

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) 5 mg/m ³ (respirable)
Copper	7440-50-8	1 mg/m ³ (dust) 0.2 mg/m ³ (fume)	1 mg/m ³ (dust) 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
Nickel	7440-02-0	1.5 mg/m ³	1 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 (H₂O = 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
Nickel	7440-02-0	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: nickel.

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
Copper	7440-50-8
Manganese	7439-96-5
Nickel	7440-02-0
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 be 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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