



## SAFETY DATA SHEET

### Section 1: Identification

**Product Identifier:** ZIRALCAST-95, ZIRALCAST-94

**Other means of identification:** Alumina Castable, Bubble Alumina Castable Refractory.

**Recommended use:** Thermal, electrical and structural insulation used primarily at high temperatures in applications requiring moderately high strength.

**Manufacturer:**

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**Emergency Telephone Number:**

CHEMTREC: (800) 424-9300 (USA/Canada), (703) 527-3887 (International)

### Section 2: Hazards Identification

**Hazard Classification(s):** Carcinogenicity, subcategory 1b, Skin Irritation, Eye Effects, category 2 Respiratory Sensitizer. May cause damage to organs through prolonged or repeated exposure

**Signal Word:** Warning.



**Precautionary Statement(s):** Presumed carcinogen (inhalation) May cause skin, eye and respiratory irritation

**CAUTION:** Handling or machining of these products may produce respirable dust particles. Dust may irritate eyes, skin and respiratory tract.

**Inhalation: Do not breathe dust as it may cause permanent lung injury (Silicosis). The IARC has classified crystalline silica inhaled in the form of quartz or cristobalite carcinogenic to humans (Group I)**

**Eye Contact:** Dust may cause temporary irritation or inflammation.

**Skin Contact:** May cause temporary dryness, irritation or rash.

**Ingestion:** Ingestion is unlikely. May cause gastrointestinal disturbances. Never induce vomiting without the advice of a physician.

**Medical Conditions Aggravated by Exposure:** Respiratory effects may be aggravated by smoking. Pre-existing respiratory problems may be aggravated by dust.

### Section 3: Composition / Information on Ingredients

#### Chemical and common names, CAS numbers and concentration

Chemical Name	Common Name	CAS Number	% by weight
Aluminium(III) oxide	Alumina	1344-28-1	95
Monocalcium aluminate	Calcium aluminate	1204268-1	4
Silicon dioxide	Silica (cristobalite)	14464-46-1	1

### Section 4: First Aid Measures

**Inhalation:** Remove to fresh air. Rinse mouth to clear throat and expel liquid. Blow nose to evacuate dust. Consult a physician if irritation persists.

**Eye Contact:** Products can be physical irritants to eyes. Do not rub eyes. Keep hands or contaminated body parts away from eyes. Remove contact lenses. Flush with water. If irritation persists, consult a physician.

**Skin Contact:** Products are irritants. Wash with soap and water. For dryness, a skin cream may be helpful. Do not apply anything to a rash. Consult a physician if irritation persists.

**Ingestion:** Drink plenty of water. Do not induce vomiting without advice of a physician. Seek medical attention.

Note to Physicians: Aluminum Oxide dusts have caused no systemic or pathological problems. Aluminum oxide is inert in the body. These products contain crystalline silica (cristobalite). The IARC has classified crystalline silica in the form of quartz or

crystobalite as carcinogenic to humans. Some individuals may experience allergic sensitivity reactions. These are generally limited to mild occupational dermatitis. Chronic inhalation may result in pleural plaques and further complications. Other effects principally derived from physical abrasion.

## Section 5: Fire Fighting Measures

**Materials are not combustible.** Use extinguishing media suitable for type of surrounding fire.

## Section 6: Accidental Release Measures

**Spill Procedures:** Clean up procedures should minimize formation of airborne dusts. Remove dust by vacuuming using HEPA filtration where possible.

**Release into Air:** Prevent release of airborne particulates where possible. Do not blow dust around. Not a regulated hazardous substance. See Section 8 for appropriate engineering controls.

**Release into Water:** Release into water is not appropriate. Not a regulated hazardous substance.

## Section 7: Handling and Storage

**Storage:** These materials are stable and may be stored in a dry place for up to one year. Physical abrasion may produce small amounts of respirable dusts. See precautions/exposure limits under Section 8.

**Normal Use:** Materials are stable under normal use and are not expected to produce significant hazardous by-products or emissions.

**Machining and Cutting:** These materials may produce respirable dusts when being mixed for casting, machined or cut. See Section 8 for exposure controls and personal protection during machining or installation procedures.

**High Temperature Conditions:** Service significantly above the product design temperature may increase friability and the possibility of generating airborne particulates.

**After Service:** Appropriate ventilation and respiratory protection should be provided in compliance with OSHA standards. Strict adherence to recommended safe work practices is advised. Product removal must consider possible pickup of contaminants found where used and the possibility of usage above design temperatures. See Section 8 for appropriate respiratory protection during removal of material the subject of this SDS.

Section 8: Exposure Controls / Personal Protection

**Exposure Limits**

Aluminum Oxide	
OSHA PEL as 8 hr TWA	15/5 mg/m <sup>3</sup> Total dust/Respirable Fraction
ACGIH PEL as 8 hr TWA	10 mg/m <sup>3</sup> Inhalable particulate with no asbestos and <1% crystalline silica
Canadian PEL as TWA	5 mg/m <sup>3</sup>
Silica (cristobalite)	
OSHA PEL as 8 hr TWA	0.05 mg/m <sup>3</sup>
ACGIH PEL as 8 hr TWA	0.05 mg/m <sup>3</sup>
Calcium Aluminate Cement	
OSHA PEL as 8 hr TWA	5.0 mg/m <sup>3</sup>
ACGIH PEL as 8 hr TWA	5.0 mg/m <sup>3</sup>

**Appropriate Engineering Controls:** Use dust suppression controls. Local exhaust ventilation, point of generation dust collection and/or down-draft work stations to minimize airborne dust generation are recommended when machining product.

**Recommendations for Personal Protective Measures**

Respiratory Protection:	Use appropriate protection pursuant to OSHA 29CFR 1910.134 and 29CFR 1926.103. The following information is provided as a guide and reflects industry recommendations for control of dust.
PPE < 1.0 f/cc	No specific recommendation, use personal protective equipment based on local conditions.
PPE 1.0 f/cc to 5.0 f/cc	Half-face, air purifying respirator equipped with a high efficiency particulate air (HEPA) filter cartridge.
PPE 5.0 to 25 f/cc	Full-face, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge
PPE > 25 f/cc	Full-face, positive pressure, supplied air respirator.
PPE Other	Work clothes should be washed separately and the washing machine rinsed following use. If possible, do not take work clothes home following machining or removal activities that produce significant amounts of dust.
Skin Protection	Wear gloves, head coverings and full body clothing to prevent skin irritation. Disposable clothing may be used. Store work clothes and street clothes separately.
Eye Protection	Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses without goggles. Do not get dust or liquids into eyes. Have eye washing facilities available when using products.

These Products are generally not hazardous during normal use. These guidelines are provided for special circumstances involved in dry mixing, casting, machining and or after service removals. See Section 7 for after service and Section 13 for disposal recommendations.

## Section 9: Physical and Chemical Properties

### Physical and Chemical Properties

Appearance		Odor	pH	Melting Point	Specific Gravity
Physical State	Color				
Dry mixture of cements and hollow spheres	White, off white	Odorless	N/A	>1871°C (3400°F)	N/A

Note: Odor threshold, freezing point, initial boiling point and boiling range, flash point, evaporation rate, flammability, upper/lower flammability or explosive limits, vapor pressure, vapor density, partition coefficient: n-octanol/water, auto-ignition temperature, decomposition temperature and viscosity are irrelevant and/or unavailable to/for these materials.

## Section 10: Stability and Reactivity

**Chemical Stability:** Materials are stable with no possibility of hazardous reactions or polymerization.

**Chemical Incompatibilities:** Powerful oxidizers; fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, etc.

**Hazardous Decomposition Products:** None

## Section 11: Toxicological Information

### Exposure Routes and Effects

**Inhalation:** Dust may cause temporary irritation or soreness of throat and nose. Dust should not be inhaled as it may cause permanent lung injury (silicosis).

**Eye Contact:** Dust may cause temporary irritation or inflammation.

**Skin Contact:** May cause temporary dryness, irritation or rash.

**Ingestion:** Ingestion is unlikely. May cause gastrointestinal disturbances. Never induce vomiting without the advice of a physician.

**Medical Conditions Aggravated by Exposure:** Respiratory effects may be aggravated by smoking. Pre-existing respiratory problems may be aggravated by dust.

### Toxicology

Aluminum Oxide	
Acute Toxicity Estimate	LD <sub>50</sub> : 4320 mg/kg
Carcinogenicity by ACGIH	Group A4: Not classifiable as a human carcinogen
Silica (cristobalite)	
Acute Toxicity Estimate	LD <sub>50</sub> Oral: 500 mg/kg (Rat)
Carcinogenicity by ACGIH	Group A2: Suspected human carcinogen
Calcium Aluminate Cement	
Acute Toxicity Estimate	No Information Available
Carcinogenicity by ACGIH	Not Classified

**Description of Symptoms:** See Exposure Routes and Effects, Hazard Statement(s) and Precautionary Statement(s) sections above.

### Section 12: Ecological Information

**Eco toxicological Information:** No information available.

**Distribution:** Aluminum oxide and silica are naturally occurring and are widely distributed in igneous rock. Secondary deposits in sedimentary rock may be found.

**Chemical Fate Information:** The relative inertness of these materials indicates that they may be highly persistent in the environment. No information regarding any negative effects of this persistence has been noted.

### Section 13: Disposal Consideration

**Disposal:** Consult with local, state and federal regulations. In most cases these materials may be land filled safely. Refer to Section 8 for instructions regarding Exposure Controls/Personal Protection.

**Hazardous Waste Classification:** Materials are not regulated hazardous materials.

**Empty Containers:** Empty containers may contain product dust or residue. Do not re-use.

### Section 14: Transportation Information

Materials are not regulated hazardous substances, no specific regulations apply.

## Section 15: Regulatory Information

### **Regulated Constituents: Aluminum Oxide, Silica (crystaline)**

SARA Title III Constituent: listed none

SARA de Minimus Concentration: 1.0% N/A

N.J. Right to Know: listed none

Penn. Right to Know: listed none

Mass. Right to Know: listed none

SARA Note: The listed substance requires reporting under Section 313 of SARA Title III of the Emergency Planning and Community Right to Know Act, annually if above the de Minimus Concentration and threshold quantity.

New Jersey Right to Know Note: The listed substance is found on the New Jersey Hazardous substance list and is subject to reporting under SARA and the New Jersey Worker and Community Right to Know Act.

Pennsylvania Right to Know Note: The listed substance is subject to reporting under the Commonwealth of Pennsylvania's Worker and Community Right to Know Act. Form HSSF submissions due annually on April 1.

Mass. Right to Know Note: Items on the Massachusetts List of Hazardous Substances require specific hazard labeling in the workplace.

WHMIS Status: This product is a WHMIS controlled substance.

California Proposition 65: WARNING: This product contains crystalline silica, a chemical known to the State of California to cause cancer.

## Section 16: Other

### Disclaimer:

The information contained herein is based on data considered to be accurate as of the preparation or revision date. It is provided in good faith and in compliance with state and federal regulations. No warranty or representation, express or implied is made as to the accuracy or completeness of this information. Other national, state and/or local regulations may apply.