



Great Ingot= Great Castings

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: ALUMINUM SMELTING DROSS
SDS #: 038
Version #: 3
Revision date: February 15, 2020
Synonyms: Skim, skim blocks, Black dross, chunky dross, salt dross
Recommended Use: Metal recovery
Restrictions: For industrial use only
Manufacturer: Trialco Inc.
 900 E Lincoln Highway
 Chicago Heights, IL 60411
 Tel #: 708 757-4200
 Fax #: 708 757-3933
www.trialco.net

Emergency Information: Chicago Heights Fire Department: 911

2. HAZARD(S) IDENTIFICATION

Physical Hazards:	Substances and mixtures which, in contact with water, emit flammable gases Skin corrosion / irritation Serious eye damage / eye irritation Specific target organ toxicity following repeated exposure	Category 3 Category 2 Category 2 Category 1
Environmental Hazards:	Hazardous to ozone layer	Not applicable



Label elements:

Signal word: Danger
Hazard statement: Causes damage to organs through prolonged or repeated exposure. Causes skin irritation. Causes serious eye irritation. May form combustible dust concentrations in air. In contact with water releases flammable gases.

Precautionary statement:**Prevention**

Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response

In case of fire, use Class D for extinction. **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists get medical advice/attention. **IF ON SKIN:** Wash with plenty of soap and water. If skin irritation occurs get medical advice/attention. Get medical advice/attention if you feel unwell.

Storage

Store in a dry place. Protect from moisture.

Disposal

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

Other Hazards:

May form combustible dust concentrations in air.

Supplemental Information: None.**Specific Hazards:**

Contact with water can generate flammable and toxic gases. Hot dross dust (above 700°C) may ignite readily.

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

- Dross is heated above 700°C
- Small chunks, dust, or fines in contact with water can generate flammable or toxic gases. These gases could present an explosion hazard in confined or poorly ventilated space.
- Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide).

Direct contact: Can cause sever irritation of the eyes and skin. Dust: Can cause irritation of the upper respiratory tract. Vapors: Can cause sever irritation of the eyes, skin, and respiratory tract.

3. Composition/Information on ingredients**Composition comments**

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

Components	CAS#	Percent
Aluminum oxide (non-fibrous)	1344-28-1	25-55
Synonym(s): Alumina		
Aluminum	7429-90-5	10-50
Metal chloride salts	Mixture	0-35
Metal carbides		0-10
Metal nitrides		0-10
Copper	7440-50-8	<5
Magnesium	7439-95-4	<5
Magnesium oxide	1309-48-4	<3
Iron	7439-89-6	<1.5
Manganese	7439-96-5	<1.5

Silicon	7440-21-3	<1.5
Components	CAS#	Percent
Chromium	7440-47-3	<0.36
Beryllium	7440-41-7	<0.1
Nickel	7440-02-0	<0.1

Additional Information #: This substance has workplace exposure limit(s). Aluminum dross is rich in metal content when it is skimmed off the molten metal. Variations in container type from which it is removed and different procedures used following its removal may result in a product whose composition varies within the wide ranges shown above. While lead is not intentionally added to this mixture, it could potentially enter through the recycle stream. Additional compounds which may be formed on contact with water are listed in Section 8.

4. First-aid measures

Eye contact	Rinse eyes with plenty of water or saline for at least 15 minutes. Consult a physician immediately.
Skin contact	Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Inhalation	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	If swallowed, dilute by drinking water. Recommend quantities up to 30mL (~1oz.) in children and 250mL (~9oz.) in adults. Never give anything by mouth to a victim who is unconscious and having convulsions. Do NOT induce vomiting. Consult a physician.
Most important symptoms/effects, acute and delayed	See Section 11 for additional information on health hazards.
Medical conditions aggravated by exposure	Asthma, chronic lung disease and skin rashes.
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Symptoms may be delayed.
General Information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In case of shortness of breath, use oxygen.

5. Fire-fighting measures

Suitable extinguishing media	Use Class D extinguishing agents on fines, dust, or molten metal.
Unsuitable extinguishing media	DO NOT USE halogenated extinguishing agents on small chunks, dust or fines. DO NOT USE water in fighting fires around molten metal. These fire extinguishing agents will react with burning material.
Specific hazards arising from the chemical	Hot dross dust (above 700°C) may ignite readily. Contact with water can generate flammable and toxic gases. May be a potential hazard under the following conditions: <ul style="list-style-type: none">• 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.• Small chunks, dust or fines in contact with water can generate flammable or toxic gases. These gases could present an explosion hazard in confined or poorly ventilated spaces.
Special protective equipment and precautions for firefighters	Firefighters should wear CE approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.
Firefighting equipment/instructions	Use gentle surface application of Class D extinguishing agent or dry inert granular material (e.g., sand) to cover and ring the burning material. If impossible to extinguish, protect surroundings and allow fire to burn itself out. Apply extinguishing media carefully to avoid creating airborne dust. As last resort, use a coarse water spray to flood the chunks.
General fire hazards	Non-combustible as supplied. Dust clouds may be explosive. Contact with Water can generate flammable and toxic gases (ammonia, phosphine, Hydrogen and methane). Hot dross dust (above 700°C) may ignite readily.
Explosion data Sensitivity to mechanical impact	Not sensitive.
Sensitivity to static discharge	Take precautionary measures against static discharges when there is a risk of dust explosion. Obtain and follow the safety procedures and equipment guides contained in Aluminum Association Bulletin F-1 and National Fire Protection Association (NFPA) Standards listed in Section 16. Use non-sparking handling equipment, tools, and natural bristle brushes. 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).

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid generating dust. Avoid contact with sharp edges or heated metal. Avoid contact with skin and eyes. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold. Avoid contact even after material solidifies. Ensure adequate ventilation. Use personal protection recommended in Section 8 of the SDS.

Personal precautions, protective equipment and emergency procedures for emergency responders

Avoid generating dust. Avoid contact with sharp edges or heated metal. Avoid contact with skin and eyes. Ensure adequate ventilation. Keep upwind of the spilled material and isolate exposure. Molten, heated and cold aluminum look alike; do not touch unless you know it is cold. Avoid contact even after material solidifies. Wash hands after handling. Use personal protection recommended in Section 8 of the SDS.

Evacuation procedures

Keep unnecessary personnel away. Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed.

Methods and materials for containment of cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Avoid generating dust. Prevent product from entering drains. Keep material dry. Protect from water run-on including precipitation. Ensure adequate ventilation. Collect scrap for recycling. Shovel into a dry metal container. 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.

Environmental precautions

Avoid release to the environment.

7. Handling and storage

Handling

Avoid generating dust clouds. Avoid contact with skin and eyes. Avoid contact with sharp edges or heated metal. Keep material dry. If wetted, remove to open area. Do not allow small chunks, fines or dust to contact water, particularly in enclosed areas.

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 labeled as such. Do not co-mingle fines of aluminum with fines of iron, iron oxide (rust) or other metal oxides.

Prior to shipment, material should be dry and cooled to ambient temperature. Shipment should be in closed containers, covered trailers, or covers hopper cars.

Storage

Keep material dry. Store in tightly closed, water-tight container. Do not allow small chunks, fines, or dust to contact water, particularly in enclosed areas. If wetted, remove to open area. Ensure that eyewash stations and safety showers are close to the workstation location.

Requirements for Remelting Scrap Material and/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 containment 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 minimizes 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.

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 melt oxides resulting in a thermite explosion.

8. Exposure controls/personal protection

Occupational exposure limits

Trialco Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	3mg/m ³ 10mg/m ³	Respirable fraction Total dust
Aluminum oxide (non-fibrous) (CAS 1344-28-1)	TWA	3mg/m ³ 10mg/m ³	Respirable fraction Total dust
Beryllium (CAS 7440-41-7)	STEL TWA	1μ/m ³ 0.2μg/m ³	Peak/Inhalable Inhalable
Manganese (CAS 7439-96-5)	TWA	0.05mg/m ³ 0.02mg/m ³	Total dust Respirable fraction
Nickel (CAS 7440-02-0)	TWA	1mg/m ³	

US ACGIH Threshold Limit Values: Short Term Exposure Limit (STEL): mg/m³ & ppm

Decomposition	Type	Value
Ammonia (CAS 7664-41-7)	STEL	35ppm
Phosphine (CAS 7803-51-2)	STEL	1ppm

US ACGIH Threshold Limit Values: Time Weighted Average (TWA): mg/m³ & ppm

Decomposition	Type	Value
Ammonia (CAS 7664-41-7)	TWA	25ppm
Phosphine (CAS 7803-51-2)	TWA	0.3ppm

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

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1mg/m ³	Respirable Fraction
Beryllium (CAS 7440-41-7)	TWA	0.00005 mg/m ³	Inhalable fraction
Chromium (CAS 7440-47-3)	TWA	0.5mg/m ³	
Copper (CAS 7440-50-3)	TWA	1mg/m ³ 0.2mg/m ³	Dust and mist Fume
Magnesium oxide (CAS 1309-48-4)	TWA	10mg/m ³	Inhalable fraction
Manganese (CAS 7439-96-5)	TWA	0.1mg/m ³ 0.02mg/m ³	Inhalable fraction Respirable fraction
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m ³	Inhalable fraction

Engineering controls

Dust and fume from processing: Use with adequate explosion-proof ventilation to meet the limits listed in Section 8.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields. Use tight fitting goggles if excessive Levels of dust are generated. If molten: Goggles/face shield are recommended.

Hand protection	The need for personal protective equipment (gloves) should be based upon hazard assessment and recommendations from health / safety professionals. Wear impervious gloves to avoid direct skin contact. When handling hot material, use heat resistant gloves.
Skin and body protection	The need for personal protective equipment should be based upon a hazard assessment and recommendations from health / safety professionals. Flame retardant protective clothing is recommended.
Respiratory protection	Dust and fume from processing: Use CE-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limit listed in Section 8. Suggested respiratory protection: P2, Beryllium: Full face filter respirator P3 or P3, Full face mask for ammonia, Supplied air respirators for phosphine.

General

Beryllium can concentrate 10-fold or higher in dross. This can create a potential for over-exposures to beryllium during dross handling, particularly when dust levels are not adequately controlled.

Appropriate exposure assessments should be conducted by a qualified Industrial Hygienist for all tasks (i.e., handling beryllium laden dust). Engineering controls or other measures (e.g., approved respiratory protection) may be necessary to reduce dust and beryllium concentrations depending on the exposure potential.

Good industrial hygiene practices, including reducing beryllium exposures to the greatest extent possible, are recommended. Beryllium work areas should be established where employees are exposed to beryllium levels above the occupational exposure limits recommended by Alcoa or where the potential exists for significant skin contact with dusts containing beryllium. Access to these work areas should be restricted and the number of employees exposed to beryllium should be limited.

Adequate protective work clothing should be provided to employees in beryllium work areas to prevent contamination of personal clothing. This work clothing should not be worn outside the work area. Special laundering practices should be followed (e.g., separation of contaminated clothing, use of water-soluble laundry bags) and personnel assigned to launder contaminated clothing shall be advised of beryllium's presence and potential health effect.

Good housekeeping and personal hygiene practices should be implemented. Dry cleaning of dust (e.g., broom sweeping, use of compressed air) should not be permitted. When vacuuming, equipment specifically certified for use with flammable/explosive dusts and utilizing high efficiency particulate (HEPA) filters are required. Food, Tobacco and cosmetic products should be prohibited in the work area. Employees in beryllium work areas should be required to shower at end of the work shift.

Medical surveillance is recommended for all employees exposed to >0.1 ug/m³ beryllium as a TWA or >1.0ug/m³ beryllium as a STEL. Surveillance should include baseline chest X-rays (periodic as required by a physician) and annual respiratory history, spirometry, and serum beryllium lymphocyte proliferation tests (BeLPT). Employees sensitized or showing symptoms or beryllium related disease should be restricted from further exposure to beryllium.

Personnel who handle and work with molten metal should utilize primary protective clothing like polycarbonate face shields, fire resistance 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).

Personal protective equipment

Thermal Hazards

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

Hygiene Measures

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

Recommended monitoring procedures

Follow standard monitoring procedures.

Environmental exposure controls

Prevent entry into waterways, sewer, basements or confined areas.

9. Physical and chemical properties

Form	Solid, dust to large chunks.
Color	Silver to grey.
Odor	Slight ammonia odor.
Odor threshold	Not determined
Density	2.30 – 3.00 g/cm ³
pH	<11.5 (saturated aqueous solution)
Melting point/freezing point	482 – 650 °C (899.6 – 1202 °F) (metal)
Initial boiling point and boiling range	Not applicable
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 may form an explosive mixture in the atmosphere. Molten metal in contact with water/moisture and moisture by molten metal can be explosive.

Dust explosion properties

St class Very strong explosion

Vapor pressure Not applicable

Vapor density Not applicable

Relative density Not determined

Solubility(ies) Slight

**Partition coefficient
(n-octano/water)** Not applicable

Auto-ignition temperature Not applicable
Decomposition temperature Not applicable
Viscosity Not applicable

10. Stability and reactivity

Reactivity Contact with water can generate flammable and toxic gasses.

Chemical stability Stable under normal conditions of use, storage, and transportation.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Small chunks, dust, or fines and molten metal are considerably more reactive with the following:

- 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.
- Heat: Oxidizes at a rate dependent upon temperature and particle size.

Incompatible materials Small chunks, dust or fines and molten metal are considerably more reactive with the following:

- 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 800°C (1470°F).

Hazardous decomposition products No hazardous decomposition products are known,

11. Toxicological Information

General Information

Not available.

Health effects associated with ingredients

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

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

Metal chlorides salts: Can cause irritation of the eyes, skin and gastrointestinal tract. Ingestion: can cause diarrhea, loss of appetite, low blood pressure (hypotension), central nervous system effects (dizziness, nausea, and loss of coordination) and respiratory arrest.

Copper dust/mists: Can cause irritation of 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.

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

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.

Nickel dust and fume: Can cause irritation of eyes, skin, 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).

Beryllium: Can cause lung sensitization in susceptible individuals. Skin contact: Can cause irritant dermatitis, allergic contact dermatitis and lumps on the skin (granulomas). Acute overexposures: Can cause inflammation of the lung tissues (Acute Beryllium Disease). Acute Beryllium Disease can be fatal but is unlikely to occur when processing beryllium-containing aluminum alloys.

Chronic exposures: Chronic inhalation of dust and fumes by sensitized individuals can result in a serious, progressive disease called Chronic Beryllium Disease (CBD). This disease is an allergic condition in which the lung tissues become inflamed. This inflammation, sometimes accompanied with scarring of the lungs (pulmonary fibrosis), restricts the uptake of oxygen into the blood stream.

CBD can, over time, be fatal.

Beryllium studies with experimental animals by inhalation have found lung tumors. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1).

Health effects associated with compounds formed during processing

Ammonia gas/vapor: Can cause severe irritation of eyes, skin, and respiratory tract. Acute overexposures: Can cause throat spasms, swelling of the throat, obstruction of the upper airway, constriction of the bronchial tubes and the accumulation of fluid in the lung (pulmonary edema). Chronic overexposures: Can cause lung damage.

Phosphine: Can cause irritation of eyes and respiratory tract. Acute overexposures: Can cause headache, vomiting, abdominal pain, cough, drowsiness (narcosis), difficulty breathing, malaise, central nervous system effects (nausea, dizziness and loss of coordination), the accumulation of fluid in the lungs (pulmonary edema), seizures, coma, and death. Chronic overexposures: Can cause liver damage. Additional information: Associated with an increased risk of cancer of the blood forming organs.

Additional health effects from elevated temperature processing (e.g., welding): 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).

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.

Information on likely routes of exposure**Inhalation**

Dust: Can cause irritation of the upper respiratory tract. Health effects of additional compounds which may be formed on contact with water. Acute exposure: Vapors: Can cause difficulty breathing and the accumulation of fluid in the lungs (pulmonary edema). Chronic exposure: Can cause lung damage and liver damage.

Skin contact

Direct contact: Can cause irritation especially when wet.

Eye contact

Direct contact: Can cause severe irritation.

Ingestion

Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical, and toxicological characteristics

Dust and fume from processing: Contains chromium. May produce an allergic reaction. Dust: Can cause irritation of the upper respiratory tract. Chronic overexposure: Can cause reduction in the number of red blood cells (anemia), skin abnormalities and (pigmentation changes).

Health effects of additional compounds which may be formed on contact with water: Vapors: Can cause severe irritation of the respiratory tract. Acute overexposure: Can cause difficulty breathing and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposure: Can cause lung damage and liver damage.

Direct contact: Can cause severe irritation of the eyes and irritation of the skin. Prolonged or repeated skin contact may cause sensitization.

Information on toxicological effects**Acute toxicity**

Contact with water can generate flammable and toxic gases (ammonia phosphine, hydrogen and methane). May cause irritation of respiratory tract.

Components	Species	Test Results
Aluminum (CAS 7429-90-5)		
Acute		
Oral		
LD50	Rat	>2000mg/kg
Aluminum oxide (non-fibrous) (CAS 1344-28-1)		
Acute		
Inhalation		
LC50	Rat	>203 mg/l 7.6 mg/l
Oral		
LD50	Rat	>5000 mg/kg
Nickel (CAS 7440-02-0)		
Acute		
Oral		
LD50	Rat	>9000 mg/kg
Zinc (CAS 7440-66-6)		
Acute		
Oral		
LD50	Rat	630 mg/kg

Skin corrosion/irritation

Non-corrosive

Serious eye damage/eye irritation

Direct contact. Can cause sever irritation.

Respiratory or skin sensitization

Not classified. Based on available data, the classification criteria are not met. Contains chromium. May produce an allergic reaction.

Respiratory sensitization

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

Skin sensitization

Not a skin sensitizer. Dust and fume from processing: Irritating to Skin.

Germ cell mutagenicity

Contains no ingredient listed as a mutagen.

Carcinogenicity

Not classified. Based on available date, the classification criteria are not met. Contains a substance which may be potentially carcinogenic.

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.

Beryllium (CAS 7440-41-7)

A1 Confirmed human carcinogen.

Chromium (CAS 7440-47-3)	A4 Not classifiable as a human carcinogen.
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.
Nickel (CAS 7440-02-0)	A5 Not suspected as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Beryllium (CAS 7440-41-7)	1 Carcinogenic to humans.
Chromium (CAS 7440-47-3)	3 Not classifiable as to carcinogenicity to humans.
Nickel (CAS 7440-02-0)	1 Carcinogenic to humans.

Reproductive toxicity

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

Specific target organ toxicity-single exposure

Dust and fumes from processing: May cause irritation to the respiratory system.

Specific target organ toxicity-repeated exposure

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

Aspiration hazard

Not an aspiration hazard.

Chronic effects

Frequent inhalation of dust over a long period of time increases the risk of developing lung disease. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Additional health effects from elevated temperature processing (e.g., welding): Can cause scarring to the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

Chronic overexposures:

Health effects of additional compounds which may be formed on contact with water: Chronic exposure: Can cause lung damage and liver damage.

Further information

Symptoms may be delayed.

12. Ecological Information

Ecotoxicity No information available.

Components	Species	Test results
Chromium (CAS 7440-47-3)		
Aquatic		
Crustacea EC50	Water flea (Daphnia magna)	0.01-0.7 mg/l, 48hrs
Fish LC50	Carp (Cyprinus carpio)	14.3 mg/l, 96hrs
Copper (CAS 7440-50-8)		
Aquatic		
Crustacea EC50	Water flea (Daphnia magna)	0.036 mg/l, 48hrs
Fish LC50	Fathead minnow (Pimephales promelas)	0.0319-0.0544 mg/l , 96hrs
Iron (CAS 7439-89-6)		
Aquatic		
Crustacea LC50	Cockle (Cerastoderma edule)	100-330mg/l, 48hrs
	Common shrimp, sand shrimp (Crangon crangon)	33-100 mg/l, 48hrs
Fish LC50	Channel catfish (Ictalurus punctatus)	>500mg/l, 96hrs
Manganese (CAS 7439-96-5)		
Aquatic		
Crustacea EC50	Water flea (Daphnia magna)	40 mg/l, 48hrs
Nickel (CAS 7440-02-0)		
Aquatic		
Crustacea EC50	Water flea (Daphnia magna)	1mg/l, 48hrs
Fish LC50	Fathead minnow (Pimephales promelas)	2.923 mg/l, 96hrs
Zinc (CAS 7440-66-6)		
Aquatic		
Crustacea EC50	Water flea (Daphnia magna)	2.8mg/l, 48hrs
Fish LC50	Rainbow trout, Donaldson trout (Oncorhynchus mykiss)	0.56 mg/l, 96hrs

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Mobility in soil No data available.

Mobility in general Not available.

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.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Waste codes	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.
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	UN3170
Proper shipping name	Aluminum remelting by-products
Hazard class	4.3
Packing group	III

General Shipping Notes

DOT

U.S. Department of Transportation

- Regulation 172.101 in the DOT Hazardous Materials Table states aluminum dross is forbidden to be shipped if it is hot or wt. Both the shipping facility and the carrier must be properly registered. Shippers must register with DOT annually by June 30th using form F 5800 2. Carriers should be registered as hazardous materials carriers and have a safety permit per 49 CFR 385.400. The official U.S. DOT shipping place card, "Dangerous When Wet 4" must be visible on all aluminum dross containers.

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

This product may contain the following toxic chemical(s) subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right To-Know Act of 1986 and of 40 CFR 372:

Chemical Name	Cas-No	Weight %
Aluminum (fume of dust only)	7429-90-5	-
Aluminum oxides (fibrous forms only)	1344-28-1	-
Copper Compounds	(none)	-
Nickel Compounds	(none)	-

16. Other Information

Issuing Date: July 15, 2013

Revision Date: February 15, 2020

Revision Note: Not applicable

Disclaimer: Information herein is given in good faith as authoritative and valid; however, no warranty, Express or implied, can be made.

The condition or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this reason, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of the product.

END OF SAFETY DATA SHEET