



SECTION 1: Identification of the substance/mixture and company/undertaking

1.1 Product designation

Wrought aluminum products, 7xxx Series alloys.

1.2 Identified uses of the substance/mixture

Various fabricated aluminium parts and products.

1.3 Further information on the company/undertaking

Manufacturer: Uddeholms AB

Address: Uvedsvägen 15
S-683 85 Hagfors
SWEDEN

Contact: Hse@uddeholm.com

1.4 Emergency telephone number

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

ALCOA: +1-412-553-4001 (24 Hour Emergency Telephone, only Englishspoken)

SECTION 2: Hazards Identification

2.1 Classification of the substance/mixture

Complete composition is provided in Section 3 and may include some components classified as nonhazardous.

2.1.1 Health hazards

The health effects listed below are not likely to occur unless processing of this product generates dusts or fumes. The following statements summarize the health effects generally expected in cases of overexposures. User specific situations should be assessed by qualified individual.

Eyes	Dust and fumes from processing: Can cause irritation.
Skin	Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause irritation. Dust and fumes from processing: Can cause irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.
Inhalation	Health effects from mechanical processing (e.g., cutting, grinding): Can cause Dust: Can cause irritation of the upper respiratory tract. Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), damage to the heart muscle (cardiomyopathy), reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes), central nervous system damage, secondary Parkinson's disease and reproductive harm.

Additional health effects from elevated temperature processing (e.g., welding, melting): Dust and fumes: Can cause irritation of the respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, chills, fever, shortness of breath and malaise), reduced ability of the blood to carry oxygen (methemoglobin) and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause asthma, benign lung disease (siderosis) and lung cancer.

Carcinogenicity

Dust from mechanical processing: Can present a cancer hazard. Dust and fumes from welding or elevated temperature processing: Can present a cancer hazard.

Reproduction

Dust from mechanical processing: Can present a reproductive hazard. Dust and fumes from welding or elevated temperature processing: Can present a cancer hazard.

2.1.2 Physical hazards

Not classified for physical hazards.

2.1.3 Environmental hazards

Not classified for environmental hazards.

2.2 Labeling

The product is not classified as hazardous and does not therefor require any labeling.

2.3 Other hazards

Not available.

SECTION 3: Composition/information on ingredients

3.2 Contents/mixtures

Substance	Identification	Concentration (%)
Aluminum	CAS 7429-90-5	> 84
Zinc	CAS 7440-66-6	< 12
Magnesium	CAS 7439-95-42	< 3,7
Copper	CAS 7440-50-8	< 3,3
Cobalt *	CAS 7440-48-4	< 2
Manganese	CAS 7439-96-5	< 1,5
Iron	CAS 7439-89-6	< 1,4
Silicon	CAS 7440-21-3	< 1,2
Chromium	CAS 7440-47-3	< 0,4

Nickel **	CAS 7440-02-0	0 – 0,2
Lead (*)	CAS 7439-92-1	< 0,05

Additional information:

* - Alloys 7064 and 7090.

** - Alloys 7093 and C7093

(*) – Present as impurity. While lead is not intentionally added to this mixture, it could potentially enter through the recycle stream.

SECTION 4: First aid measures

4.1 Description of first aid measures

First aid procedures:

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. Provide cardiopulmonary resuscitation for persons without pulse or respirations. Consult with a physician.

4.2 Most important symptoms and effects, both acute and delayed

Dust and fumes from processing this material can aggravate conditions such as asthma, chronic lung disease, secondary Parkinson's disease and skin rashes.

4.3 Any immediate medical attention and special treatment needed

Not available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

USE class D extinguishing agents on fines, dust or molten metal of this substance. Use coarse water spray on chips and turnings.

DO NOT USE halogenate 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 metal!

5.2 Special hazards arising from the substance or mixture

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 generations, 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.

5.3 Advice for firefighters

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

In solid form this material causes no special clean-up problems. Wear appropriate protective equipment and clothing during cleaning of debris or dust of the product.

6.2 Environmental precautions

Avoid release to the environment. In the event of a spill or accidental release, the competent authorities need to be notified in accordance with all applicable regulations. Prevent further leakage or spillage if it can be done safely. Keep out of sewers, watercourses or on the ground and in the aquatic environment.

6.3 Methods and materials for containment and cleaning

Collect scrap for recycling.

If molten: Contain the flow using sand or salt flux as a dam. 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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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.

7.2 Conditions for safe storage, including any pollution

Keep material dry. Avoid generating dust. Avoid contact with sharp edges or heated metal. Hot and cold aluminum are not visually different. Hot aluminum does not necessarily glow red.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limit values

U.S – OSHA Compounds	Type of limit	Value (mg/m ³)	Form
Aluminum (CAS 7429-90-5)	TWA	5	Respirable dust
		15	Total dust
Zinc (CAS 7440-66-6)	-	-	Not applicable
Magnesium (CAS 7439-95-4)	-	-	Not applicable
Copper (CAS- 7440-50-8)	TWA	1	Dust and mist
		0,1	Fume
Cobalt (CAS- 7440-48-4)	TWA	0,1	Dust and fume
Manganese (7439-96-5)	Ceiling	5	Fume
Iron (CAS 7439-89-6)	-	-	Not applicable
Silicon (CAS 7440-21-3)	TWA	5	Not applicable
Chromium (CAS 7440-47-3)	TWA	1	Respirable
Nickel (CAS- 7440-02-0)	TWA	1	Total dust
Lead (CAS 7439-92-1)	TWA	50µg/m ³	Inhalable dust
		0,05	Respirable dust
Compounds formed during process	Type of limit	Value (mg/m ³)	Form
Aluminum oxide	TWA	5	Respirable dust
		15	Total dust
Chromium (II) compounds	TWA	0,5	(as Cr)
Chromium (III) compounds	TWA	0,5	(as Cr)
Chromium (VI) compounds	TWA	0.0025	(as Cr(VI))
		10	Fume
Lead compounds (inorganic)	TWA	0.05	(as Pb)
		0.03	Action level (as Pb)
Manganese compounds	Ceiling	5	Fume
Iron oxide	TWA	10	Fume
Nickel compounds	TWA	1	(as Ni)
Nitric oxide	TWA	30	(as Ni)
Ozone	TWA	5	Respirable dust
Zinc oxide	TWA	5	Respirable dust+ Fume
		15	Total dust

U.S. – OSHA Residuals	Type of limit	Value (mg/m ³)	Form
Oil mist, mineral (CAS 8012-95-1)	TWA	5	Mist

U.S. – OSHA Specially regulated substances	Type of limit	Value (mg/m ³)	Form
Lead (CAS 7439-92-1)	TWA	0.05	Not applicable
Chromium (VI) compounds Certain water insoluble forms	TWA	0.005	(as Cr(VI))
Chromium (VI) compounds Water soluble	TWA	0.005	Not applicable
Chromium (VI) compounds	TWA	0.005	(as Cr(VI))

U.S. – OSHA Table Z-1 Limits for Air Contaminants	Type of limit	Value (mg/m ³)	Form
Magnesium oxide fume	PEL	15	Total particulate
Nitrogen oxide fume	Ceiling	9	Not applicable
Zinc oxide	PEL	5	Respirable dust + fume
		15	Total dust

ACGIH Components	Type of limit	Value (mg/m ³)	Form
Copper (CAS 7440-50-8)	TWA	1	Dust and mist
		0.2	Fume
Manganese (7439-96-5)	TWA	0.2	Inhalable dust
		0.02	Respirable dust

ACGIH Compounds formed during process	Type of limit	Value (mg/m ³)	Form
Aluminium oxide (non-fibrous)	TWA	1	Respirable dust
Chromium (VI) compounds Water soluble forms	TWA	0.05	(as Cr)
Chromium (VI) compounds	TWA	0.05	(as Cr)
Ozone (CAS 10028-15-6)	TWA	0.2 (ppm)	Heavy moderate

ACGIH Threshold Limit Values: Short Term Exposure Limit (STEL)	Type of limit	Value (mg/m ³)	Form
Zinc oxide (CAS 1314-13-2)	STEL	10	Respirable dust

US ACGIH Threshold Limit Values: Time Weighted Average (TWA): Compounds formed during processing	Type of limit	Value (ppm)	Form
Nitric oxide (CAS 10102-43-9)	TWA	25	Not applicable
Nitrogen dioxide (CAS 10102-44-0)	TWA	0.2	Not applicable

US ACGIH Threshold Limit Values: Time Weighted Average (TWA) Non-standard units: compounds	Type of limit	Value (mg/m ³)	Form
Aluminum (CAS 7429-90-5)	TWA	1	Respirable dust
Chromium (CAS 7440-47-3)	TWA	0.5	Not applicable
Cobalt (CAS 7440-48-4)	TWA	0.02	Not applicable
Lead (CAS 7439-92-1)	TWA	0.05	Not applicable
Nickel (CAS 7440-02-0)	TWA	1.5	Inhalable dust

US ACGIH Threshold Limit Values: Time Weighted Average (TWA) Non-standard units: Compounds formed during processing	Type of limit	Value (mg/m³)	Form
Chromium (III) compounds	TWA	0.5	Not applicable
Chromium (VI) compounds Certain water insoluble forms	TWA	0.01	(as Cr)
Chromium (VI) compounds	TWA	0.01	(as Cr)
Iron oxide	TWA	5	Respirable dust
Lead compounds, inorganic	TWA	0.05	Inhalable dust
Magnesium oxide fume	TWA	10	Inhalable dust
Manganese compounds, inorganic	TWA	0.1	Respirable dust
		0.02	Respirable dust
Nickel compounds, insoluble	TWA	0.2	Inhalable dust
Zinc oxide	TWA	2	Respirable dust

US ACGIH Threshold Limit Values: Time Weighted Average (TWA) Non-standard units: Residuals	Type of limit	Value (mg/m³)	Form
Oil mist, mineral (CAS 8012-95-1)	TWA	5	Inhalable dust

Alcoa components	Type of limit	Value (mg/m³)	Form
Aluminium (CAS 7429-90-5)	TWA	3	Respirable dust
		10	Total dust
Cobalt (CAS 74400-48-4)	TWA	0.02	Inhalable dust
Manganese (CAS 7439-96-5)	TWA	0.05	Total dust
		0.02	Respirable dust
Nickel (CAS 7440-02-0)	TWA	1	Not applicable

Alcoa compounds formed during processing	Type of limit	Value (mg/m ³)	Form
Aluminium oxide (non-fibrous)	TWA	3	Respirable dust
		10	Total dust
Chromium (VI) compounds	TWA	0.25	Not applicable
Manganese compounds, inorganic	TWA	0.05	Total dust (as Mn)
		0.02	Respirable dust(as Mn)
Nickel compounds, insoluble	TWA	0.1	Insoluble

Alcoa Residuals	Type of limit	Value (mg/m ³)	Form
Oil mist, mineral (CAS 8012-95-1)	TWA	0.5	(8 hour)

8.1.2 Biological limits values

No biological exposure limits has been detected for the constituents.

8.1.3 Recommended monitoring procedures

Wet methods:

Machine Use is normally carried out with a flow of lubricating liquid/coolant, which helps to reduce airborne particles. However, by driving the machine with coolant containing small divided particles in suspension, may cause the concentration increases to such a point where the particles can become airborne during use. Some processes such as sanding and grinding may require a complete covered containment and local exhaust ventilation. Prevent coolant spill on floor areas, external structures or operators' clothing. Use a coolant filtering system to remove particles from the cooling liquid.

Work practies:

Develop working process and procedures to prevent particles that come in contact with workers' skin, hair or personal clothing. If the working practices and / or procedures are not effective enough to control exposure and prevent airborne or visual particles from being stored on skin, hair or clothing, provide appropriate when washing / cleaning facilities. Written procedures should describe the plant's requirements for protective clothing and personal hygiene. These requirements for clothing and personal hygiene helps prevent the spread of the particles to areas that are not used for production or that they comply with the staff home. Never use compressed air to clean work clothes or other surfaces.

Housekeeping:

Use vacuum or wet cleaning methods for removing particles from surfaces. Be certain to de-energize the electrical system before beginning wet cleaning. Use a vacuum cleaner with a HEPA filter. Do not use compressed air, brushes, or regular vacuum cleaner to remove particles from the surfaces, as this may lead to increased exposure to airborne particles. Follow the manufacturer's instructions when performing maintenance on the vacuum cleaner with a HEPA filter used for cleaning hazardous materials.

8.1.4 Exposure guidelines

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

8.2 Exposure Controls

General

Personnel who handle and work with molten 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, 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 clothes; 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.

Eye/face protection

Wear safety glasses with side shields.

Skin protection

Wear impervious gloves to avoid repeated or prolonged skin contact with residual oils and to avoid any skin injury.

Respiratory protection

Dust and fumes from processing: Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if considerations exceed the limits listed in Section 8. Suggested respiratory protection: P95, P100 for lead.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Colour	Silver
Odour	Odorless
pH-value	Not applicable
Flammability	Not applicable
Solubility in water	Insoluble
Density	2,7 – 2,9 g/cm ³ (0,098 – 0,105 lb/in ³)
Melting point	476,7 – 657,2 °C (890 – 1215 °F)

9.2 Other information

No further information applicable.

SECTION 10: Stability and reactivity

10.1 Reactivity

There is no risk for reactivity.

10.2 Chemical stability

Stable under normal conditions of use, storage and transportation as shipped.

10.3 Possibility for hazardous reactions

Hazardous polymerization of this product will not occur.

10.4 Conditions to avoid

Avoid dust formation. Contact with water. Contact with acids. Contact with alkalis.

10.5 Incompatible materials

Water, strong acids, alkalies and oxidizing agents.

10.6 Hazardous decomposition products

Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects associated with the contents

Aluminum	Dust and fumes has low health risk by inhalation. Generally considered to be biologically inert (milling, cutting, grinding).
Copper	Dust and 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 (anaemia), skin abnormalities (pigmentation changes) and hair dislocation.
Cobalt	Can cause irritation of eyes, skin and respiratory tract. Skin contact can cause allergic reactions. Acute and chronic overexposures can cause respiratory sensitization, asthma, scarring of the lungs (pulmonary fibrosis) and damage to the heart muscle (cardiomyopathy). Listed as possibly carcinogenic to humans by IARC (Group 2B).
Manganese	Chronic overexposure of dust or fumes can cause inflammation of the lung tissues, scarring of the lunges (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproduction harm in males.
Silicon	Chronic overexposure of inert dusts can cause chronic bronchitis and narrowing of airways.
Chromium	Dust and fumes can cause irritation of eyes, skin and respiratory tract. Metallic chromium and trivalent chromium is not classifiable as to their carcinogenicity to humans by IARC.
Nickel	Dust and fumes 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). Reviewed and not recommended for listing by NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Note:

In accordance with the CLP Regulation, steels containing more than 10% nickel should be classified as Specific Target Organ Toxicity Repeated Exposure 1 (STOT RE1) and steels containing 1 to 10% nickel should be classified as Specific Target Organ Toxicity Repeated Exposure 2 (STOT RE 2). Steels containing more than 1% nickel should be classified as Carcinogen Category 2.

Lead

Can cause irritation of eyes and upper respiratory tract. Acute overexposures can cause nausea and muscle cramps. Chronic 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 fatal toxicity in pregnant women. Listed as “reasonably anticipated to be a human carcinogen” by the NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B).

Some products are supplied with an oil coating or have a residual oil from the manufacturing process. Oil can cause irritation of skin. Prolonged or repeated skin contact can cause dermatitis.

Components	Acute	Species	Test Results
Aluminium (CAS 7429-90-5)	Inhalation (LC 50)	Rat	>2.3 mg/l
	Oral (LD 50)	Rat	>2000 mg/kg
Nickel (CAS 7440-02-0)	Oral (LD 50)	Rat	>9000 mg/kg
Zinc (CAS 7440-66-6)	Oral (LD 50)	Rat	630 mg/kg

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

Skin corrosion/irritation Non-corrosive.

Serious eye damage/irritation Dust and fume from processing: Can cause mechanical irritation. **Eye**

Respiratory Sensitization Products as shipped: Not classified. Dust and fumes from processing: Contains (Cobalt, Nickel). May produce and allergic reaction. May cause sensitization by inhalation.

Skin sensitization Dust and fume from processing: Direct contact may irritate. Contact with residual oil/oil coating: Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Germ cell mutagenicity Classification not possible due to the lack of data.

Carcinogenicity Product as shipped: Does not present any cancer hazards. Health effects from mechanical processing (e.g., cutting, grinding):

can present a cancer hazard due to the contents of Cobalt, Nickel and lead.

Health effects from elevated temperature processing (e.g., welding, melting): can present a cancer hazard due to the (Hexavalent chromium compounds, nickel compounds, lead compounds, welding fumes).

ACGIH Carcinogens	Classification
Aluminum (CAS 7429-90-5)	Not classifiable as a human carcinogen. A4
Chromium (CAS 7440-47-3)	Not classifiable as a human carcinogen. A4
Cobalt (CAS 7440-48-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Lead (CAS 7439-92-1)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Nickel (CAS 7440-02-0)	Not suspected as a human carcinogen. A5

IARC Monographs. Overall Evaluation of Carcinogenicity	Classification
Chromium (CAS 7440-47-3)	3 Not classifiable as to carcinogenicity to humans.
Lead (CAS 7439-92-1)	2B Possibly carcinogenic to humans.
Nickel (CAS 7440-02-0)	1 Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens	Classification
Lead (CAS 7439-92-1)	Reasonably Anticipated to be a Human Carcinogen.
Nickel (CAS 7440-02-0)	Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity	Product as shipped: Does not present any reproductive hazards. Dust or fume from processing: Can present a reproductive hazard due to the Lead, Manganese, Manganese compounds and Lead compounds.
Routes to exposure	Inhalation. Skin contact. Eye contact.
Specific target organ toxicity- Single exposure	Not classified. Based on available data, the classification criteria are not met.
Specific target organ toxicity- Repeated exposure	Not classified. Based on available data, the classification criteria are not met.
Aspiration hazard	Not applicable.

Chronic effects	Prolonged exposure may cause chronic effects.
Further information	Non known.

11.2 Health effects associated with compounds formed during processing.

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

Aluminum oxide	Low health risk by inhalation. Generally considered to be biologically inert.
Zinc oxide fume	Can cause irritation of respiratory tract. Acute overexposures can cause metal fume fever (nausea, fever, chills shortness of breath and malaise).
Magnesium oxide fume	Can cause irritation of the eyes and respiratory tract. Acute exposure can cause metal fume fever (nausea, fever, chills shortness of breath and malaise).
Copper fume	Can cause irritation of the eyes, mucous membranes, and respiratory tract. Acute overexposure can cause, metal fume fever (nausea, fever, chills shortness of breath and malaise).
Cobalt compounds	Can cause irritation of eyes, skin and respiratory tract. Acute overexposures can cause allergic reactions. Acute and chronic overexposures can cause respiratory sensitization, asthma, kidney damage and damage to the heart muscle (cardiomyopathy). Listed as possibly carcinogenic to humans by IARC (Group 2B).
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).
Iron oxide	Chronic overexposures can cause benign lung disease (siderosis). Ingestion can cause irritation of the gastrointestinal tract, bleeding, changes in the pH of the body fluids (metabolic acidosis) and liver damage.
Silica, amorphous	Acute overexposure can cause dryness of eyes, nose and upper respiratory tract.
Chromium (III)compounds	Can cause irritation of eye, skin and respiratory tract. (Not classified as carcinogenic to humans by IARC).
Chromium (VI)compounds	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. Listed as "Known to be human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).
Nickel compounds	Associated with lung cancer, cancer of the vocal cords and nasal cancer. Listed as "Known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).
Lead (inorganic compounds)	Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as probably carcinogenic to humans by IARC (Group 2A).

If the products are heated well above ambient temperatures or machines, 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 overexposure can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposure of 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 are listed as possibly carcinogenic to humans by IARC (Group 2B).

Additional information: In one study, occupational asthma was associated with exposures to fumes from aluminium welding.

Plasma arc cutting of aluminium 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 (methaemoglobin). 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.

Chronic overexposure of nitrogen dioxide (NO₂) can cause scarring of the lungs (pulmonary fibrosis).

11.3 Symptoms related to the physical, chemical and toxicological characteristics.

Contains (Cobalt, Nickel). May produce an allergic reaction. May cause sensitization of susceptible persons by skin contact or by inhalation of dust.

Dust and fumes from processing:

Cobalt: Can cause irritation of eyes, skin and respiratory tract. Skin contact: Can cause allergic reactions. Acute and chronic overexposures: Can cause respiratory sensitization, asthma, scarring of the lungs (pulmonary fibrosis) and damage to the heart muscle (cardiomyopathy). IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B).

Chronic exposure to breathing low levels of manganese dust or fume over a long period of time can result in "manganism," a disease of the central nervous system similar to Parkinson's Disease, gait impairment, muscle spasms and behavioral changes.

Contains nickel, which can cause lung or nasal cancer. Long-term breathing of this material may cause chronic lung disease.

Lead may damage kidney function, the blood forming system and the reproductive system.

Contact with residual oil/oil coating: Prolonged skin contact may cause skin irritation and/or dermatitis.

SECTION 12: Ecological information

Ecotoxicity

Not expected to be harmful to aquatic organisms.

Components	Aquatic	Species	Test Results
Chromium (CAS 7440-47-3)	Crustacea (EC 50)	Water flea (Daphnia magna)	0.01-0.7 mg/l, 48 h
	Fish (LC 50)	Carp (Cyprinus carpio)	14.3 mg/l, 48 h
Copper (CAS 7440-50-8)	Crustacea (EC 50)	Water flea (Daphnia magna)	0.036 mg/l, 48 h
	Fish (LD 50)	Fathead minnow (Pimephales promelas)	0.0319 - 0.0544 mg/l, 96 h
Iron (CAS 7439-89-6)	Crustacea (EC 50)	Cockle (Cerastoderma edule)	100 - 330 mg/l, 48 h
	Fish (LC 50)	Channel catfish (Ictalurus punctatus)	> 500 mg/l, 96 h
Lead (CAS 7439-92-1)	Fish (LC 50)	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	1.17 mg/l, 96 h
Manganese (CAS 7439-96-5)	Crustacea (EC 50)	Water flea (Daphnia magna)	40 mg/l, 48 h
Nickel (CAS 7440-02-0)	Crustacea (EC 50)	Water flea (Daphnia magna)	1 mg/l, 48 h
	Fish (LC 50)	Fathead minnow (Pimephales promelas)	2.923 mg/l, 96 h
Zinc (CAS 7440-66-6)	Crustacea (EC 50)	Water flea (Daphnia magna)	2.8 mg/l, 48 h
	Fish (LC 50)	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	0.56 mg/l, 96 h

Persistence and degradability

The product is not expected to be biodegradable.

Bioaccumulative potential

The product is not bioaccumulating.

Mobility in soil

Not considered mobile.

Mobility in general

Not applicable.

Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Reuse or recycle material whenever possible. If reuse or recycling is not possible, disposal must be made according to local or governmental regulations.

13.2 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 on 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.

13.3 Dross handling

Small amounts of beryllium (<0,0002% or <2 ppm) can be present in aluminum alloys either from naturally occurring beryllium in aluminum ore or as a alloying element in the aluminum recycling stream. This beryllium does not present a health hazard during processing (grinding, cutting or welding of aluminum products. However, beryllium may concentrate in the dross formed when aluminum scrap is remelted. Therefore, the potential for exposures to beryllium when handling dross must be considered. Control of airborne dust levels would be critical in reducing or eliminating this potential.

SECTION 14: Transport information

14.1 General shipping information

Basic shipping information

ID number	-
Proper shippingname	Not regulated
Hazard class	-
Packing group	-

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.

SECTION 15: Regulatory information

15.1 U.S federal regulations

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.

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.

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

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Substance	
Chromium (CAS 7440-47-3)	Listed
Cobalt (CAS 7440-48-4)	Listed
Copper (CAS 7440-50-8)	Listed
Lead (CAS 7439-92-1)	Listed
Manganese (CAS 7439-96-5)	Listed
Nickel (CAS 7440-02-0)	Listed
Zinc (CAS 7440-66-6)	Listed

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

Substance	
Lead (CAS 7439-92-1)	Reproductive toxicity Central nervous system Kidney Blood Acute toxicity

15.2 Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 311/312 Hazard categories

Type of hazard	Hazardous?	Occation
Immmediate 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

None.

SARA 311/312 Hazardous chemical

Yes.

Disclaimer: The user of this SDS should verify the substance specific concentration information as it relates to regulatory reporting. Listed concentrations may cover a range of formulations and process batch variations.

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Aluminum	7429-90-5	>84
Zinc	7440-66-6	<12
Copper	7440-50-8	<4.7
Cobalt	7440-48-4	<2.0
Manganese	7439-96-5	<1.5
Nickel	7440-02-0	0-0.2

15.3 U.S State regulations

U.S - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Chemical name	CAS number	Date
Cobalt	7440-48-4	Listed: July 1, 1992
Lead	7439-92-1	Listed: October 1, 1992
Nickel	7440-02-0	Listed: May 7, 2004

U.S - California Proposition 65 - CRT: Listed date/Developmental toxin

Chemical name	CAS number	Date
Lead	7439-92-1	Listed: February 27, 1987

U.S - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Chemical name	CAS number	Date
Lead	7439-92-1	Listed: February 27, 1987

U.S - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Chemical name	CAS number	Date
Lead	7439-92-1	Listed: February 27, 1987

15.3 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
U.S & Puerto Rica	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).

SECTION 16: Other information

This document has been prepared using data from sources considered technically reliable and the information considered to be accurate. We pose no warranties, either expresses or implied, in case the information provided herewith is accurate or not. We cannot foresee all the circumstances by which this information and its products are to be used, and user conditions are beyond its control clone. User is responsible to evaluate all available information when using this product for a particular purpose, and to comply with all federal, state, provincial and local laws, statutes and regulations.