



MATERIAL SAFETY DATA SHEET
COMPLIES WITH 29 CFR 1910.1200.
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 01-15-08

CHEMICAL IDENTITY

LABEL IDENTITY	ZIRCONIUM OXIDE
CHEMICAL NAME/SYNONYMS	Zirconium dioxide, baddeleyite, zirconia, zirconic anhydride.
FORMULA	ZrO₂
CHEMICAL FAMILY	METAL OXIDE
CALCULATED MOLECULAR WEIGHT	123.22
CAS REGISTRY NUMBER	1314-23-4, LISTED IN THE TSCA INVENTORY
HAZARDOUS INGREDIENTS	ZIRCONIUM OXIDE
%: 100	TLV: 5mg/m³ OSHA/PEL: 5mg/m³ (as Zr)

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR	Very fine white to yellow powder, no odor. powder/crystals
BOILING POINT	5000
DENSITY (gm/cc)	5.7
VAPOR PRESSURE @ 20°	NA
% VOLATILE BY VOLUME (%)	NA
REACTION WITH WATER	None
EVAPORATION RATE (H ₂ O=1)	NA
SOLUBILITY IN WATER	Insoluble
MELTING POINT	2715

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	NA
AUTOIGNITION TEMPERATURE (°C)	NA
FLAMMABILITY	Non-flammable
EXTINGUISHING MEDIA	Water, Dry chemical, CO (2), and whatever media is suitable for surrounding materials and type of fire.
SPECIAL FIRE FIGHTING PROCEDURES	Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.
UNUSUAL FIRE & EXPLOSION HAZARDS	Material may emit toxic fumes if involved in a fire.



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HEALTH HAZARD INFORMATION

TOXICITY DATA **No data on this compound.**

HMIS RATING:

HEALTH: **2** FLAMMABILITY: **0** REACTIVITY: **0** PERSONAL PROTECTION: **E**

ROUTES OF ENTRY

INHALATION: **Yes**
SKIN: **Yes**
INGESTION: **Yes**

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: **Respiratory Disorders**

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: **a respiratory irritant. Coughing, sneezing, difficulty breathing and pulmonary edema possible. May cause irritation of the mucous membranes of the nose and throat.**

DERMAL: **irritation, inflammation, redness possible, may cause dermatitis.**

EYE: **irritation, inflammation, watering and redness possible.**

OTHER: **zirconium is not an important industrial poison. Most zirconium compounds in common use are insoluble and considered inert. Pulmonary granulomas in zirconium workers has been separated. Avoid inhalation of Zr containing aerosols, which can cause lung granulomas.**

CARCINOGENICITY: **None** NTP: **no** IARC MONOGRAPHS: **no** OSHA REGULATE: **no**

EMERGENCY FIRST AID PROCEDURES:

INGESTION: **Give 1-2 glasses of milk or water and induce vomiting, seek medical attention**

INHALATION: **Remove to fresh air; give oxygen if breathing is difficult, seek medical attention**

SKIN CONTACT: **Brush off skin, wash area with soap and water and seek medical attention**

EYE CONTACT: **Flush eyes with lukewarm water for 15 minutes and seek medical attention**

REACTIVITY DATA

STABILITY

Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY

Heat

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong acids, strong bases

HAZARDOUS DECOMPOSITION PRODUCTS

Zr, ZrxOy

HAZARDOUS POLYMERIZATION

Will Not Occur

CONDITIONS TO AVOID

Heat and incompatible materials



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SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: **Wear a self-contained breathing apparatus and full protective clothing. Isolate the area where the spill occurred and insure proper ventilation is available. Vacuum up the spill using a high efficiency unit and place in a container for proper disposal. Take care not to raise dust.**

WASTE DISPOSAL METHOD:

Dispose of in accordance with local, state and federal regulations.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION	Wear NIOSH-approved dust-mist-fume cartridge respirator
LOCAL EXHAUST	Maintain exposure below TLV
MECHANICAL (general)	Recommended
PROTECTIVE GLOVES	Neoprene
EYE PROTECTION	Safety glasses
OTHER PROTECTIVE EQUIPMENT	Wear protective clothing to prevent the contamination of skin and clothes

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE: **Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly after handling and before meals.**

TRANSPORTATION REQUIREMENTS	DOT CLASS:	Not Classified
	UN NUMBER:	NC
	IMCO CLASS:	NC
	OTHER:	

PRECAUTIONARY LABELING **NONE**

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, **ANGSTROM SCIENCES** MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

NA= NOT APPLICABLE

ND= NO DATA FOUND

NR=NOT RECORDED