

MATERIAL SAFETY DATA SHEETS

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EFFECTIVE DATE: 1/1/00

1. PRODUCT IDENTIFICATION/DESCRIPTION

PRODUCT NAME: Alumina Zirconia
FORMULA: Al₂O₃ (75%) ZrO₂ (23-25%)

2. COMPOSITION

<u>Ingredient</u>	<u>CAS#</u>	<u>Typical(%)</u>	<u>PEL-OSHA</u> (mg/m ³)	<u>TLV-ACGIH</u> (mg/m ³)	<u>Carcinogen</u>
ZrO ₂	1314-23-1	23-25%	5	5	N
HfO ₂	12055-23-1	0.4-1.3	0.5	0.5	N
Al ₂ O ₃	1344-28-1	73-77	10	10	N

*Materials are regulated under OSHA 29 CFR 1900.1200, Hazard Communication Standard.

*Source of exposure limit data; ACGIH Threshold Limit Values; (OSHA Tables Z-1-A, Z-2, Z-3)

*All ingredients are listed under TSCA.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Non-flammable abrasive particulate which may cause minor eye and skin irritation. Inhalation of high concentrations may cause transient upper respiratory irritation. Product is non-combustible and stable.

Primary Route(s) of Entry: *Inhalation:* Yes *Skin:* No *Ingestion:* No *Other:* No

POTENTIAL HEALTH EFFECTS

EYE: Dusts may cause minor irritation. Particulate matter may scratch the cornea or cause other mechanical injury to the eye.

SKIN: May cause minor irritation. Not absorbed through skin.

INGESTION: Relatively non-toxic. Ingestion is not anticipated under normal working conditions.

INHALATION: Product will act as a nuisance dust. Inhalation of high concentrations of dust may cause coughing and mild, transitory respiratory irritation.

Acute: Coughing, shortness of breath

Chronic: May affect breathing capacity.

SIGNS AND SYMPTOMS: Irritation, redness, pain, tear formation, blurred vision, light sensitivity, shortness of breath, decreased chest expansion, dry cough, and fatigue.

CARCINOGENICITY: **NTP:** No **IARC:** No **OSHA:** No

4. FIRST AID MEASURES

EYES: Flush eyes with lukewarm water for 15 minutes, opening and closing eyelids to ensure adequate rinsing. If redness, irritation, pain, or tearing occurs, seek medical attention.

SKIN: Wash contaminated area with soap and water. Wash contaminated clothing. Seek medical attention if symptoms persist.

INHALATION: If inhalation of high concentrations occurs, move to fresh air. If breathing has stopped, a certified professional should give CPR. Seek immediate medical attention.

INGESTION: Do not induce vomiting unless suggested by a doctor. Seek medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not Applicable

FLAMMABLE LIMITS: LEL: Not Applicable UEL: Not Applicable

AUTO IGNITION TEMPERATURES: Not Applicable.

EXTINGUISHING MEDIA: Use media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARDS: Non-flammable, non-combustible. Product will not burn.

HAZARDOUS DECOMPOSITION PRODUCTS: None

NFPA CLASSIFICATION: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

6. ACCIDENTAL RELEASE MEASURES

Isolate hazard area and deny entry to unauthorized and/or unprotected personnel. Avoid dust generation. Water mist may be added as necessary to control the level of airborne dusts. Respiratory protection for clean-up personnel depends on the level of exposure anticipated. (See Section 8. *EXPOSURE CONTROLS/PERSONAL PROTECTION*) Gently shovel or scoop into clean dry container for later recycle or disposal. Comply with Federal, State and Local regulations regarding reporting of spills and disposal.

7. HANDLING AND STORAGE

Normal storage and handling: Handle with adequate ventilation for nuisance dust. See OSHA 29CFR1910.94(Ventilation) and CFR1910.1000 (Air contaminants)

Standard landfill methods consistent with applicable federal, state, and local laws.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Under normal working conditions, below acceptable exposure guidelines, none is required. For concentrations above the PEL but less than 10X the PEL, a NIOSH/MSHA approved dust mist respirator should be worn. Appropriate respirator selection will be dependent upon the magnitude of exposure and should be selected in accordance with 29 CFR 1910.134. (See Section 2. *COMPOSITION* for PEL's and TWA's).

SKIN PROTECTION: Protective gloves, as needed, to prevent skin contact.

EYE PROTECTION: Safety-glasses with side shields or goggles to prevent dust and particles from entering the eye. See OSHA 29 CFR 1910.133.

OTHER: Under dusty conditions, employees should wear coveralls or other suitable work clothing. Contaminated clothing must be vacuumed before removal. DO NOT REMOVE dust from clothing by blowing or shaking.

ENGINEERING CONTROLS: Use general ventilation. Local exhaust may be necessary for processes which generate large quantities of airborne dust. Keep exposures below applicable OSHA PEL's and ACGIH-TLV's.

9. PHYSICAL PROPERTIES

Formula	Al ₂ O ₃ ZrO ₂
Molecular Weight	107.75
Boiling Point	Not Applicable
Melting Point	1900°C
Specific Gravity (H ₂ O = 1)	4.30
Percent Volatile	0
Evaporation Rate	None
Solubility in Water	Insoluble
Solubility in Alcohol	Insoluble
pH (10% slurry)	Not applicable
Appearance/Odor	Granular, grayish to blue grey /Odorless

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal ambient conditions of temperature and pressure.

REACTIVITY/INCOMPATIBILITY: No incompatible materials known.

HAZARDOUS DECOMPOSITION: Not applicable

HAZARDOUS POLYMERIZATION: Will not occur.

11. ECOLOGICAL INFORMATION

Alumina Zirconia is not expected to exert an ecotoxic effect or bioconcentrate in the food chain.

12. DISPOSAL CONSIDERATIONS

Dispose of according to applicable federal, state, and local regulations. Dispose per 40 CFR 261 and 262.

13. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT): Not Classified

14. KEY

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendment and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act

15. DISCLAIMER

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