

1 Product and Company Identification

Product Details

Trade Name: Calcia/Magnesia Stabilized Zirconia Compositions [$<0.05\%$ U+Th];
Comp. 0410,0871,0872,0873,0874,1028,1030,1031,1300,1317,1320,1593,1640,
1651,1661,1722,1859,1876,1936,1968,1999,2011,2016,2043,2069,2073,2074,
2098,2107,2132,2134,2136,3000,3001,3009,3061,3077,5027,Z95S,GGF,GNF

Manufacturer/Supplier:

Zircoa, Inc.
31501 Solon Road
Solon, OH 44139

General Phone: (440) 248-0500

Chemical Family or Product Type: Inorganic Metal Oxide Refractory

Emergency Information: Chandra Kodali 24-hour emergency phone number: (440) 248-0500

2 Hazards Identification

Acute:

EYES

May cause irritation.

SKIN CONTACT

May cause irritation.

INGESTION

Not expected to be an important route of entry into the body. Ingestion of large quantities of the product may cause gastric discomfort or distress.

INHALATION

May cause irritation of the mucus membranes and respiratory tract.

Chronic:

Prolonged exposure may cause dermatitis and a benign pneumoconiosis. The liver and lung toxicity exhibited by pure Hafnia does not manifest itself in studies involving Zirconia containing 2% to 3% Hafnia. Pre-existing lung and skin conditions may possibly be aggravated by exposure to the components of the product.

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3 Composition/Data on Components

Chemical Characterization

Description: White, Light Yellow, or Tan Shapes, Granules, or Powder

| CAS# | Component | OSHA PEL | ACGIH TLV | Percent |
|-------------|----------------------------|---|---|---------|
| 1314-23-4 | Zirconia (Zirconium Oxide) | 5 mg/m ³ (TWA) (Zirconium Compounds) | 5 mg/m ³ (TWA) 10 mg/m ³ (C) | 80-99 |
| 1305-78-8 | Calcia (Calcium Oxide) | 5 mg/m ³ (TWA) | 2 mg/m ³ (TWA) | 0-10 |
| 1309-48-4 | Magnesia (Magnesium Oxide) | 15 mg/m ³ (T) | 10 mg/m ³ (I) | 0-10 |
| 112926-00-8 | Amorphous Silica | <u>80 mg/m³</u> (TWA) %SiO ₂ | 10 mg/m ³ (TWA) | 0-1 |
| 12055-23-1 | Hafnia (Hafnium Oxide) | 0.5 mg/m ³ (TWA) | 0.5 mg/m ³ (TWA) | 1-2 |

This product contains small amounts, <0.4% each, of Aluminum, Iron and Titanium Dioxides.

(TWA) = 8-hour Time Weighted Average

(C) = Ceiling Limit

(T) = Total Particulate

(I) = Inhalable Fraction

ACGIH TLVS and OSHA PELs are based on 2010 values.

4 First Aid Measures

After Inhalation: Remove to fresh air. If breathing is difficult, oxygen may be administered. If breathing has stopped, artificial respiration should be started immediately. Seek medical attention.

After Skin Contact: Wash thoroughly with mild soap and water. Seek medical attention if irritation develops.

After Eye Contact: Flush with tepid water for at least 20 minutes holding the eyelids open. Seek medical attention if irritation develops.

After Swallowing: Do not induce vomiting unless directed to do so by medical personnel. If large quantities of this material are swallowed, call a physician immediately.

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5 Fire Fighting Measures

Product will not burn.

Suitable Extinguishing Agents: Product will not burn. Cool material in or near fires with a waterspray or fog if compatible with fire fighting techniques for the other materials involved in the fire.

Protective Equipment: A self-contained breathing apparatus operating in the positive pressure mode and full fire fighting gear should be worn for combating fires.

6 Accidental Release Measures

Response to Small Spills: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Vacuuming or wet mopping are acceptable means of collection.

Waste Disposal: Place in an appropriate disposal facility in compliance with federal, state, and local regulations

7 Handling and Storage

Handling:

Information for Safe Handling: Use proper work practices and engineering controls to prevent the generation of dusts. Dusts generated during processing or handling should be promptly cleaned up. Wash hands and contaminated skin after handling. Follow all warnings and precautions even after container is emptied.

Information About Protection Against Explosions and Fires: No special measures required.

Storage:

Requirements To Be Met By Storerooms and Containers: Store in closed containers out of contact with the elements and incompatible materials cited in Section 10.

Information about storage in one common storage facility: Not required.

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8 Exposure Controls and Personal Protection

RESPIRATORY PROTECTION

If exposure is likely to exceed exposure limits an R,N,P-95 rating filtering facepiece respirator can be used depending upon all working conditions in accordance with local, state, and federal regulations. Comply with the OSHA Respiratory Protection Standard (29 CFR 1910.134, or others, as applicable).

VENTILATION

General (mechanical) room ventilation is generally satisfactory. Special, local ventilation may be needed at points where dust levels can be expected to exceed exposure limits.

PROTECTIVE GLOVES

Polymeric gloves to prevent irritation. Appropriate body covering to protect work clothes if working in dusty areas.

EYE PROTECTION

Safety glasses with side shields should be worn for protection against particulate matter.

ADDITIONAL PROTECTIVE CLOTHING OR EQUIPMENT

Boots, aprons, or chemical suits should be used when necessary to prevent skin contact. Eye wash fountains and safety showers should be available for emergency use.

Section 8 Notes: All personal protective equipment should be thoroughly cleaned and decontaminated prior to re-use.

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9 Physical and Chemical Properties

General Information:

Form: Granules or Powder

Color: White, Light Yellow, or Tan

Odor: Odorless

Specific Gravity / Bulk Density: 5.4-5.7 g/cc

pH: NA

Melting Point / Melting Range: >4000°F (2200°C)

Boiling Point / Boiling Range: ~7000°F (3910°C)

Flash Point: NA

LEL/UEL: NA / NA

Auto Igniting: NA

Danger of Explosion: Product does not present an explosion hazard.

Solubility in / Miscibility with Water: NA

Vapor Density (air = 1): NA

Vapor Pressure: NA

% Volatile by Volume: Not Volatile

% Solubility (H₂O): <1

Octanol / Water Partition Coefficient: NA

Evaporation Rate BuOAc = 1: NA

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10 Stability and Reactivity

Stability and Polymerization: Product is stable. Hazardous polymerization will not occur.

Hazardous Decomposition Products: None that are known. Product is stable to at least 4000°F.

Incompatibility/Conditions To Be Avoided: Do not store with or near strong acids, or reducing agents.

Special Sensitivity: None that are known.

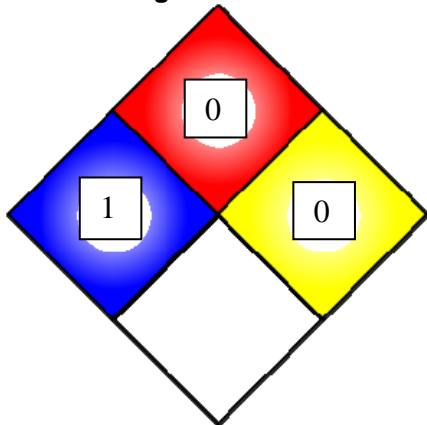
11 Toxicological Information

HMIS® III Classification

| | |
|---------------------|----|
| HEALTH | *1 |
| FLAMMABILITY | 0 |
| PHYSICAL HAZARD | 0 |
| PERSONAL PROTECTION | E |

* Indicates Chronic Health Hazard

NFPA Rating



Health = 1
Flammability = 0
Instability = 0
Special = None

Components listed as a carcinogen or potential Carcinogen: National Toxicology Program: No
I.A.R.C. Monographs: No
OSHA: No

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12 Ecological Information

Environmental Fate: When released into the soil this material is not expected to biodegrade.

Environmental Toxicity: NA

13 Disposal Considerations

Disposal: Dispose of all cleanup materials in accordance with all local, state, and federal regulations

14 Transport Information

Proper Shipping Name: NA (Not a US DOT Hazardous Material)
Hazard Class or Division: NA
Identification Number: NA
Packing Group: NA
Packing Authorization: NA
IATA Packing Instructions: NA

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15 Regulations

SARA 313 TOXIC CHEMICALS:

Not subject to reporting requirements

SARA 302 EXTREMELY HAZARDOUS SUBSTANCES:

EHS RQ: None

TSCA (Toxic Substances Control Act)

Zirconium Oxide, Hafnium Oxide, and Calcium Oxide are listed on the TSCA Inventory

WHMIS Classification

Zirconium Oxide has a WHMIS Classification of D2B

Carcinogenicity Categories:

EPA (Environmental Protection Agency)

Not Listed

IARC (International Agency for Research on Cancer)

Not Listed

NTP (National Toxicity Program)

Not Listed

MAK (German Maximum Workplace Concentration)

Not Listed

NIOSH-Ca (National Institute for Occupational Safety and Health)

Not Listed

Classification According to EU-Guidelines

Safety Phrases:

S24/25- Avoid contact with skin and eyes

S28A- After contact with skin, wash immediately with plenty of water

S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

The following ingredients are known in the state of California to be a cancer risk (Proposition 65):

Not Listed

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16 Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact: Chandra Kodali (440) 248-0500

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