# SAFETY DATA SHEET

## 1. Product and Company Identification

**Product Name:** Aluminum Casting Alloy A356, A357 series alloy

**Synonym(s):** 356.X, A356.X, 357.X, A357.X

**Prepared By:**


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**Recommended Use:** Not Applicable

## 2. Hazards Identification

**Emergency Overview**

**WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING)**

Not hazardous in solid form. Fines and/or particles from processing may be readily ignitable. Fine particles and molten metal are highly reactive with water, strong oxidizers, acids and alkalis, halogenated compounds and certain metal oxides.

**General Hazard Statement:**

Solid metallic products are generally classified as “articles” and do not constitute a hazardous material in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). However some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite readily, though.

## 3. Composition / Information on Ingredients

| MATERIAL | FORMULA | CAS NO# | PERCENT BY WEIGHT |
|---|---|---|---|
| Aluminum | Al | 7429-90-5 | 90-93% |
| Beryllium | Be | 7440-41-7 | 0.04-0.07% |
| Copper | Cu | 7440-50-8 | 0.0-0.2% |
| Iron | Fe | 7439-89-6 | 0.0-0.2% |
| Magnesium | Mg | 7439-95-4 | 0.25-0.7% |
| Manganese | Mn | 7439-96-5 | 0.0-0.1% |
| Silicon | Si | 7440-21-3 | 6.5-7.5% |
| Titanium | Ti | 7440-32-6 | 0.0-0.2% |
| Zinc | Zn | 7440-66-6 | 0.0-0.1% |

## 4. First Aid Measures

**Inhalation of dust:** In case of discomfort, remove to a ventilated area. If discomfort persists, consult a physician.

**Skin Contact:** Wash with plenty of soap and water. If skin irritation or rash occurs, consult a physician.

**Eyes Contact:** Flush eyes with copious amount of water to remove particles. If discomfort continues, consult a physician.

**Ingestion:** Not an expected route of exposure. Immediate medical attention is not required. Consult a physician if necessary.

## 5. Fire Fighting Measures

**Extinguishing Media:**

In case of aluminum fires, use a Class D dry-powder extinguisher. Do not use water or halogenated extinguishing media.

**Unusual Fire and Explosion Hazards:**

Not a fire hazard unless in particle form (small chips, fine turnings, dusts). Avoid generating dust. Suspension of aluminum dust in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard, especially in a confined atmosphere. Avoid sparks and prevent electrostatic charges from accumulating.
NEVER PUT WATER ON MOLTEN METAL – THIS WILL CAUSE EXPLOSION

**Protective Equipment and Precautions for Firefighters:**

As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

## 6. Accidental Release Measures

**Solid Form (castings):**

No special precautions are necessary for spills of large product fragments. Wear gloves to prevent metal cuts.

**Dust Form:**

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.

Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).

Non-sparking tools should be used.

## 7. Handling and Storage

**Storage:**

Keep in a dry and cool area.

**Handling Precautions:**

Minimize dust generation and accumulation.

Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

## 8. Exposure Controls / Personal Protection

**Exposure Limits:**

| CHEMICAL NAME | CAS NO# | ACGIH TWA/TLV | OSHA PEL TWA |
|---|---|---|---|
| Aluminum (dust) | 7429-90-5 | 1 $mg/m^3$ (respirable) | 15 $mg/m^3$ (total)<br>5 $mg/m^3$ (respirable) |
| Beryllium | 7440-41-7 | 0.00005 $mg/m^3$<br>(inhalable particulate matter) | 0.002 $mg/m^3$<br>Ceiling: 0.005 $mg/m^3$ |
| Copper | 7440-50-8 | 1 $mg/m^3$ (dust)<br>0.2 $mg/m^3$ (fume) | 1 $mg/m^3$ (dust)<br>0.1 $mg/m^3$ (fume) |
| Iron | 7439-89-6 | Not established | Not established |
| Magnesium | 7439-95-4 | N/A | N/A |
| Manganese (fume) | 7439-96-5 | 0.02 $mg/m^3$ (respirable) | Ceiling: 5 $mg/m^3$ |
| Silicon (dust) | 7440-21-3 | 10 $mg/m^3$ (dust) | N/A |
| Titanium | 7440-32-6 | N/A | N/A |
| Zinc | 7440-66-6 | Not established | Not established |

**Exposure Controls / Personal Protection:**

Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing or polishing operations, in order to eliminate explosion hazards. 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 that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Use only appropriately classified electrical equipment and powered industrial trucks.

Use an approved respirator designed for the hazard where concentrations exceed exposure limits.

## 9. Physical / Chemical Characteristics

| | | | |
|---|---|---|---|
| **Appearance and Odor:** | Grey to silver solid; odorless | **Explosive Limits:** | No Information available |
| **Vapor Pressure:** | 1 @ 1284 °C | **Specific Gravity ($H_2O$ = 1):** | 2.7 |
| **Vapor Density (Air = 1):** | No Information available | **Melting Point:** | 1050-1220°F |
| **Solubility in Water:** | Insoluble | **Boiling Point:** | 3733°F |
| **Flash Point:** | Not applicable | **Evaporation Rate** | Not applicable |
| **Flammability:** | No Information available | **pH:** | No Information available |
| **Relative Density:** | No Information available | **Partition coefficient:** | No Information available |
| **Auto-ignition Temperature:** | No Information available | **Decomposition Temperature:** | No Information available |
| **Viscosity:** | No Information available | | |

## 10. Stability and Reactivity

**Stability:** Stable under normal conditions of use, storage and transport.

**Reactivity / Incompatibility (Materials to Avoid):**

Heat generation and release of flammable hydrogen gas may occur when fines, chips or dust are mixed with halogenated acids, halogenated solvents, bromates, iodates or ammonium nitrate. Molten aluminum may explode on contact with water, particularly if water is entrapped.

**Hazardous Polymerization:** Will not occur

## 11. Toxicological Information

**Acute Potential Health Effects:**

**Inhalation:** Not expected to be an inhalation hazard unless it is heated or if aluminum dust is present. If heated or in dust form, it may cause respiratory tract irritation. Heating aluminum can release aluminum oxide fumes and cause fume metal fever when inhaled. This is a flu-like illness with symptoms of metallic taste, fever, chills, aches, chest tightness, and cough.

**Skin Contact:** Exposure to aluminum may cause skin irritation

**Eyes Contact:** Not expected to be a hazard unless aluminum dust particles are present. Exposure to aluminum dust may cause eye irritation by mechanical action.

**Ingestion:** Not applicable

**Chronic Effects:** Not available

**Acute Toxicity:** Component Analysis

| CHEMICAL NAME | CAS NO# | LD50 | LC50 |
|---|---|---|---|
| Iron | 7439-89-6 | 30 g/kg | unknown |
| Manganese (fume) | 7439-96-5 | 9000 mg/kg | unknown |
| Silicon (dust) | 7440-21-3 | 3160 mg/kg | unknown |

**Carcinogenicity:**

The following metal(s) and metal compounds are considered carcinogenic by the International Agency for Research on Cancer (IARC) and the National Toxicology program (NTP) as carcinogens: beryllium

## 12. Ecological Information

**Ecotoxicity:** Aluminum ecotoxicity has not been demonstrated using standard OECD test protocols.

**Mobility:** Aluminum is not mobile in the environment, unless it comes in contact with an aqueous environment with a pH below 5.5 or above 8.5.

**Biodegradability:** Not relevant for metals.

## 13. Disposal Considerations

Reuse or Recycle material wherever possible. Dispose of waste in accordance with federal, state, or local regulations.

## 14. Transport Information

Not regulated for shipping.

## 15. Regulatory Information

**USA Regulations:**

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

| Chemical Name | CAS Number |
|---|---|
| Aluminum | 7429-90-5 |
| Beryllium | 7440-41-7 |
| Copper | 7440-50-8 |
| Manganese | 7439-96-5 |
| Zinc | 7440-66-6 |

**Canadian Regulation:** WHMIS Classification: D2B Toxic material causing other toxic effects.

## 16. Other Information

Refer to NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, for safe handling.

**NOTICE:**
**Although the information in this SDS was obtained from sources which we believe to be reliable, it cannot by guaranteed. In addition, this information may be used in a manner beyond our knowledge or control. The information is therefore provided for advice purposes only, without any representation or warranty, either express or implied.**

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