Aluminum, 5xxx Series Alloys

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Date of Issue: 05/14/2020 Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Aluminum, 5xxx Series Alloys

Additional Information: This product is a formed solid as shipped, and the hazard classification presented in Section 2 is based on the shipped form. Additional hazards are represented throughout the SDS if this product is further processed and dust or fumes are generated.

1.2. Intended Use of the Product

Use of the Substance/Mixture: Fabricated Parts

1.3. Name, Address, and Telephone of the Responsible Party

Company

TCI – Texarkana, Inc
300 Alumax Drive
Texarkana, TX 75501
903-832-8471

EHS@texarkanaaluminum.com
www.texarkanaaluminum.com

1.4. Emergency Telephone Number

Emergency Number : ChemTel LLC
(800)255-3924 (North America)
+1 (813)248-0585 (International)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Comb. Dust

Full text of hazard classes and H-statements : see section 16

2.2. Label Elements

GHS-US Labeling

Signal Word (GHS-US) : Warning

Hazard Statements (GHS-US) : May form combustible dust concentrations in air during processing and handling.

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. Other Hazards

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

2.4. 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	84.051 - 100	Comb. Dust

Magnesium	Magnesium powder / Magnesium powders / Magnesium powder (pyrophoric)	(CAS-No.) 7439-95-4	< 6.6	Comb. 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	Comb. Dust
Manganese	Manganese, elemental / Manganese metal	(CAS-No.) 7439-96-5	< 1.9	Comb. Dust
Iron	Iron, elemental / Direct reduced Iron / Iron, reduced / Elemental iron / IRON POWDER	(CAS-No.) 7439-89-6	< 1.8	Comb. Dust
Silicon	Silicon powder / Silicon powder, amorphous / Ammonium hexafluorosilicate	(CAS-No.) 7440-21-3	< 1.5	Comb. Dust
Chromium	Chromium metal / Chromium, elemental / Chromium, metal / Chromium, metallic / Chrome, metal / Chrome	(CAS-No.) 7440-47-3	< 1.1	Comb. 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 Comb. Dust
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 Comb. Dust
The ingredients listed below are compounds which could be formed during futher processing operations.				
Name	**Synonyms**	**Product Identifier**	**%**	**GHS US classification**
Aluminum oxide (Al2O3)	Aluminum oxide / .alpha.-Alumina / Alumina / Aluminium oxide / Aluminium oxide (Al2O3) / .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 (Cr6+)	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
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	Comb. 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

Full text of H-phrases: see section 16

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.

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 fume 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: Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings.

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. Self-heating: may catch fire. 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.

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).

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 chromium may be formed during welding. The welding of aluminum 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.

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: React 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.

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 TWA (mg/m³)	1 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Silicon (7440-21-3)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Chromium (7440-47-3)		
USA ACGIH	ACGIH TWA (mg/m³)	0.5 mg/m³ (inhalable particulate matter)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.5 mg/m³
USA IDLH	US IDLH (mg/m³)	250 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	1 mg/m³

Lead (7439-92-1)		
USA ACGIH	ACGIH TWA (mg/m³)	0.05 mg/m³
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	Biological Exposure Indices (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) (mg/m³)	0.05 mg/m³
USA IDLH	US IDLH (mg/m³)	100 mg/m³

USA OSHA	OSHA PEL (TWA) (mg/m³)	50 µg/m³
Nickel (7440-02-0)		
USA ACGIH	ACGIH TWA (mg/m³)	1.5 mg/m³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Suspected as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.015 mg/m³
USA IDLH	US IDLH (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	1 mg/m³
Nitrogen monoxide (10102-43-9)		
USA ACGIH	ACGIH TWA (ppm)	25 ppm
USA ACGIH	Biological Exposure Indices (BEI)	1.5 % of hemoglobin Parameter: Methemoglobin - Medium: blood - Sampling time: during or end of shift (background, nonspecific, semi-quantitative)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	30 mg/m³
USA NIOSH	NIOSH REL (TWA) (ppm)	25 ppm
USA IDLH	US IDLH (ppm)	100 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	30 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	25 ppm
Ozone (10028-15-6)		
USA ACGIH	ACGIH TWA (ppm)	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 (ceiling) (mg/m³)	0.2 mg/m³
USA NIOSH	NIOSH REL (ceiling) (ppm)	0.1 ppm
USA IDLH	US IDLH (ppm)	5 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.2 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	0.1 ppm
Aluminum oxide (Al2O3) (1344-28-1)		
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
Lead inorganic compounds (Not Applicable)		
USA ACGIH	ACGIH TWA (mg/m³)	0.05 mg/m³
USA ACGIH	ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
USA ACGIH	Biological Exposure Indices (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) (mg/m³)	50 µg/m³
Zinc oxide (ZnO) (1314-13-2)		
USA ACGIH	ACGIH TWA (mg/m³)	2 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH STEL (mg/m³)	10 mg/m³ (respirable particulate matter)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (dust and fume)
USA NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³ (fume)
USA NIOSH	NIOSH REL (ceiling) (mg/m³)	15 mg/m³ (dust)
USA IDLH	US IDLH (mg/m³)	500 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ (fume) 15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
Magnesium oxide (MgO) (1309-48-4)		
USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen

USA IDLH	US IDLH (mg/m³)	750 mg/m³ (fume)
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (fume, total particulate)
Paraffin oils (8012-95-1)		
USA ACGIH	ACGIH TWA (mg/m³)	5 mg/m³ (excluding metal working fluids, highly & severely refined-inhalable particulate matter)
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) (mg/m³)	5 mg/m³
USA NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³
USA IDLH	US IDLH (mg/m³)	2500 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³
Iron oxide (Fe2O3) (1309-37-1)		
USA ACGIH	ACGIH TWA (mg/m³)	5 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (dust and fume)
USA IDLH	US IDLH (mg/m³)	2500 mg/m³ (dust and fume)
USA OSHA	OSHA PEL (TWA) (mg/m³)	10 mg/m³ (fume) 15 mg/m³ (total dust (Rouge) 5 mg/m³ (respirable fraction (Rouge)
Nitrogen dioxide (10102-44-0)		
USA ACGIH	ACGIH TWA (ppm)	0.2 ppm
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (STEL) (mg/m³)	1.8 mg/m³
USA NIOSH	NIOSH REL (STEL) (ppm)	1 ppm
USA IDLH	US IDLH (ppm)	13 ppm
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	9 mg/m³
USA OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm
Manganese inorganic compounds (Not applicable)		
USA ACGIH	ACGIH TWA (mg/m³)	0.02 mg/m³ (respirable particulate matter) 0.1 mg/m³ (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) (mg/m³)	5 µg/m³
Chromium(III) compounds (Not applicable)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.5 mg/m³
USA IDLH	US IDLH (mg/m³)	25 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.5 mg/m³
Chromium(II) compounds (Not applicable)		
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.5 mg/m³
USA IDLH	US IDLH (mg/m³)	250 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	0.5 mg/m³
Nickel insoluble compounds (Not applicable)		
USA OSHA	OSHA PEL (TWA) (mg/m³)	1 mg/m³
Chromium(VI) water-soluble compounds (Not Applicable)		
USA ACGIH	Biological Exposure Indices (BEI)	25 µg/l Parameter: Total chromium - Medium: urine - Sampling time: end of shift at end of workweek (fume) 10 µg/l Parameter: Total chromium - Medium: urine - Sampling time: increase during shift (fume)
Manganese (7439-96-5)		
USA ACGIH	ACGIH TWA (mg/m³)	0.02 mg/m³ (respirable particulate matter) 0.1 mg/m³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³ (fume)
USA NIOSH	NIOSH REL (STEL) (mg/m³)	3 mg/m³

USA IDLH	US IDLH (mg/m³)	500 mg/m³
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	5 mg/m³ (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 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.

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

Materials for Protective Clothing : Chemically resistant materials and fabrics. Wear fire/flame 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

Appearance : Spherical aluminum solid, silver

Odor : None

Odor Threshold : No data available

pH : No data available

Evaporation Rate : 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/cm³

Solubility : No data available

Partition Coefficient: N-Octanol/Water : No data available

Viscosity : No data available

9.2. Other Information No additional information available

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: 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: React 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

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
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat	4.6 mg/l/4h
Iron (7439-89-6)	
LD50 Oral Rat	98.6 g/kg
Silicon (7440-21-3)	
LD50 Oral Rat	3160 mg/kg
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
Nickel (7440-02-0)	
LD50 Oral Rat	> 9000 mg/kg
LC50 Inhalation Rat	> 10.2 mg/l (Exposure time: 1 h)
Nitrogen monoxide (10102-43-9)	
LC50 Inhalation Rat	780 ppm/4h
Ozone (10028-15-6)	
LC50 Inhalation Rat	4800 ppb (Exposure time: 4 h)

LC50 Inhalation Rat	4.8 ppm
Aluminum oxide (Al2O3) (1344-28-1)	
LD50 Oral Rat	> 15900 mg/kg
LC50 Inhalation Rat	> 2.3 mg/l/4h
Zinc oxide (ZnO) (1314-13-2)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
Magnesium oxide (MgO) (1309-48-4)	
LD50 Oral Rat	3870 mg/kg
Paraffin oils (8012-95-1)	
LD50 Oral Rat	> 24 g/kg
LC50 Inhalation Rat	2062 ppm/4h
Iron oxide (Fe2O3) (1309-37-1)	
LD50 Oral Rat	> 10000 mg/kg
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)	
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 (Not Applicable)	
IARC group	2A
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.
Paraffin oils (8012-95-1)	
IARC group	1
Iron oxide (Fe2O3) (1309-37-1)	
IARC group	3
Chromium, ion (Cr6+) (18540-29-9)	
IARC group	1
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 (Not applicable)	
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 fume 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 : Not classified. 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)	
LC50 Fish 1	35 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 Fish 2	10000 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
Nickel (7440-02-0)	
LC50 Fish 1	100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 Daphnia 1	100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 Fish 2	15.3 mg/l
EC50 Daphnia 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 Daphnia 1	> 100 mg/l
ErC50 (Algae)	> 100 mg/l
NOEC (Acute)	> 50 mg/l
Zinc oxide (ZnO) (1314-13-2)	
LC50 Fish 1	970 µg/l (780 ug Zn/L; Exposure time: 96 h - Species: Pimephales promelas)
LC50 Fish 2	1.793 mg/l (Exposure time: 96 h - Species: Zebrafish)
NOEC Chronic Fish	0.026 mg/l (Species: Jordanella floridae)
Iron oxide (Fe2O3) (1309-37-1)	
LC50 Fish 1	100000 mg/l (Exposure time: 96 h - Species: Danio rerio [static])
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])
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.

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	Health hazard - Specific target organ toxicity (single or repeated exposure) Physical hazard - Self-heating Physical hazard - In contact with water emits flammable gas Physical hazard - Flammable (gases, aerosols, liquids, or solids) Physical hazard - Combustible dust

Distillates, petroleum, hydrotreated middle (64742-46-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory 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	

Iron (7439-89-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Silicon (7440-21-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Zinc (7440-66-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 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 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	0.1 %

Nickel (7440-02-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb (only applicable if particles are < 100 µm)
SARA Section 313 - Emission Reporting	0.1 %

Nitrogen monoxide (10102-43-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 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 Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (fibrous forms)

Lead inorganic compounds (Not Applicable)	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	0.1 %

Zinc oxide (ZnO) (1314-13-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Magnesium oxide (MgO) (1309-48-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Paraffin oils (8012-95-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Iron oxide (Fe2O3) (1309-37-1)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Nitrogen dioxide (10102-44-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory 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 (Not applicable)

Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (except for Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the Chromite ore processing residue (COPR))

Chromium(II) compounds (Not applicable)	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	(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 Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 %

15.2. US State Regulations

Aluminum (7429-90-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Magnesium (7439-95-4)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Silicon (7440-21-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Zinc (7440-66-6)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Chromium (7440-47-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

Lead (7439-92-1)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Nickel (7440-02-0)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances
U.S. - Pennsylvania - RTK (Right to Know) List

Silica, amorphous, precipitated and gel (112926-00-8)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Nitrogen monoxide (10102-43-9)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Ozone (10028-15-6)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Aluminum oxide (Al_2O_3) (1344-28-1)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Zinc oxide (ZnO) (1314-13-2)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Magnesium oxide (MgO) (1309-48-4)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Paraffin oils (8012-95-1)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Iron oxide (Fe_2O_3) (1309-37-1)
U.S. - Massachusetts - Right To Know List
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. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Chromium, ion (Cr6+) (18540-29-9)
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Chromium(III) compounds (Not applicable)
U.S. - New Jersey - Right to Know Hazardous Substance List

Manganese (7439-96-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65

⚠ **WARNING:** This product can expose you to 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 : 05/14/2020

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:

Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Aquatic Chronic 4	Hazardous to the aquatic environment - Chronic Hazard Category 4
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Comb. Dust	Combustible Dust
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Lact.	Reproductive toxicity (Lact.)
Ox. Gas 1	Oxidizing gases Category 1
Press. Gas (Comp.)	Gases under pressure Compressed gas
Repr. 1A	Reproductive toxicity Category 1A
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization, Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
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
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H330	Fatal if inhaled
H331	Toxic 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
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very 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

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)