing

	Type	Value	Form
Chromium (III) compounds (CAS No. Not available)	TWA	0.5 mg/m3	
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	TWA	0.01 mg/m3	(as Cr)
Chromium (VI) compounds (CAS 18540-29-9)	TWA	0.01 mg/m3	Insoluble compounds as Cr
Iron oxide (CAS 1309-37-1)	TWA	5 mg/m3	Respirable fraction.
Lead compounds, inorganic (CAS No. Not available)	TWA	0.05 mg/m3	
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Inhalable fraction.
Manganese oxide (CAS 1344-43-0)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.
Nickel compounds, insoluble (CAS No. Not available)	TWA	0.2 mg/m3	Inhalable fraction.
Oil mist, mineral (CAS 8012-95-1)	TWA	5 mg/m3	Inhalable fraction.

Alcoa**Components**

	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	3 mg/m3	Respirable fraction
		10 mg/m3	Total dust
Manganese (CAS 7439-96-5)	TWA	0.05 mg/m3	Total dust.

Alcoa Components	Type	Value	Form
Nickel (CAS 7440-02-0)	TWA	0.02 mg/m ³ 1 mg/m ³	Respirable fraction.
Compounds Formed During Processing	Type	Value	Form
Aluminum oxide (non-fibrous) (CAS 1344-28-1)	TWA	3 mg/m ³	Respirable fraction.
Chromium (VI) compounds (CAS 18540-29-9)	TWA	10 mg/m ³ 0.25 µg/m ³	Total dust.
Nickel compounds, insoluble (CAS No. Not available)	TWA	0.1 mg/m ³	Insoluble
Oil mist, mineral (CAS 8012-95-1)	TWA	0.5 mg/m ³	(8 Hour)

General

Personnel who handle and work with molten metal should utilize primary protective clothing like polycarbonate face shields, fire resistant tapper's jackets, neck shades (snoods), leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten metal. Synthetic materials should never be worn even as secondary clothing (undergarments).

Minimize breathing oil vapors and mist. Remove oil contaminated clothing; launder or dry-clean before reuse. Remove oil contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work period. Oil coating is readily removed from skin with waterless hand cleaners followed by a thorough washing with soap and water.

Appropriate engineering controls

If dust and fumes are generated through processing: Use with adequate explosion-proof ventilation designed to handle particulates to meet the limits listed in Section 8, Exposure Guidelines.

Individual protection measures, such as personal protective equipment

Eye/face protection

Safety glasses with full side shields or goggles recommended. If molten: Goggles/face shield are recommended.

Skin protection

Hand protection

Wear impervious gloves to avoid repeated or prolonged skin contact with residual oils and to avoid any skin injury. When handling hot material, use heat resistant gloves.

Other

The need for personal protective equipment should be based upon a hazard assessment and recommendations from health / safety professionals. Molten metal: Wear fire/flame resistant/retardant clothing. Wear heat resistant gloves. Full Face Shield.

Respiratory protection

Dust and fumes from processing: Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8. Suggested respiratory protection: P100 for Lead.

Thermal hazards

Contact with molten material can cause thermal burns. Hot aluminum does not necessarily glow red. Flame retardant protective clothing is recommended. When material is heated, wear gloves to protect against thermal burns.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Form	Solid.
Color	Silver.
Odor	Odorless
Odor threshold	Not applicable
pH	Not applicable
Melting point/freezing point	1005.8 - 1205.6 °F (541 - 652 °C)
Initial boiling point and boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not applicable

Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - upper (%)	Not applicable
Flammability limit - lower (%)	Not applicable
Explosive properties	Dust clouds may be explosive under certain conditions.
Dust explosion properties	
St class	Very strong explosion.
Vapor pressure	Not applicable
Vapor density	Not applicable
Relative density	Not determined
Solubility(ies)	Insoluble
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity	Not applicable

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal conditions of use, storage, and transportation as shipped.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	<p>Chips, fines, dust and molten metal are considerably more reactive with the following:</p> <ul style="list-style-type: none"> • Water: Slowly generates flammable and explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Water/aluminum mixtures may be hazardous when confined. • Heat: Oxidizes at a rate dependent upon temperature and particle size.
Incompatible materials	<p>Chips, fines, dust and molten metal are considerably more reactive with the following:</p> <ul style="list-style-type: none"> • 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. • Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). • Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided or molten aluminum. • 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. • Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C). <p>Thermite explosions have been reported when aluminum alloys were melted in furnaces used for alloying with lead, bismuth or other metals with low melting temperatures. These metals, when added as high purity ingots, can seep through cracks in furnace liners and become oxidized. During subsequent melts in the furnace, molten aluminum can contact these metal oxides resulting in a thermite explosion.</p>
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Eye contact	If dust and fumes are generated through processing: Can cause irritation.
Skin contact	May cause an allergic skin reaction. Can cause irritation. Prolonged or repeated skin contact may cause dermatitis. Contains nickel compounds. May produce an allergic reaction.

Inhalation

Health effects from mechanical processing (e.g., cutting, grinding): Dust from processing: Can cause irritation of the upper respiratory tract. Chronic exposure: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes), respiratory sensitization and reproductive harm.

Additional health effects from elevated temperature processing (e.g., welding, melting): Dust and fumes from processing: Acute exposure: Can cause metal fume fever (nausea, fever, chills, shortness of breath, malaise), the accumulation of fluid in the lungs and the reduced ability of the blood to carry oxygen. Chronic exposure: Can cause scarring of the lungs and lung cancer.

Ingestion

Not likely, due to the form of the product.

Symptoms related to the physical, chemical and toxicological characteristics

Health effects from mechanical processing (e.g., cutting, grinding): Contains nickel. May produce an allergic reaction. Contains (chromium). May produce an allergic reaction. May cause sensitization by inhalation and skin contact. Dust: Can cause irritation of the upper respiratory tract. Chronic exposure: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes) respiratory sensitization and reproductive harm.

Additional health effects from elevated temperature processing (e.g., if heated to decomposition): Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Acute exposure: Can cause the accumulation of fluid in the lungs (pulmonary edema) and reduced ability of the blood to carry oxygen (methemoglobin). Can cause scarring of the lungs (pulmonary fibrosis) and lung cancer. Lead may damage kidney function, the blood forming system and the reproductive system.

Health effects associated with ingredients

Aluminum dust/fines and fumes: Low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).

Silicon (inert dusts): Chronic overexposures: Can cause chronic bronchitis and narrowing of airways.

Copper dust/mists: Can cause irritation of the eyes, mucous membranes, skin, and respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes) and hair discoloration.

Manganese dust or fumes: Chronic overexposures: Can cause inflammation of the lung tissues, scarring of the lungs (pulmonary fibrosis), central nervous system damage, Secondary Parkinson's Disease and reproductive harm in males.

Nickel dust and fume: Can cause irritation of eyes, skin and respiratory tract. Eye contact: Can cause inflammation of the eyes and eyelids (conjunctivitis). Skin contact: Can cause sensitization and allergic contact dermatitis. Chronic overexposures: Can cause perforation of the nasal septum, inflammation of the nasal passages (sinusitis), respiratory sensitization, asthma and scarring of the lungs (pulmonary fibrosis). Nickel alloys IARC/NTP: Reviewed and not recommended for listing by NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Lead dust or fume: Can cause irritation of eyes and upper respiratory tract. Acute overexposures: Can cause nausea and muscle cramps. Chronic overexposures: Can cause weakness in the extremities (peripheral neuropathy), abdominal cramps, gastrointestinal tract effects, kidney damage, liver damage, central nervous system damage, damage to the blood forming organs, blood cell damage and reproductive harm. Can cause reduced fertility and fetal toxicity in pregnant women. IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Chromium dust and fumes: Can cause irritation of eye, skin and respiratory tract.

Metallic chromium and trivalent chromium: Not classifiable as to their carcinogenicity to humans by IARC.

Some products are supplied with an oil coating or have residual oil from the manufacturing process.

Oil: Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis.

Health effects associated with compounds formed during processing

The following could be expected if welded, remelted or otherwise processed at elevated temperatures:

Alumina (aluminum oxide): Low health risk by inhalation. Generally considered to be biologically inert.

Silica, amorphous: Acute overexposures: Can cause dryness of eyes, nose and upper respiratory tract.

Copper fume: Can cause irritation of the eyes, mucous membranes, and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Magnesium oxide fumes: Can cause irritation of the eyes and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Manganese oxide fumes: Can cause irritation of the eyes, skin, and respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, fever, chills, shortness of breath and malaise).

Nickel compounds: Can cause irritation of eyes, skin and respiratory tract. Skin contact: Can cause sensitization and allergic contact dermatitis. Chronic overexposures: Can cause perforation of the nasal septum, inflammation of the nasal passages (sinusitis), respiratory sensitization and asthma. Associated with lung cancer, cancer of the vocal cords and nasal cancer. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Lead (inorganic compounds): IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as probably carcinogenic to humans by IARC (Group 2A).

Iron oxide: Chronic overexposures: Can cause benign lung disease (siderosis). Ingestion: Can cause irritation of gastrointestinal tract, bleeding, changes in the pH of the body fluids (metabolic acidosis) and liver damage.

Hexavalent chromium compounds (chromium VI): Can cause irritation of eye, skin and respiratory tract. Skin contact: Can cause irritant dermatitis, allergic reactions and skin ulcers. Chronic overexposures: Can cause perforation of the nasal septum, respiratory sensitization, asthma, the accumulation of fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated.

Oil vapor or mist: Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone.

Ozone: Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and the accumulation of fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies (inhalation) with experimental animals have found genetic damage, reproductive harm, blood cell damage, lung damage and death.

Welding fumes: IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B).

Plasma arc cutting of aluminum can generate oxides of nitrogen.

Oxides of nitrogen (NO and NO₂): Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause reduced ability of the blood to carry oxygen (methemoglobin). Can cause cough, shortness of breath, accumulation of fluid in the lungs (pulmonary edema) and death. Effects can be delayed up to 2-3 weeks.

Nitrogen dioxide (NO₂): Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis).

Information on toxicological effects

Acute toxicity Not classified. Based on available data, the classification criteria are not met.

Components	Species	Test Results
Aluminum (CAS 7429-90-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 2.3 mg/l 7.6 mg/l
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg

Components	Species	Test Results
Nickel (CAS 7440-02-0)		
Acute		
<i>Oral</i>		
LD50	Rat	> 9000 mg/kg
Compounds Formed During Processing	Species	Test Results
Aluminum oxide (non-fibrous) (CAS 1344-28-1)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 2.3 mg/l 7.6 mg/l
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Nitric oxide (CAS 10102-43-9)		
Acute		
<i>Inhalation</i>		
LC50	Rat	115 mg/l, 1 Hours 57.5 mg/l, 4 Hours
Nitrogen dioxide (CAS 10102-44-0)		
Acute		
<i>Inhalation</i>		
LC50	Guinea pig Rat	30 ppm, 1 Hours 88 ppm, 4 Hours
Silica, amorphous (CAS 69012-64-2)		
Acute		
<i>Oral</i>		
LD50	Mouse Rat	> 15000 mg/kg > 22500 mg/kg
Iron oxide (CAS 1309-37-1)		
Acute		
<i>Oral</i>		
LD50	Rat	> 10000 mg/kg
Skin corrosion/irritation	Non-corrosive.	
Serious eye damage/eye irritation	Dust and fume from processing: May irritate eyes.	
Respiratory or skin sensitization	Contains nickel. May produce an allergic reaction. Contains chromium. May produce an allergic reaction. May cause sensitization by inhalation and skin contact.	
Respiratory sensitization	Contains nickel. May produce an allergic reaction. Contains chromium. May produce an allergic reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.	
Skin sensitization	Contains chromium. May produce an allergic reaction. Dust and fume from processing: May cause irritation. Contains nickel. May produce an allergic reaction. May cause sensitization by skin contact.	
Germ cell mutagenicity	Classification not possible. Based on available data, the classification criteria are not met.	
Carcinogenicity	Dust from mechanical processing: Can present a cancer hazard (Lead, Nickel). Dust and fumes from welding or elevated temperature processing: Can present a cancer hazard (Hexavalent chromium, Lead compounds, Nickel compounds, Welding fumes).	
ACGIH Carcinogens		
Aluminum (CAS 7429-90-5)		A4 Not classifiable as a human carcinogen.
Aluminum oxide (non-fibrous) (CAS 1344-28-1)		A4 Not classifiable as a human carcinogen.
Chromium (CAS 7440-47-3)		A4 Not classifiable as a human carcinogen.
Chromium (III) compounds (CAS No. Not available)		A4 Not classifiable as a human carcinogen.
Chromium (VI) compounds (CAS 18540-29-9)		A1 Confirmed human carcinogen.

Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	A1 Confirmed human carcinogen.
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	A1 Confirmed human carcinogen.
Iron oxide (CAS 1309-37-1)	A4 Not classifiable as a human carcinogen.
Lead compounds, inorganic (CAS No. Not available)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Lead, Elemental (CAS 7439-92-1)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Magnesium oxide (CAS 1309-48-4)	A4 Not classifiable as a human carcinogen.
Manganese (CAS 7439-96-5)	A4 Not classifiable as a human carcinogen.
Manganese oxide (CAS 1344-43-0)	A4 Not classifiable as a human carcinogen.
Nickel (CAS 7440-02-0)	A5 Not suspected as a human carcinogen.
Nickel compounds, insoluble (CAS No. Not available)	A1 Confirmed human carcinogen.
Nitrogen dioxide (CAS 10102-44-0)	A4 Not classifiable as a human carcinogen.
Oil mist, mineral (CAS 8012-95-1)	A2 Suspected human carcinogen.
Ozone (CAS 10028-15-6)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Chromium (CAS 7440-47-3)	3 Not classifiable as to carcinogenicity to humans.
Chromium (III) compounds (CAS No. Not available)	3 Not classifiable as to carcinogenicity to humans.
Chromium (VI) compounds (CAS 18540-29-9)	1 Carcinogenic to humans.
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	1 Carcinogenic to humans.
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	1 Carcinogenic to humans.
Iron oxide (CAS 1309-37-1)	3 Not classifiable as to carcinogenicity to humans.
Lead compounds, inorganic (CAS No. Not available)	2A Probably carcinogenic to humans.
Lead, Elemental (CAS 7439-92-1)	2B Possibly carcinogenic to humans.
Nickel (CAS 7440-02-0)	1 Carcinogenic to humans.
Nickel compounds, insoluble (CAS No. Not available)	1 Carcinogenic to humans.
Silica, amorphous (CAS 69012-64-2)	3 Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Chromium (VI) compounds (CAS 18540-29-9)	Known To Be Human Carcinogen.
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Known To Be Human Carcinogen.
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Known To Be Human Carcinogen.
Lead compounds, inorganic (CAS No. Not available)	Reasonably Anticipated to be a Human Carcinogen.
Lead, Elemental (CAS 7439-92-1)	Reasonably Anticipated to be a Human Carcinogen.
Nickel (CAS 7440-02-0)	Known To Be Human Carcinogen.
Oil mist, mineral (CAS 8012-95-1)	Reasonably Anticipated to be a Human Carcinogen.
	Known To Be Human Carcinogen.

Reproductive toxicity	Dust and fumes from processing: Can present a reproductive hazard (Lead compounds, Manganese compounds).
Specific target organ toxicity - single exposure	Classification not possible. Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure	Dust and fumes from processing: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	Not applicable. Not an aspiration hazard.
Chronic effects	Dust and fumes from processing: Chronic exposure: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes), respiratory sensitization and reproductive harm. Prolonged skin contact may cause skin irritation and/or dermatitis. Dust and fumes from welding or elevated temperature processing: Can cause scarring of the lungs and lung cancer.

12. Ecological information

Ecotoxicity	The product is not expected to be toxic to aquatic organisms.
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Components	Species		Test Results
Aluminum (CAS 7429-90-5)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.31 mg/l, 96 hours
			0.16 mg/l, 96 hours
			0.12 mg/l, 96 hours
Chromium (CAS 7440-47-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.01 - 0.7 mg/l, 48 hours
Fish	LC50	Carp (Cyprinus carpio)	14.3 mg/l, 96 hours
Copper (CAS 7440-50-8)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.036 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	0.0319 - 0.0544 mg/l, 96 hours
Iron (CAS 7439-89-6)			
Aquatic			
Crustacea	LC50	Cockle (Cerastoderma edule)	100 - 330 mg/l, 48 hours
		Common shrimp, sand shrimp (Crangon crangon)	33 - 100 mg/l, 48 hours
Fish	LC50	Channel catfish (Ictalurus punctatus)	> 500 mg/l, 96 hours
Lead, Elemental (CAS 7439-92-1)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	1.17 mg/l, 96 hours
Manganese (CAS 7439-96-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	40 mg/l, 48 hours
Nickel (CAS 7440-02-0)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	2.923 mg/l, 96 hours
Compounds Formed During Processing	Species	Test Results	
Nitrogen dioxide (CAS 10102-44-0)			
Aquatic			
Fish	LC50	Tench (Tinca tinca)	19.6 mg/l, 96 hours
Ozone (CAS 10028-15-6)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.0081 - 0.0106 mg/l, 96 hours

Persistence and degradability	The product contains inorganic compounds which are not biodegradable.
Bioaccumulative potential	Bioaccumulation is unlikely to be significant because of the low water solubility of this product.
Mobility in soil	Not considered mobile.
Mobility in general	Not considered mobile.
Other adverse effects	Not available.

13. Disposal considerations

Disposal instructions	Reuse or recycle material whenever possible. If reuse or recycling is not possible, disposal must be made according to local or governmental regulations. Keep scrap separate from other metal scrap.
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Waste codes	RCRA Status: Must be determined at the point of waste generation. If material is disposed as a waste, it must be characterized under RCRA according to 40 CFR, Part 261, or state equivalent in the U.S. TCLP testing is recommended for lead, chromium in a waste disposal scenario.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Dispose of in accordance with local regulations.

14. Transport information

General Shipping Information

Basic Shipping Information

ID number	-
Proper shipping name	Not regulated
Hazard class	-
Packing group	-

General Shipping Notes

- When "Not regulated", enter the proper freight classification, SDS Number and Product Name onto the shipping paperwork.

Disclaimer

This section provides basic classification information and, where relevant, information with respect to specific modal regulations, environmental hazards and special precautions. Otherwise, it is presumed that the information is not available/not relevant

15. Regulatory information

US federal regulations All electrical equipment must be suitable for use in hazardous atmospheres involving aluminum powder in accordance with 29 CFR 1910.307. The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installation which will meet this requirement.

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Chromium (VI) compounds (CAS 18540-29-9)	0.1 % Annual Export Notification required.
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	0.1 % Annual Export Notification required.
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	0.1 % Annual Export Notification required.

CERCLA Hazardous Substance List (40 CFR 302.4)

Chromium (CAS 7440-47-3)	LISTED
Chromium (II) compounds (CAS No. Not available)	LISTED
Chromium (III) compounds (CAS No. Not available)	LISTED
Chromium (VI) compounds (CAS 18540-29-9)	LISTED
Copper (CAS 7440-50-8)	LISTED
Lead compounds, inorganic (CAS No. Not available)	LISTED
Lead, Elemental (CAS 7439-92-1)	LISTED

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Chromium (VI) compounds (CAS 18540-29-9)	Cancer
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Cancer
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Cancer
Lead compounds, inorganic (CAS No. Not available)	Reproductive toxicity
Lead, Elemental (CAS 7439-92-1)	Reproductive toxicity
Chromium (VI) compounds (CAS 18540-29-9)	Eye irritation
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Eye irritation
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Eye irritation
Lead compounds, inorganic (CAS No. Not available)	Central nervous system
Lead, Elemental (CAS 7439-92-1)	Central nervous system
Chromium (VI) compounds (CAS 18540-29-9)	Skin sensitization
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Skin sensitization

Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Skin sensitization
Lead compounds, inorganic (CAS No. Not available)	Kidney
Lead, Elemental (CAS 7439-92-1)	Kidney
Lead compounds, inorganic (CAS No. Not available)	Blood
Lead, Elemental (CAS 7439-92-1)	Blood
Lead compounds, inorganic (CAS No. Not available)	Acute toxicity
Lead, Elemental (CAS 7439-92-1)	Acute toxicity

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 hazard categories	Immediate Hazard - Yes	If particulates/fumes generated during processing
	Delayed Hazard - Yes	If particulates/fumes generated during processing
	Fire Hazard - No	
	Pressure Hazard - No	
	Reactivity Hazard - Yes	If molten

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Aluminum	7429-90-5	>83
Copper	7440-50-8	<6.1
Manganese	7439-96-5	<2.1
Nickel	7440-02-0	<2.1
Lead, Elemental	7439-92-1	0.15 - 2

US state regulations WARNING: Processing of this product under certain conditions could create chromium (hexavalent compounds). Chromium (hexavalent compounds) are chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
 WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

- Aluminum (CAS 7429-90-5)
- Aluminum oxide (non-fibrous) (CAS 1344-28-1)
- Chromium (CAS 7440-47-3)
- Copper (CAS 7440-50-8)
- Iron oxide (CAS 1309-37-1)
- Lead, Elemental (CAS 7439-92-1)
- Magnesium (CAS 7439-95-4)
- Magnesium oxide (CAS 1309-48-4)
- Manganese (CAS 7439-96-5)
- Nickel (CAS 7440-02-0)
- Oil mist, mineral (CAS 8012-95-1)
- Silicon (CAS 7440-21-3)

US. New Jersey Worker and Community Right-to-Know Act

- Aluminum (CAS 7429-90-5) 500 LBS
- Aluminum oxide (non-fibrous) (CAS 1344-28-1) 500 LBS
- Chromium (CAS 7440-47-3) 500 LBS
- Chromium (II) compounds (CAS No. Not available) 500 LBS
- Chromium (III) compounds (CAS No. Not available) 500 LBS
- Chromium (VI) compounds (CAS 18540-29-9) 500 LBS
- Chromium (VI) compounds, water soluble forms (CAS No. Not available) 500 LBS
- Copper (CAS 7440-50-8) 500 LBS
- Lead compounds, inorganic (CAS No. Not available) 500 LBS
- Lead, Elemental (CAS 7439-92-1) 500 LBS
- Manganese (CAS 7439-96-5) 500 LBS
- Manganese oxide (CAS 1344-43-0) 500 LBS
- Nickel (CAS 7440-02-0) 500 LBS
- Nickel compounds, insoluble (CAS No. Not available) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

- Aluminum (CAS 7429-90-5)

Aluminum oxide (non-fibrous) (CAS 1344-28-1)
Chromium (CAS 7440-47-3)
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)
Chromium (VI) compounds, water soluble forms (CAS No. Not available)
Copper (CAS 7440-50-8)
Iron oxide (CAS 1309-37-1)
Lead, Elemental (CAS 7439-92-1)
Magnesium (CAS 7439-95-4)
Magnesium oxide (CAS 1309-48-4)
Manganese (CAS 7439-96-5)
Nickel (CAS 7440-02-0)
Oil mist, mineral (CAS 8012-95-1)
Silica, amorphous (CAS 69012-64-2)
Silicon (CAS 7440-21-3)

US. Rhode Island RTK

Aluminum (CAS 7429-90-5)
Aluminum oxide (non-fibrous) (CAS 1344-28-1)
Chromium (CAS 7440-47-3)
Chromium (II) compounds (CAS No. Not available)
Chromium (VI) compounds (CAS 18540-29-9)
Chromium (VI) compounds, water soluble forms (CAS No. Not available)
Copper (CAS 7440-50-8)
Lead compounds, inorganic (CAS No. Not available)
Lead, Elemental (CAS 7439-92-1)
Manganese (CAS 7439-96-5)
Manganese oxide (CAS 1344-43-0)
Nickel (CAS 7440-02-0)
Nickel compounds, insoluble (CAS No. Not available)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Chromium (VI) compounds (CAS 18540-29-9)	Listed: February 27, 1987
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Listed: February 27, 1987
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Listed: February 27, 1987
Lead compounds, inorganic (CAS No. Not available)	Listed: October 1, 1992
Lead, Elemental (CAS 7439-92-1)	Listed: October 1, 1992
Nickel (CAS 7440-02-0)	Listed: May 7, 2004
Nickel compounds, insoluble (CAS No. Not available)	Listed: May 7, 2004

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Chromium (VI) compounds (CAS 18540-29-9)	Listed: December 19, 2008
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Listed: December 19, 2008
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Listed: December 19, 2008
Lead compounds, inorganic (CAS No. Not available)	Listed: February 27, 1987
Lead, Elemental (CAS 7439-92-1)	Listed: February 27, 1987

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Chromium (VI) compounds (CAS 18540-29-9)	Listed: December 19, 2008
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Listed: December 19, 2008
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Listed: December 19, 2008
Lead compounds, inorganic (CAS No. Not available)	Listed: February 27, 1987
Lead, Elemental (CAS 7439-92-1)	Listed: February 27, 1987

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Chromium (VI) compounds (CAS 18540-29-9)	Listed: December 19, 2008
Chromium (VI) compounds, certain water insoluble forms (CAS No. Not available)	Listed: December 19, 2008
Chromium (VI) compounds, water soluble forms (CAS No. Not available)	Listed: December 19, 2008

Lead compounds, inorganic (CAS No. Not available) Listed: February 27, 1987
Lead, Elemental (CAS 7439-92-1) Listed: February 27, 1987

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	08-29-2014
Revision date	08-29-2014
Version #	09
Revision Information	Product and Company Identification: Synonyms Composition / Information on Ingredients: Ingredients Physical & Chemical Properties: Multiple Properties Transport Information: Hazreg Values Transportation Regulatory Information: United States HazReg Data: North America GHS: Qualifiers
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available.
SDS Status	August 29, 2014: Change(s) in Section: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15 and 16. November 11, 2012: Change(s) in Section: 1, 2, 4, 5, 6, 7, 8, 19, 11, 12, 13, 15 and 16. June 2, 2011: New format. May 12, 2008: Change(s) in Section: 2, 3, 9 and 11. June 15, 2007: Changes in classification of European versions only. February 6, 2007: Change(s) in Section: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14 and 15. July 8, 2005: Reviewed on a periodic basis in accordance with Alcoa policy. Change(s) in Section: 1, 2, 3, 5, 8 and 15. May 24, 2002: Change(s) in Section: 1, 2 and 8. Preparer: Jim Perriello, +1-865-977-2051 MSDS System Number: 115889

Other information

- Guide to Occupational Exposure Values 2014, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).
- NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, September 2005.
- expub, Expert Publishing, LLC., www.expub.com,
- Ariel, 3E Company, www.3Ecompany.com
- Aluminum Association's Bulletin F-1, "Guidelines for Handling Aluminum Fines Generated During Various Aluminum Fabricating Operations." The Aluminum Association, 1525 Wilson Boulevard, Suite 600, Arlington, Virginia 22209, www.aluminum.org.
- Aluminum Association, "Guidelines for Handling Molten Aluminum, The Aluminum Association, 1525 Wilson Boulevard, Suite 600, Arlington, Virginia 22209, www.aluminum.org.
- NFPA 484, Standard for Combustible Metals (NFPA phone: 800-344-3555)
- NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
- NFPA 70, Standard for National Electrical Code (Electrical Equipment, Grounding and Bonding)
- NFPA 77, Standard for Static Electricity

Key/Legend:

ACGIH	American Conference of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstract Services
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPR	Cardio-pulmonary Resuscitation
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
EC	Effective Concentration
ED	Effective Dose
EINECS	European Inventory of Existing Commercial Chemical Substances
ENCS	Japan - Existing and New Chemical Substances
EWC	European Waste Catalogue
EPA	Environmental Protective Agency
IARC	International Agency for Research on Cancer
LC	Lethal Concentration
LD	Lethal Dose
MAK	Maximum Workplace Concentration (Germany) "maximale Arbeitsplatz-Konzentration"
NDSL	Non-Domestic Substances List (Canada)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PIN	Product Identification Number
PMCC	Pensky Marten Closed Cup
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SIMDUT	Système d'Information sur les Matières Dangereuses Utilisées au Travail
STEL	Short Term Exposure Limit
TCLP	Toxic Chemicals Leachate Program
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
WHMIS	Workplace Hazardous Materials Information System
m meter, cm centimeter, mm millimeter, in inch, g gram, kg kilogram, lb pound, µg microgram, ppm parts per million, ft feet	

*** End of SDS ***

ALUMINUM ALLOYS WITH LEAD



Danger

Hazard statement

May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

Precautionary statement

Prevention

Do not breathe dust/fume/gas/mist/vapors/spray. Obtain special instructions before use. Avoid breathing dust/fume. In case of inadequate ventilation wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Response

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

IF EXPOSED OR CONCERNED: Get medical advice/attention.

Storage

Store in a dry place. Keep dry.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental information

Dust and fume from processing: May form combustible dust concentrations in air.

This product does not present fire or explosion hazards as shipped. Small chips, fine turnings and dust from processing may be readily ignitable.

Explosion/fire hazards may be present when:

- Dust or fines are dispersed in air.
- Chips, dust or fines are in contact with water.
- Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide).
- Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

Contains nickel. May produce an allergic reaction.

See Alcoa SDS Number 0390.

USA: Chemtrec: +1-703-527-3887 +1-800-424-9300 (24 Hour Emergency Telephone, multiple languages spoken)

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