



SAFETY DATA SHEET

Section 1: Identification

Product Identifier: ZC-2

Other means of identification: Single part, water-based zirconia coating.

Recommended use: Coating of metals, ceramics and refractory materials used primarily at high temperatures in a number of advanced applications.

Manufacturer:

ZIRCAR Ceramics, Inc.
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Florida, NY 10921
www.zircarceramics.com
sales@zircarceramics.com
(845) 651-6600

Emergency Telephone Number:

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

Section 2: Hazards Identification

Hazard Classification(s): Skin Irritation, Eye Effects, category 2 Respiratory Sensitizer (if dust from dried material is generated.).

Signal Word: Warning.



Precautionary Statement(s): May cause skin, eye and respiratory irritation.

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

Inhalation: Dust may cause irritation or soreness of throat and nose.

Eye Contact: Solids contained in these materials and dust from dried material 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
Zirconium oxide	Zirconia	1314-23-4	65 - 70
Aluminum oxide	Alumina	1318-23-6	1-5
Nitric Acid	Nitric Acid	7697-37-2	<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 and Zirconium Oxide dusts have caused no systemic or pathological problems. These materials are inert in the body. Some individuals may experience allergic sensitivity reactions. These are generally limited to mild occupational dermatitis. Chronic inhalation may result in pleural plaques not associated with cancers. Other effects principally derived from physical abrasion. Dusts are therefore considered of the inert (nuisance) type and would not be expected to cause permanent damage to tissues on inhalation unless the exposure is severe. Chronic exposure may produce radioplaque deposits in the pulmonary system with little or no parenchymal reactions. Some individuals may exhibit allergenic reactions ranging from asthmatic symptoms to benign pneumoconiosis.

Section 5: Fire Fighting Measures

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

Initial exposure to high temperatures will cause small quantities of fumes to be emitted that may be, if concentrated, irritating or corrosive to the upper respiratory system.

Section 6: Accidental Release Measures

Spill Procedures: Liquid materials should be cleaned up using sponge, mop or cloth. 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 should be stored in a sealed container. Best if used within one year from manufacture date.

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

Machining and Cutting: After dried, these materials may produce respirable and nuisance dusts when 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 dust. While not considered problematic during use, such dust may complicate removal activities. It is recommended that product use be carefully matched to design parameters.

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

Zirconium Oxide	
OSHA PEL	None Established. Treat as nuisance dust. 10/5 mg/m ³ Total dust/Respirable Fraction
Aluminum Oxide	
ACGIH TLV	10/5 mg/m ³ Total dust/Respirable Fraction
Nitric Acid	
OSHA TWA	2 ppm, 5 mg/m ³ STEL = 4 ppm, 10 mg/m ³

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 threatened with these materials.

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 machining use 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				
Viscous liquid	Yellow to tan	Nearly Odorless	1-2	>1871°C (3400°F) Dreid	2.25

Note: These materials should not be allowed to freeze. 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: Do not mix with alcohols.

Hazardous Decomposition Products: Initial heating to 600C will decompose the nitric acid component and if allowed to concentrate will form irritating/corrosive nitric acid fumes in small amounts.

Section 11: Toxicological Information

Exposure Routes and Effects

Inhalation: Dust from dried product 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: These materials may cause corrosive burns.

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

Zirconium Oxide	
Acute Toxicity Estimate	LD ₅₀ : 5000 mg/kg
Carcinogenicity by ACGIH	Not Classified
Aluminum Oxide	
Acute Toxicity Estimate	LD ₅₀ : 5000 mg/kg
Carcinogenicity by ACGIH	Not Classified
Nitric Acid	Contains < 1%

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: Alumina and Zirconia 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, Nitric Acid

SARA Title III Constituent: listed none

SARA de Minimus Concentration: 1.0% N/A

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: Aluminum oxide (CAS no. 1344-28-1 is subject to disclosure under the Hazardous Products Act.

Nitric Acid is on the following regulatory lists:

Clean Water Act Section 311 Hazardous Substances

CERCLA

SARA Title 111

Canadian WHMIS list

Section 16: Other

Disclaimer:

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