

MATERIAL SAFETY DATA SHEET

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Prepared By: Research & Development
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Section 1- Product Name

Material Name: Dolomite-Zirconia Brick
Intended Use: Refractory Material
Product Name: Z-DOL
Brand Code: MIX5021

Section 2- Composition And Information On Hazardous Ingredients

Ingredient	CAS No.	% Weight	OSHA PEL	ACGIH TLV	SEC 313
Calcium Oxide	1305-78-8	40-70	5 mg/m ³	2 mg/m ³	No
Magnesium Oxide	1309-48-4	30-60	15 mg/m ³ Total Particulate	10 mg/m ³ Inhalable	No
Zirconium Oxide	1314-23-4	1-5	5 mg/m ³ as Zr	5 mg/m ³ as Zr	No
Petroleum Wax ³	8002-74-2	0-5.0	Not Established (4)	2 mg/m ³	No
Crystalline Silica (Total)	Not Applicable	0.0-1.0	Not Applicable	Not Applicable	No
Cristobalite	14464-46-1		0.05mg/m ³ Respirable	0.025mg/m ³ Respirable	
Tridymite	15468-32-3		0.05mg/m ³ Respirable	Withdrawn	
Quartz	14808-60-7		0.1 mg/m ³ Respirable	0.025 mg/m ³ Respirable	

Notes: (1) The PEL and TLV values shown above are 8-hour time-weighted averages, unless otherwise specified. "Not Established" means that no PEL or TLV has been assigned. (2) This product has a constituent that contains a mixture of calcium and magnesium oxides, it can be referred to as dead burned dolomite. (3) Petroleum Wax may be added to this product depending on the time of year. (4) Particulates not otherwise regulated – 15 mg/m³ total dust, and 5 mg/m³ respirable dust.

Section 3- Hazards Identification

Emergency Overview: Do not fight fire with water, keep material dry. Dust may be irritating to skin, eyes, gastrointestinal tract, and mucous membranes.

Primary Route(s) of Entry for Particulate: Note that eye and inhalation factors would be for sawing or tear out.

Eye: Yes **Skin:** Yes **Inhalation:** Yes **Ingestion:** No

Potential Adverse Health Effects:

Acute:	Eye: Severe irritation, intense tearing, burns.
	Skin: Removes natural skin oils; blotches, itching and superficial burns in case of sweating.
	Inhalation: Dust of this product may be irritating to respiratory tract.
Chronic:	Eye: Possible blindness when exposure is prolonged
	Skin: None known
	Inhalation: Prolonged or repeated inhalation of dusts of this product in excess of the stated PEL or TLV may cause lung disease (Silicosis). According to the International Agency for Research on Cancer (IARC), there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite from occupational sources.

Carcinogenicity: Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1 IARC, NTP).

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

Signs and Symptoms of Overexposure: Coughing can result from overexposure to dust.

Medical Conditions Generally Aggravated by Exposure to Particles: Pre-existing diseases or other conditions of the lungs, skin, eyes, and mucous membranes.

Section 4- First Aid Measures

Eye Contact: Flush product from eyes using large amounts of water for at least 15 minutes, if irritation continues seek medical attention.

Skin Contact: Wash product from skin using soap and water, if irritation continues, seek medical attention.

Inhalation: If exposed to excessive levels of dust remove victim to fresh air. If necessary, seek medical attention.

Ingestion: As shipped, product is not likely to be ingested, but if it occurs, do not induce vomiting. Seek medical attention.

Section 5- Fire Fighting Measures

Flash Point: Of wax (if used) >375°F

Flammable Limits: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Autoignition Temperature: Not Applicable

Extinguishing Media: Use regular foam, carbon dioxide, or dry chemical media to fight fires. Avoid water stream on brick

Fire Fighting Instructions: Reacts with water to form: $\text{Ca}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$, and heat.

Fire Fighting Equipment: Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus (SCBA) and full protective clothing (bunker gear) when fighting fires.

Hazardous Combustion Products: None, if wax used - fire may produce irritant gasses and carbon monoxide.

Flame Propagation or Burning Rate of Solid Material: Not Applicable

Flammability Classification (As defined by 29 CFR 1910.1200): Not Flammable

Section 6- Accidental Release Measures

Brick spills are remedied by recovering and restacking the shapes. If dusts are generated during the spill, these should be collected by gently sweeping the material into a dust pan or collecting with a vacuum device. All personnel engaged in cleanup operations should adhere to the instructions outlined in section 8 for personal protection. Disposal of wastes from cleanup operations should be carried out in accordance to the guidelines outlined in Section 13.

Section 7- Handling And Storage

Handling: Avoid direct contact with product or dust, by wearing protective clothing, using approved respiratory protection, and wearing gloves of the impermeable type.

Storage: The product should be stored in a dry location and protected from humidity. Pallet protection such as shrink-wrap or stretch-wrap should be kept in place until the product is required for installation.

Section 8- Exposure Control/Personal Protection

Engineering Controls: If brick are sawed, or being torn out; enclosures, local exhaust ventilation, or other engineering process controls may be necessary to keep any air contaminants within their TLV's. This is particularly true if the user operation generates dust, vapors, or mist.

Respiratory Protection: Since this product is a proprietary mixture of unique ingredients, it does not have an established limit for airborne concentration (PEL or TLV), which workers can routinely be exposed to without suffering adverse health effects. This MSDS is prepared to alert customers and other users to the various components of the product and their relative quantity and toxicity in the product as provided. The user must review his/her own circumstances and then determine what is required to establish a respiratory protection program that meets OSHA 1910.134 requirements. If workplace conditions warrant respiratory protection, use MSHA/NIOSH approved units as listed in the current 29 CFR 1910.134 for the existing conditions. Actual respirator selection should be made after consultation with a competent health and safety professional.

Eye Protection: Industrial-type safety glasses offer some protection, goggles offer more. Contact lenses should not be worn when working with lime products.

Protective Gloves: Use as needed to prevent direct skin contact.

Other Protective Clothing or Equipment: Wear clothing designed to limit direct exposure to product, or dust, associated with product. If clothing becomes contaminated, it should be laundered before wearing again. Steel toe boots are recommended for brick products. Maintain good personal hygiene. Wash Hands thoroughly before eating or drinking.

Section 9- Physical and Chemical Properties

Appearance: Shaped brick – brown color	Vapor Pressure: Not Applicable
Odor: None	Vapor Density: Not Applicable
Water solubility: See section 10-Chemical Stability	pH: Not Applicable
Density (H₂O=1): 2.70-2.90 g/cm ³	Boiling Point: Not Applicable
Melting Point: Greater than 2,500 °F	

Section 10- Stability And Reactivity

Chemical Stability: Reacts with water to form: $\text{Ca}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$ and heat.

Conditions to avoid: Keep out of the vicinity of incompatible materials.

Incompatible Materials: Acids; reactive fluoridated brominated or phosphorous compounds; aluminum (may form hydrogen gas), reactive metals; organic acid anhydrides; nitro-organic compounds; interhalogenated compounds.

Hazardous Decomposition: None

Hazardous Polymerization: None

Reactivity: Reacts with acids to form calcium salts while generating heat

Section 11- Toxicological Information

	LD ₅₀	LC ₅₀
Calcium Oxide	No Data	No Data
Magnesium Oxide	No Data	No Data
Zirconium Oxide	No Data	No Data
Petroleum Wax	No Data	No Data
Crystalline Silica (Total) Cristobalite	No Data	No Data

Tridymite Quartz	No Data No Data	No Data No Data
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Target Organs

Calcium Oxide	Skin - Eyes and respiratory system when cutting or in tear out of brick
Magnesium Oxide	Eyes and respiratory system
Zirconium Oxide	Eyes, skin, and lungs
Petroleum Wax	Skin and respiratory system
Crystalline Silica (Total)	
Cristobalite	Respiratory
Tridymite	Respiratory
Quartz	Respiratory

Long Term Toxicity

Calcium Oxide	Possible blindness
Magnesium Oxide	Not Available
Zirconium Oxide	Not Available
Petroleum Wax	In rats chronic ingestion has shown accumulation in liver-spleen with associated nonspecific immune response.
Crystalline Silica (Total)	
Cristobalite	Repeated and prolonged inhalations may cause lung disease (silicosis).
Tridymite	Repeated and prolonged inhalations may cause lung disease (silicosis).
Quartz	Repeated and prolonged inhalations may cause lung disease (silicosis).

Short Term Toxicity

Calcium Oxide	Irritation: Skin and gastrointestinal tract – Eyes and respiratory system when cutting or being torn out.
Magnesium Oxide	Not Available
Zirconium Oxide	May irritate eyes, skin, and respiratory tract
Petroleum Wax	Wax fumes may irritate respiratory tract, molten product burns on contact with skin
Crystalline Silica (Total)	
Cristobalite	Repeated and prolonged inhalations may cause lung disease (silicosis).
Tridymite	Repeated and prolonged inhalations may cause lung disease (silicosis).
Quartz	Repeated and prolonged inhalations may cause lung disease (silicosis).

Section 12- Ecological Information

Accidental Release: Uncontrolled spillage in surface waters should be avoided, since the increase in pH could be detrimental to fish. Material is harmful to aquatic life in high concentrations.

Section 13- Disposal Considerations

Waste Disposal Method: The as manufactured refractory, or dust from this material, is not considered a hazardous waste as defined by 40 CFR 261. However, used product (and dust generated during maintenance and tear-out operations) may be contaminated with other hazardous substances from the particular application (for example, metals). Therefore, appropriate waste analysis may be necessary to determine proper disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state, and local regulations.

Section 14-Transport Information

DOT (Department of Transportation) Classification under 49 CFR 172.101: Not Regulated

UN (United Nations) Number: Not Applicable

NA (North American) Number: Not Applicable

Section 15- Regulatory Information

Resco Products, Inc. considers this product to be hazardous as defined by the OSHA Hazardous Communications Standard (29 CFR 1910.1200). Section 2 chemicals, which must be addressed, and the summary of regulatory and other lists upon which they appear are:

INGREDIENT	CAS NUMER	LIST
Calcium Oxide	1305-78-8	1,2,3,4
Magnesium Oxide	1309-48-4	1,2,3,4
Zirconium Oxide	1314-23-4	1,2,3,4
Petroleum Wax	8002-74-2	1,3,4
Crystalline Silica	Not Applicable	
Cristobalite	14464-46-1	1,2,3,4
Tridymite	15468-32-3	1,2,3,4
Quartz	14808-60-7	1,2,3,4

The lists are as follows:

1. ACGIH TLV "Threshold Limit Values" (2008)
2. OSHA Air Contaminates- Permissible Exposure Limits

- 3. Canadian Domestic Substance List
- 4. EPA TSCA Chemical Inventory List

SARA Title III: Section 311/312 Hazardous Categories: Irritant

<i>Section 16- Other Information</i>

This information and recommendations set forth herein are taken from sources believed to be accurate as of the date herein; however, Resco Products, Inc. makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability to any user thereof.