

SECTION 1: IDENTIFICATION**1.1. Product Identifier****Product Form:** Mixture**Product Name:** Aluminum, 5xxx Series Alloys**1.2 Recommended Use and Restrictions on Use****Use Of The Substance/Mixture** : Fabricated Parts**Restrictions On Use** : No additional information available**1.3. Name, Address, and Telephone of the Responsible Party****Company**

TCI – Texarkana, Inc

300 Alumax Drive

Nash, TX 75569

T 1-903-832-8471

Email:

EHS@texarkanaaluminum.comWebsite: www.texarkanaaluminum.com**1.4. Emergency Telephone Number****Emergency Number** : VelocityEHS
(800)255-3924 (North America)
+1 (813)248-0585 (International)**SECTION 2: HAZARDS IDENTIFICATION****2.1. Classification of the Substance or Mixture****GHS-US Classification**

Hazardous to the aquatic environment — Acute Hazard, Category 3 H402

Hazardous to the aquatic environment — Chronic Hazard, Category 3 H412

Combustible dust

2.2. Label Elements**GHS-US Labeling****Signal Word (GHS-US)** : Warning**Hazard Statements (GHS-US)** : CODU - May form combustible dust concentrations in air if small particles are generated during further processing, handling or by other means.
H402 - Harmful to aquatic life.
H412 - Harmful to aquatic life with long lasting effects.**Precautionary Statements (GHS-US)** : P273 - Avoid release to the environment.
P501 - Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.**Supplemental Information** : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Proper grounding procedures to avoid static electricity should be followed. Prevent dust accumulation (to minimize explosion hazard). Avoid generating dust.**2.3 Hazards associated with known or reasonably anticipated uses**

If this product is used in unforeseeable chemical processes and not used as intended or reasonable, the hazards listed in Section 2.3 cannot cover all chemistries. Therefore, a Process Hazard Analysis (PHA) or other hazard assessment for additional specific end uses should be performed to ensure that hazards are fully understood, and adequate safety measures are in place. See Section 10 for relevant reactivity and stability information. Hazards from expected use: This product may produce gases and fumes including metal fumes, ozone, nitrogen dioxide, and nitrogen monoxide during welding or smelting operations. The following hazards may be observed: H314 / H315 - Causes skin burns and eye irritation or irritation; H318 / H319 - Causes serious eye damage or irritation; H330 / H331 / H332 – Fatal, Toxic, or harmful if inhaled; H350 – May cause cancer; H360 – May damage fertility or the unborn child; H362 – May cause harm to breast-fed children; H370 - Causes damage to organs if inhaled; H372 - Causes damage to organs through prolonged or repeated exposure if inhaled. The severities of the individual symptoms are dependent upon the

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level of exposure(s). Inhalation of dusts and fumes can cause metal fume fever.

2.4. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions. Risk of thermal burns on contact with molten product.

2.5. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Synonyms	Product Identifier	%*	GHS US classification
Aluminum	Aluminium / Aluminium metal / Aluminium, metal / Aluminum metal / Aluminum, elemental / Aluminum, metal / C.I. 77000 / CI 77000 / Aluminium powder (stabilised) / Aluminium powder (stabilized) / Aluminium powder / Pigment Metal 1 / Aluminum powder / Aluminium metal, powder / Aluminium powder (pyrophoric)	(CAS-No.) 7429-90-5	80 – 100	Combustible Dust
Magnesium	Magnesium powder / Magnesium powders / Magnesium powder (pyrophoric)	(CAS-No.) 7439-95-4	< 6.6	Combustible Dust
Zinc	C.I. Pigment Black 16 / C.I. Pigment Metal 6 / Zinc (metallic) / Pigment Black 16 / Zinc powder - zinc dust (stabilised) / Zinc powder - zinc dust (pyrophoric)	(CAS-No.) 7440-66-6	< 4	Combustible Dust
Manganese	Manganese, elemental / Manganese metal	(CAS-No.) 7439-96-5	< 1.9	Combustible Dust
Iron	Iron, elemental / Direct reduced Iron / Iron, reduced / Elemental iron / IRON POWDER	(CAS-No.) 7439-89-6	< 1.8	Combustible Dust
Silicon	Silicon powder / Silicon powder, amorphous / Ammonium hexafluorosilicate	(CAS-No.) 7440-21-3	< 1.5	Combustible Dust
Chromium	Chromium metal / Chromium, elemental / Chromium, metal / Chromium, metallic / Chrome, metal / Chrome	(CAS-No.) 7440-47-3	< 1.1	Combustible Dust
Distillates, petroleum, hydrotreated middle	Petroleum distillates, hydrotreated middle / Distillates (petroleum), hydrotreated middle / Distillates, hydrotreated middle petroleum / Distillates (petroleum) hydrotreated middle / Distillates, (petroleum), hydrotreated middle / Hydrotreated middle distillate (petroleum) / Distillates (petroleum), hydrotreated middle- gas oil - unspecified / (Petroleum) distillates, hydrotreated middle / Isopar V / C13-15 ALKANE / Paraffin oil / Paraffin - C15-19 alkane / Distillates, petroleum, hydrotreated middle (A complex combination of hydrocarbons obtained by treating a petroleum fraction with hydrogen in the presence of a catalyst. It consists of hydrocarbons having carbon numbers predominantly in the range of C11-25 and boiling in the range of approximately 205-400°C.) / Petroleum distillate, hydrogenated, middle / Distillates(petroleum), hydrotreated middle / Distillates (petroleum), hydrotreated middle; Gasoil - unspecified [A complex combination of hydrocarbons obtained by treating a petroleum fraction with hydrogen in the presence of a catalyst. It consists of hydrocarbons having carbon numbers predominantly in the range of C11 through C25 and boiling in the range of approximately; 205°C to 400°C (401°F to 752°F).]	(CAS-No.) 64742-46-7	0.1 - 1	Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Asp. Tox. 1, H304 Aquatic Acute 3, H402 Aquatic Chronic 2, H411
Nickel	Nickel metal / Nickel, elemental / Nickel, metallic / Nickel, metal / C.I. 77775	(CAS-No.) 7440-02-0	< 0.1	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 3, H412 Combustible Dust

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Lead	C.I. Pigment Metal 4 / Lead metal / Lead, elemental / C.I. 77575	(CAS-No.) 7439-92-1	< 0.05	Carc. 1B, H350 Lact., H362 Repr. 1A, H360 STOT RE 1, H372 Combustible Dust
The ingredients listed below are compounds which could be formed during further processing operations.				
Name	Synonyms	Product Identifier	%	GHS US classification
Aluminum oxide (Al ₂ O ₃)	Aluminum oxide / .alpha.-Alumina / Alumina / Aluminium oxide / Aluminium oxide (Al ₂ O ₃) / .alpha.-Aluminum oxide / Alundum / ALUMINA / Dialuminium trioxide / Dialuminum trioxide	(CAS-No.) 1344-28-1	Not applicable	Not classified
Nitrogen monoxide	Nitric oxide / Nitrogen oxide (NO) / Nitric monoxide / Nitric oxide, compressed / Nitrogen(II) oxide	(CAS-No.) 10102-43-9	Not applicable	Ox. Gas 1, H270 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT RE 2, H373
Ozone	Triatomic oxygen	(CAS-No.) 10028-15-6	Not applicable	Ox. Gas 1, H270 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Silica, amorphous, precipitated and gel	Precipitated silica / Silica gel / Silica gel, precipitated, crystalline free / Silica, amorphous, gel / Silica gel, precipitated, crystalline-free / Silica gel, crystalline free / Precipitated silica and silica gel / Silica gel, crystalline-free / Hydrated silica / Amorphous silicon dioxide / Synthetic amorphous silicon dioxide / Silica gel, precipitated / Dioxosilane / Silica, amorphous and synthetic, precipitated and gel	(CAS-No.) 112926-00-8	Not applicable	Not classified
Lead inorganic compounds	Lead compounds, inorganic / Lead, inorganic compounds / Lead, inorganic compounds, n.o.s. / Inorganic lead compounds	(CAS-No.) Not Applicable	Not applicable	Not classified
Nickel insoluble compounds	Nickel, insoluble compounds / Nickel compounds, insoluble / Nickel, water-insoluble compounds, n.o.s.	(CAS-No.) Not applicable	Not applicable	Not classified
Paraffin oils	Oil mist, mineral / Liquid paraffin / Mineral oil / Mineral oil mist / Mineral oil, white / Oil mist / Oil, mineral / Oils, paraffin / Paraffin oil / White mineral oil / Oil mist (mineral) / Oil mineral / Paraffin / KZ oil / Oil mist, refined mineral / PARAFFINUM LIQUIDUM / Mineral oils / Cutting oils / MINERAL OIL / Mineral oils and fats / C12-35 Mineral oils / Paraffinum liquidum / Liquid hydrocarbons from petroleum	(CAS-No.) 8012-95-1	Not applicable	Asp. Tox. 1, H304 Aquatic Chronic 4, H413
Chromium, ion (Cr ⁶⁺)	Chromium hexavalent ion / Chromium(6+) / Chromium(6+) ion / Chromium(VI) / Chromium, hexavalent / Hexavalent chromium / Chromium hexavalent / Chromium Cr(6+) / Chromium(VI) ion / NO ENGLISH NAME	(CAS-No.) 18540-29-9	Not applicable	Skin Sens. 1, H317 Carc. 1B, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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Iron oxide (Fe2O3)	C.I. 77491 / C.I. Pigment Red 101 / Diiron trioxide / Ferric oxide / Iron sesquioxide / Iron(III) oxide / Red Iron Oxide / Rouge / CI 77491 / Iron trioxide / Sienna / Pigment Red 101 / Red iron oxide / Red iron oxide pigment / Iron Oxide Red / Diiron(III) trioxide / Iron oxide	(CAS-No.) 1309-37-1	Not applicable	Combustible Dust
Magnesium oxide (MgO)	Calcined magnesite / Magnesium oxide / MAGNESIUM OXIDE / Magnesia	(CAS-No.) 1309-48-4	Not applicable	Not classified
Nitrogen dioxide	Nitrogen oxide (NO2) / Nitrogen oxide / Nitrogen(IV) oxide / Nitrogen peroxide	(CAS-No.) 10102-44-0	Not applicable	Ox. Gas 1, H270 Press. Gas (Comp.), H280 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1B, H314 Eye Dam. 1, H318
Zinc oxide (ZnO)	Zinc oxide / C.I. 77947 / C.I. Pigment White 4 / Zinc White / CI 77947 / Pigment White 4	(CAS-No.) 1314-13-2	Not applicable	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Chromium(VI) insoluble compounds	Chromium(VI) compounds, insoluble / Insoluble chromium(VI) compounds / Chromium(VI) water-insoluble compounds	(CAS-No.) Not applicable	Not applicable	Not classified
Chromium(VI) water-soluble compounds	Chromium(VI) soluble compounds / Chromium(VI) compounds, soluble / Chromium(VI) compounds, water soluble / Chromium hexavalent soluble compounds	(CAS-No.) Not Applicable	Not applicable	Not classified
Manganese inorganic compounds	Manganese compounds, inorganic / Manganese, inorganic compounds	(CAS-No.) Not applicable	Not applicable	Not classified
Chromium(II) compounds		(CAS-No.) Not applicable	Not applicable	Not classified
Chromium(III) compounds	Chromium(3+) compounds / Chromium trivalent compounds / Chromium(III) compounds soluble compounds	(CAS-No.) Not applicable	Not applicable	Not classified

* The actual concentration of ingredient(s) is withheld as a trade secret in accordance with the 29 CFR 1910.1200. Percentages are listed in weight-by-weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume-by-volume percentage (v/v%). Full text of H-phrases: see section 16. *This mixture has a variable composition.*

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation: Using proper respiratory protection, move the exposed person to fresh air at once. Encourage exposed person to cough, spit out, and blow nose to remove dust. Immediately call a poison center, physician, or emergency medical service.

First-aid Measures After Skin Contact: For particulates and dust: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. If skin irritation occurs: Get medical advice/attention. *In molten form:* Removal of solidified molten material from skin requires medical assistance. Get immediate medical advice/attention.

First-aid Measures After Eye Contact: For particulates and dust: Rinse cautiously with water for at least 5 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists. *In molten form:* Removal of solidified molten material from the eyes requires medical assistance.

First-aid Measures After Ingestion: Not expected to be a primary route of exposure. Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Injuries: This product is not hazardous in the form in which it is shipped by the manufacturer. Welding, cutting, or processing this material may release dust or fumes that are hazardous.

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Symptoms/Injuries After Inhalation: Dust may be harmful or cause irritation. Fumes from welding, or processing of this material can be harmful if inhaled. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation. Skin contact with large amounts of dust may cause mechanical irritation. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes. May cause mechanical eye irritation. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Ingestion: Not expected to be a primary route of exposure. Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Causes damage to organs through prolonged or repeated exposure. Prolonged exposure to welding fumes is associated with causing lung damage, stomach ulcers, kidney damage, nervous system damage and various types of cancer, including lung, larynx and urinary tract. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. If heated to the point of fume generation zinc fumes may cause metal fume fever. Otherwise, zinc is non-toxic. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Silicon: Can cause chronic bronchitis and narrowing of the airways. Repeated inhalation of iron oxide dust can cause siderosis, a benign condition. Chromium: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion. Lead: Exposure can result in lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; encephalopathy; kidney disease; hypertension.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: For metal fires, dry sand or graphite may be used. Class D fire extinguishers are also appropriate.

Unsuitable Extinguishing Media: If material is hot or in dust form, do not use a heavy water stream. DO NOT USE: Halogenated agents on small chips, dusts or fines.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: In massive form: Product is not flammable. The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: Flammable solid. Reacts readily with water to produce flammable gases which may ignite and cause a fire. Combustible Dust.

Explosion Hazard: In massive form: Product is not explosive. For particulates and dust: Reacts readily with water to emit flammable gases which could ignite and possibly cause an explosion. Dust explosion hazard in air.

Reactivity: May form explosive hydrogen gas on contact with acids. In molten form may react violently with water. For particulates and dust: Reacts readily with water liberating highly flammable gases. Reacts violently with strong oxidizers. Increased risk of fire or explosion. May react violently with halogens or halogenated compounds. Contact with certain metal oxides may result in a thermite reaction with a source of ignition.

5.3. Advice for Firefighters

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

Firefighting Instructions: Do not disturb burning metal. Dust, fines, or molten metal: Use Class D extinguishing agents. As shipped: Water spray, fog, carbon dioxide (CO₂), alcohol-resistant foam, or dry chemical. Use extinguishing media appropriate for surrounding fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Metal oxides.

Other Information: Fine dust dispersed in air may ignite. Do not allow run-off from firefighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid generating dust. For particulates and dust: Remove ignition sources. Do not breathe dust. Do not get in eyes, on skin, or on clothing. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Use only non-sparking tools.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

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Emergency Procedures: Evacuate unnecessary personnel. Stop leak if safe to do so.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Eliminate ignition sources. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Use only non-sparking tools. Avoid generation of dust during clean-up of spills.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. As shipped: Mechanically recover the product. For particulates and dust: Vacuum clean-up is preferred. If sweeping is required use a dust suppressant. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Use only non-sparking tools. Spills should be cleaned up immediately and placed in approved containers. For small molten spills, allow product to cool and remove as a solid. Use cautious judgement when cleaning up large molten spills. Wear personal protective equipment as appropriate, shut off source of leak if safe to do so, dike and contain molten material, and collect in approved containers for disposal in accordance with federal, state, and local regulations. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: This product is physiologically inert in its massive form. However, user-generated dust and/or fumes may pose a physiological hazard if inhaled or ingested. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation. User-generated dust is easily ignited and difficult to extinguish. Avoid dust production. Keep away from any possible contact with water, because of violent reaction and possible flash fire. Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations. Self-heating in large quantities; may catch fire. Fumes from welding, or processing of this material can be harmful if inhaled. Hexavalent chrome may be formed during welding. The welding of alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infrared radiation, and ultra-violet radiation.

Precautions for Safe Handling: Use appropriate personal protective equipment (PPE). Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid creating or spreading dust. Protect skin and eyes from contact with molten material. For particulates and dust: Keep away from heat, sparks, open flames, and hot surfaces. No smoking. Do not breathe dust. Avoid contact with eyes, skin and clothing. Protect from moisture. Handle under inert gas. Take precautionary measures against static discharge. Use only non-sparking tools.

Handling Temperature: No temperature range given. Product may be used in molten form.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Avoid creating or spreading dust. Take action to prevent static discharges. Proper grounding procedures to avoid static electricity should be followed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating, and lighting equipment.

Storage Conditions: Store in a dry place. Keep/Store away from incompatible materials. For particulates and dust: Store in a well-ventilated place. Keep container tightly closed. Containers which are opened should be properly resealed and kept upright to prevent leakage. Keep in fireproof place.

Incompatible Materials: Corrosive substances in contact with metals may produce flammable hydrogen gas. Chips, fines, dust 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 metal. 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). 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

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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. Thermite reactions can occur with oxides of lead, copper, iron, bismuth and certain other metals.

Storage Temperature: No temperature range given. Product may be used in molten form.

Storage Area: Store in ventilated dry area, away from sources of water or combustible materials. Refer to local codes and regulations.

7.3. Specific End Use(s)

Fabricated Parts

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

Aluminum (7429-90-5)		
USA ACGIH	ACGIH® TLV® TWA	1 mg/m ³ (respirable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL TWA	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Silicon (7440-21-3)		
USA NIOSH	NIOSH REL TWA	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Chromium (7440-47-3)		
USA ACGIH	ACGIH® TLV® TWA	0.5 mg/m ³ (inhalable particulate matter)
USA ACGIH	BEI	0.7 µg/l Parameter: total Chromium - Medium: urine - Sampling time: end of shift at end of workweek (population based)
USA NIOSH	NIOSH REL TWA	0.5 mg/m ³
USA IDLH	IDLH	250 mg/m ³
USA OSHA	OSHA PEL TWA	1 mg/m ³
Lead (7439-92-1)		
USA ACGIH	ACGIH® TLV® TWA	0.05 mg/m ³
USA ACGIH	ACGIH® chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	BEI	200 µg/l Parameter: Lead - Medium: blood - Sampling time: not critical (Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB (lead in blood level) over the current CDC reference value.)
USA NIOSH	NIOSH REL TWA	0.05 mg/m ³
USA IDLH	IDLH	100 mg/m ³
USA OSHA	OSHA PEL TWA	50 µg/m ³
USA OSHA	OSHA Action Level/Excursion Limit	30 µg/m ³ (Action Level, see 29 CFR 1910.1025)
Nickel (7440-02-0)		
USA ACGIH	ACGIH® TLV® TWA	1.5 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Suspected as a Human Carcinogen
USA ACGIH	BEI	5 µg/l Parameter: Nickel - Medium: urine - Sampling time: post-shift at end of workweek (background)
USA NIOSH	NIOSH REL TWA	0.015 mg/m ³
USA IDLH	IDLH	10 mg/m ³
USA OSHA	OSHA PEL TWA	1 mg/m ³
Silica, amorphous, precipitated and gel (112926-00-8)		
USA OSHA	OSHA PEL TWA	20 mppcf
USA OSHA	OSHA PEL TWA	20 mppcf, 80/(SiO ₂) mg/m ³ (See 29 CFR 1910.1000 TABLE Z-3)

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Nitrogen monoxide (10102-43-9)		
USA ACGIH	ACGIH® TLV® TWA	25 ppm
USA ACGIH	BEI	5 % of hemoglobin Parameter: Methemoglobin - Medium: blood - Sampling time: during or end of shift (background, nonspecific, semi-quantitative)
USA NIOSH	NIOSH REL TWA	30 mg/m ³
USA NIOSH	NIOSH REL TWA	25 ppm
USA IDLH	IDLH	100 ppm
USA OSHA	OSHA PEL TWA	30 mg/m ³
USA OSHA	OSHA PEL TWA	25 ppm
Ozone (10028-15-6)		
USA ACGIH	ACGIH® TLV® TWA	0.05 ppm (heavy work) 0.08 ppm (moderate work) 0.1 ppm (light work) 0.2 ppm (heavy, moderate or light workloads, <=2 hours)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL C	0.2 mg/m ³
USA NIOSH	NIOSH REL C	0.1 ppm
USA IDLH	IDLH	5 ppm
USA OSHA	OSHA PEL TWA	0.2 mg/m ³
USA OSHA	OSHA PEL TWA	0.1 ppm
Aluminum oxide (Al₂O₃) (1344-28-1)		
USA ACGIH	ACGIH® TLV® TWA	10 mg/m ³
USA OSHA	OSHA PEL TWA	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Lead inorganic compounds		
USA ACGIH	ACGIH® TLV® TWA	0.05 mg/m ³
USA ACGIH	ACGIH® chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	BEI	200 µg/l Parameter: Lead - Medium: blood - Sampling time: not critical (Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB (lead in blood level) over the current CDC reference value.)
USA OSHA	OSHA PEL TWA	50 µg/m ³
USA OSHA	OSHA Action Level/Excursion Limit	30 µg/m ³ (Action Level, See 29 CFR 1910.1025, as Pb)
Zinc oxide (ZnO) (1314-13-2)		
USA ACGIH	ACGIH® TLV® TWA	2 mg/m ³ (respirable particulate matter)
USA ACGIH	ACGIH® TLV® STEL	10 mg/m ³ (respirable particulate matter)
USA NIOSH	NIOSH REL TWA	5 mg/m ³ (dust and fume)
USA NIOSH	NIOSH REL STEL	10 mg/m ³ (fume)
USA NIOSH	NIOSH REL C	15 mg/m ³ (dust)
USA IDLH	IDLH	500 mg/m ³
USA OSHA	OSHA PEL TWA	5 mg/m ³ (fume) 15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Magnesium oxide (MgO) (1309-48-4)		
USA ACGIH	ACGIH® TLV® TWA	10 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA IDLH	IDLH	750 mg/m ³ (fume)
USA OSHA	OSHA PEL TWA	15 mg/m ³ (fume, total particulate)
Paraffin oils (8012-95-1)		
USA ACGIH	ACGIH® TLV® TWA	5 mg/m ³ (excluding metal working fluids, highly & severely refined-inhalable particulate matter)

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USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen highly and severely refined, Suspected Human Carcinogen highly and severely refined
USA NIOSH	NIOSH REL TWA	5 mg/m ³
USA NIOSH	NIOSH REL STEL	10 mg/m ³
USA IDLH	IDLH	2500 mg/m ³
USA OSHA	OSHA PEL TWA	5 mg/m ³
Iron oxide (Fe₂O₃) (1309-37-1)		
USA ACGIH	ACGIH® TLV® TWA	5 mg/m ³ (respirable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL TWA	5 mg/m ³ (dust and fume)
USA IDLH	IDLH	2500 mg/m ³ (dust and fume)
USA OSHA	OSHA PEL TWA	10 mg/m ³ (fume) 15 mg/m ³ (total dust (Rouge)) 5 mg/m ³ (respirable fraction (Rouge))
Nitrogen dioxide (10102-44-0)		
USA ACGIH	ACGIH® TLV® TWA	0.2 ppm
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL STEL	1.8 mg/m ³
USA NIOSH	NIOSH REL STEL	1 ppm
USA IDLH	IDLH	13 ppm
USA OSHA	OSHA PEL C	9 mg/m ³
USA OSHA	OSHA PEL C	5 ppm
Manganese inorganic compounds		
USA ACGIH	ACGIH® TLV® TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
Chromium, ion (Cr⁶⁺) (18540-29-9)		
USA OSHA	OSHA PEL TWA	5 µg/m ³
USA OSHA	OSHA Action Level/Excursion Limit	2.5 µg/m ³ (Action level, see 29 CFR 1910.1026)
Chromium(III) compounds		
USA NIOSH	NIOSH REL TWA	0.5 mg/m ³
USA IDLH	IDLH	25 mg/m ³
USA OSHA	OSHA PEL TWA	0.5 mg/m ³
Chromium(II) compounds		
USA NIOSH	NIOSH REL TWA	0.5 mg/m ³
USA IDLH	IDLH	250 mg/m ³
USA OSHA	OSHA PEL TWA	0.5 mg/m ³
Nickel insoluble compounds		
USA OSHA	OSHA PEL TWA	1 mg/m ³
Chromium(VI) water-soluble compounds		
USA ACGIH	BEI	0.7 µg/l Parameter: total Chromium - Medium: urine - Sampling time: end of shift at end of workweek (fume)
Manganese (7439-96-5)		
USA ACGIH	ACGIH® TLV® TWA	0.02 mg/m ³ (respirable particulate matter) 0.1 mg/m ³ (inhalable particulate matter)
USA ACGIH	ACGIH® chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL TWA	1 mg/m ³ (fume)
USA NIOSH	NIOSH REL STEL	3 mg/m ³
USA IDLH	IDLH	500 mg/m ³
USA OSHA	OSHA PEL C	5 mg/m ³ (fume)

8.2. Exposure Controls

Appropriate Engineering Controls

: Suitable eye/body wash equipment should be available in the vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Proper grounding procedures to avoid static electricity should be followed. Use

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Personal Protective Equipment

explosion-proof equipment. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure all national/local regulations are observed. Although not all inclusive, see ANSI Z49.1:2012 Safety in Welding, Cutting, and Allied Processing for welding specific engineering controls.

: Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing

: Chemically resistant materials and fabrics. Wear fire/flammable resistant/retardant clothing.

Hand Protection

: Wear protective gloves.

Eye and Face Protection

: Chemical safety goggles.

Skin and Body Protection

: Wear suitable protective clothing. Reference ANSI Z49.1:2012 for PPE guidance for welders.

Respiratory Protection

: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Thermal Hazard Protection

: When working with hot material, use suitable thermally protective clothing.

Other Information

: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Color	: Spherical aluminum solid, silver
Odor	: None
pH	: No data available
Melting Point	: 565.56 – 660 °C (1050.01 – 1220 °F)
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: Flammable solid
Vapor Pressure	: No data available
Relative Vapor Density at 20°C	: No data available
Relative Density	: No data available
Density	: 2.64 – 2.72 g/cm ³
Solubility	: No data available
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity, Kinematic	: No data available
Particle Size	: No data available
Particle Size Distribution	: No data available
Particle Shape	: No data available
Particle Aspect Ratio	: No data available
Particle Aggregation State	: No data available
Particle Agglomeration State	: No data available
Particle Specific Surface Area	: No data available
Particle Dustiness	: No data available

9.2. Other Information

No additional information available

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SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity**
May form explosive hydrogen gas on contact with acids. In molten form may react violently with water. For particulates and dust: Reacts readily with water liberating highly flammable gases. Reacts violently with strong oxidizers. Increased risk of fire or explosion. May react violently with halogens or halogenated compounds. Contact with certain metal oxides may result in a thermite reaction with a source of ignition.
- 10.2. Chemical Stability**
Stable under normal conditions. The following applies to the product if it is cut, sanded or altered in such a way that excessive and/or significant particulates and/or dusts may be generated: Self-heating: may catch fire. Flammable solid. Water reactive.
- 10.3. Possibility of Hazardous Reactions, Including those Associated with Foreseeable Emergencies**
Hazardous polymerization will not occur.
- 10.4. Conditions to Avoid**
Keep away from moisture, water, ignition sources, direct sunlight, extremely high or low temperatures, incompatible materials. Sparks, heat, open flame and other sources of ignition. Dust accumulation (to minimize explosion hazard).
- 10.5. Incompatible Materials**
Corrosive substances in contact with metals may produce flammable hydrogen gas. Chips, fines, dust 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 metal. 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). 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. Thermite reactions can occur with oxides of lead, copper, iron, bismuth and certain other metals.
- 10.6. Hazardous Decomposition Products**
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1. Information on Toxicological Effects**
Likely Routes of Exposure: Dermal, Eye Contact, Inhalation, Oral
Acute Toxicity (Oral): Not classified.
Acute Toxicity (Dermal): Not classified.
Acute Toxicity (Inhalation): Not classified.

Distillates, petroleum, hydrotreated middle (64742-46-7)	
LD50 Oral Rat	7400 mg/kg (Source: IUCLID)
LD50 Dermal Rabbit	> 2000 mg/kg (Source: ECHA_API)
LC50 Inhalation Rat	4.6 mg/l/4h
Aluminum (7429-90-5)	
LC50 Inhalation Rat	0.888 mg/L/4h (No deaths)
Magnesium (7439-95-4)	
LD50 Oral Rat	230 mg/kg (Source: IUCLID)
Iron (7439-89-6)	
LD50 Oral Rat	98.6 g/kg
Silicon (7440-21-3)	
LD50 Oral Rat	3160 mg/kg

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Zinc (7440-66-6)	
LD50 Oral Rat	> 2000 mg/kg
Chromium (7440-47-3)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 5.41 mg/l/4h
Lead (7439-92-1)	
LD50 Oral Rat	> 5000 mg/kg
LC50 Inhalation Rat	> 5.05 mg/l/4h No observed mortality. No abnormalities detected at necropsy.
Nickel (7440-02-0)	
LD50 Oral Rat	> 9000 mg/kg (Source: EU_RAR)
LC50 Inhalation Rat	> 10.2 mg/l (Exposure time: 1 h Source: EU_RAR)
Silica, amorphous, precipitated and gel (112926-00-8)	
LD50 Oral Rat	> 20000 mg/kg (Source: ECHA)
Nitrogen monoxide (10102-43-9)	
LC50 Inhalation Rat	1068 mg/m ³ (Exposure time: 4 h Source: NLM_CIP)
LC50 Inhalation Rat	354 ppm/4h
Ozone (10028-15-6)	
LC50 Inhalation Rat	4800 ppb (Exposure time: 4 h Source: NLM_CIP)
LC50 Inhalation Rat	4.8 ppm
Aluminum oxide (Al₂O₃) (1344-28-1)	
LD50 Oral Rat	> 15900 mg/kg
Zinc oxide (ZnO) (1314-13-2)	
LD50 Oral Rat	> 5000 mg/kg (Source: EU_RAR)
LD50 Dermal Rat	> 2000 mg/kg (no deaths)
LC50 Inhalation Rat	> 5700 mg/m ³ (Exposure time: 4 h Source: ECHA_API)
LC50 Inhalation Rat	5.7 mg/l/4h
Magnesium oxide (MgO) (1309-48-4)	
LD50 Oral Rat	3870 mg/kg (Source: NLM_HSDB)
Paraffin oils (8012-95-1)	
LD50 Oral Rat	> 24 g/kg (Source: NLM_CIP)
LC50 Inhalation Rat	2062 ppm/4h
Iron oxide (Fe₂O₃) (1309-37-1)	
LD50 Oral Rat	> 10000 mg/kg (Source: ECHA)
LC50 Inhalation Rat	5.05 mg/l/4h
Nitrogen dioxide (10102-44-0)	
LC50 Inhalation Rat	88 ppm/4h
Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.14 mg/l/4h

Skin Corrosion/Irritation: Not classified.

Serious Eye Damage/Irritation: Not classified.

Respiratory or Skin Sensitization: Not classified.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Not classified.

Chromium (7440-47-3)	
IARC group	3
Lead (7439-92-1)	
IARC group	2A
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Nickel (7440-02-0)	

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IARC group	2B
National Toxicology Program (NTP) Status	Reasonably anticipated to be Human Carcinogen.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Silica, amorphous, precipitated and gel (112926-00-8)	
IARC group	3
Lead inorganic compounds	
IARC group	2A
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Paraffin oils (8012-95-1)	
IARC group	3
Iron oxide (Fe2O3) (1309-37-1)	
IARC group	3
Chromium, ion (Cr6+) (18540-29-9)	
IARC group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
OSHA Specifically Regulated Carcinogen List	In OSHA Specifically Regulated Carcinogen list.
Chromium(III) compounds	
IARC group	3

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity (Single Exposure): Not classified.

Specific Target Organ Toxicity (Repeated Exposure): Not classified.

Aspiration Hazard: Not classified.

Symptoms/Injuries After Inhalation: Dust may be harmful or cause irritation. Fumes from welding, or processing of this material can be harmful if inhaled. Inhalation of dusts and fumes can cause metal fume fever. Symptoms can include a metallic or sweet taste in the mouth, sweating, shivering, headache, throat irritation, fever, chills, thirstiness, muscle aches, nausea, vomiting, weakness, fatigue, and shortness of breath.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation. Skin contact with large amounts of dust may cause mechanical irritation. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes. May cause mechanical eye irritation. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Ingestion: Not expected to be a primary route of exposure. Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Causes damage to organs through prolonged or repeated exposure. Prolonged exposure to welding fumes is associated with causing lung damage, stomach ulcers, kidney damage, nervous system damage and various types of cancer, including lung, larynx and urinary tract. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. If heated to the point of fume generation zinc fumes may cause metal fume fever. Otherwise, zinc is non-toxic. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Silicon: Can cause chronic bronchitis and narrowing of the airways. Repeated inhalation of iron oxide dust can cause siderosis, a benign condition. Chromium: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals. Increased incidences of respiratory cancer have been found in chromium (VI) workers. There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion. Lead: Exposure can result in lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; encephalopathy; kidney disease; hypertension.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : This product contains components that are environmentally hazardous and small chips and dust from processing may be toxic to aquatic life with long lasting effects.

Distillates, petroleum, hydrotreated middle (64742-46-7)
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LC50 Fish 1	35 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through] Source: IUCLID)
LC50 Fish 2	10000 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
Zinc (7440-66-6)	
EC50 - Crustacea [1]	0.169 mg/l
Lead (7439-92-1)	
LC50 Fish 1	0.44 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static] Source: EPA)
EC50 - Crustacea [1]	600 µg/l (Exposure time: 48 h - Species: water flea)
LC50 Fish 2	1.17 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through] Source: EPA)
ErC50 (Algae)	0.0205 mg/l
NOEC Chronic Fish	0.008 mg/l
NOEC Chronic Crustacea	0.017 mg/l
NOEC Chronic Algae	0.0061 mg/l
Nickel (7440-02-0)	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 - Crustacea [1]	100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	15.3 mg/l
EC50 - Crustacea [2]	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
Silica, amorphous, precipitated and gel (112926-00-8)	
LC50 Fish 1	10000 mg/l
Aluminum oxide (Al₂O₃) (1344-28-1)	
LC50 Fish 1	> 100 mg/l
EC50 - Crustacea [1]	> 100 mg/l
ErC50 (Algae)	> 100 mg/l
NOEC (Acute)	> 50 mg/l
Zinc oxide (ZnO) (1314-13-2)	
LC50 Fish 1	1.793 mg/l (Exposure time: 96 h - Species: Zebrafish)
EC50 - Crustacea [1]	0.154 mg/l (Desmodesmus subspicatus 48 h)
ErC50 (Algae)	3.35 mg/l (Desmodesmus subspicatus 72 h)
NOEC Chronic Fish	0.026 mg/l (Jordanelia floridae)
NOEC Chronic Crustacea	0.04 mg/l (Daphnia magna 21 d semi-static reproduction)
Iron oxide (Fe₂O₃) (1309-37-1)	
LC50 Fish 1	100000 mg/l (Exposure time: 96 h - Species: Danio rerio [static] Source: ECHA)
Chromium, ion (Cr⁶⁺) (18540-29-9)	
LC50 Fish 1	36.2 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
LC50 Fish 2	7.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
Manganese (7439-96-5)	
LC50 Fish 1	> 3.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static] Source: ECHA)
ErC50 (Algae)	4.5 mg/l
NOEC Chronic Fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)

12.2. Persistence and Degradability

Aluminum, 5xxx Series Alloys	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Aluminum, 5xxx Series Alloys	
Bioaccumulative Potential	Not established.

12.4. Mobility in Soil

Aluminum, 5xxx Series Alloys	
Ecology - Soil	Not established.

12.5. Other Adverse Effects

Other Information	: Avoid release to the environment.
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SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, and international regulations. Material should be recycled if possible.

Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT

Not regulated for transport

14.2. In Accordance with IMDG

Not regulated for transport

14.3. In Accordance with IATA

Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Aluminum, 5xxx Series Alloys	
SARA Section 311/312 Hazard Classes	Physical hazard - Combustible dust
Distillates, petroleum, hydrotreated middle (64742-46-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (dust or fume only)
Magnesium (7439-95-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Iron (7439-89-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Silicon (7440-21-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Zinc (7440-66-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	1 % (dust or fume only)
Chromium (7440-47-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	1 %
Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	10 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
SARA Section 313 - Emission Reporting	(not eligible for the de minimis exemption)
Nickel (7440-02-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb (only applicable if particles are < 100 µm)

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SARA Section 313 - Emission Reporting	0.1 %
Nitrogen monoxide (10102-43-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Listed on the United States SARA Section 302	
CERCLA RQ	10 lb releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
Ozone (10028-15-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Listed on the United States SARA Section 302	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
SARA Section 313 - Emission Reporting	1 %
Aluminum oxide (Al₂O₃) (1344-28-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (fibrous forms)
Lead inorganic compounds	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	(not eligible for the de minimis exemption)
Zinc oxide (ZnO) (1314-13-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Magnesium oxide (MgO) (1309-48-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Paraffin oils (8012-95-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Iron oxide (Fe₂O₃) (1309-37-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Nitrogen dioxide (10102-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Listed on the United States SARA Section 302	
CERCLA RQ	10 lb releases to the air in amounts <1000 pounds per 24 hours which are the result of combustion and combustion-related activities are exempt from the notification requirements per 40 CFR 302.6
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
Chromium(III) compounds	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (includes any unique chemical substance that contains Chromium as part of that chemical's infrastructure except for Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the Chromite ore processing residue (COPR), no de minimis concentration has been assigned to this chemical category)
Chromium(II) compounds	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	(includes any unique chemical substance that contains Chromium as part of that chemical's infrastructure except for Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the Chromite ore processing residue (COPR), no de minimis concentration has been assigned to this chemical category)
Manganese (7439-96-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 %

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15.2. US State Regulations

Aluminum (7429-90-5)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Magnesium (7439-95-4)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Silicon (7440-21-3)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Zinc (7440-66-6)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Chromium (7440-47-3)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Lead (7439-92-1)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Nickel (7440-02-0)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Silica, amorphous, precipitated and gel (112926-00-8)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
Nitrogen monoxide (10102-43-9)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Ozone (10028-15-6)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Aluminum oxide (Al₂O₃) (1344-28-1)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

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U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Zinc oxide (ZnO) (1314-13-2)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Magnesium oxide (MgO) (1309-48-4)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
Paraffin oils (8012-95-1)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
Iron oxide (Fe2O3) (1309-37-1)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
Nitrogen dioxide (10102-44-0)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Chromium, ion (Cr6+) (18540-29-9)
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Chromium(III) compounds
U.S. - New Jersey - Right to Know Hazardous Substance List
Manganese (7439-96-5)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

California Proposition 65

 **WARNING:** This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chemical Name (CAS No.)	Carcinogenicity	Developmental Toxicity	Female Reproductive Toxicity	Male Reproductive Toxicity
Lead (7439-92-1)	X	X	X	X
Nickel (7440-02-0)	X			
Chromium, ion (Cr6+) (18540-29-9)	X	X		

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 07/29/2026
Indication of Changes : Update of SDS to latest OSHA regulations under 29CFR1910.1200.
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

GHS Full Text Phrases:

H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H304	May be fatal if swallowed and enters airways
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation

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H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H330	Fatal if inhaled
H332	Harmful if inhaled
H350	May cause cancer.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child
H362	May cause harm to breast-fed children
H370	Causes damage to organs.
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life
SIAS	May displace oxygen and cause rapid suffocation

Glossary of Data Source Abbreviations

ATSDR: Agency for Toxic Substances and Disease Registry (U.S. Department of Health and Human Services)	FOOD_JOURN: Food Research Journal (1956)
AU_WES: Australia WES	IARC: The International Agency for Research on Cancer
CHEMVIEW: ChemView (U.S. Environmental Protection Agency)	IDLH: National Institute for Occupational Health and Safety Immediately Dangerous to Life or Health Value Profiles
EC_RAR: European Commission Renewal Assessment Report	IUCLID: International Uniform Chemical Information Database
EC_SCOEL: European Commission Scientific Committee on Occupational Exposure Limits	JAPAN_GHS: Japan GHS Basis for Classification Data
ECETOC: European Centre for Ecotoxicology and Toxicology of Chemicals Reports	JP_J-CHECK: Japan J-Check
ECHA_API: European Chemicals Agency API	KR_NIER: South Korea National Institute of Environmental Research Evaluations
ECHA_RAC: ECHA Committee for Risk Assessment	NICNAS: Australia National Industrial Chemicals Notification and Assessment Scheme
EFSA: European Food Safety Authority	NIOSH: National Institute for Occupational Health and Safety (U.S. Department of Health and Human Services)
EPA: U.S. Environmental Protection Agency	NLM_CIP: National Library of Medicine ChemID plus database
EPA_AEGL: Acute Exposure Guideline Levels (U.S. Environmental Protection Agency)	NLM_HSDB: National Library of Medicine Hazardous Substance Data Bank
EPA_FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act Reregistration Eligibility Decision (U.S. Environmental Protection Agency)	NLM_PUBMED: National Library of Medicine PubMed database
EPA_HPVC: High Production Volume Chemicals (U.S. Environmental Protection Agency)	NTP: National Toxicology Program
EPA_TRED: Risk Assessment for Tolerance Reassessment Eligibility Decision (U.S. Environmental Protection Agency)	NZ_CCID: New Zealand Chemical Classification and Information Database
EU_CLH: European Union Harmonised Classification and Labelling Proposal	OECD_EHSP: Environment, Health, and Safety Publication (Organisation for Economic Co-operation and Development)
EU_RAR: European Union Risk Assessment Report	OECD_SIDS: Screening Information Data Sets (Organisation for Economic Co-operation and Development)
	WHO: World Health Organization

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)