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## MATERIAL SAFETY DATA SHEET

### Section 1- PRODUCT IDENTIFICATION

COMPOSITION <b>ThO2</b>	PRODUCT NAME <b>Thorium Oxide</b>
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### Section 2- HAZARDOUS INGREDIENTS

Note: Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

MATERIAL OR COMPONENT	CAS NUMBER	WT%	EXPOSURE LIMITS	
			OSHA PEL (Mg/M3)	ACGIH TLV(MG/M3)
<b>Thorium Oxide</b>	<b>1314-20-1</b>	<b>100</b>	<b>Nuclear Regulatory Commission maximum concentration 6x10<sup>(-11)</sup>uCi/ml</b>	

### Section 3- PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other	APPEARANCE AND ODOR <b>White crystalline powder or pieces, no odor</b>
MELTING POINT (BASE METAL) <b>3050C</b>	SPECIFIC GRAVITY <b>9.86(gm/cc)</b>

### Section 4- FIRE AND EXPLOSION

Flash Point (Method Used) <b>N/A</b>	Flammable Limits <b>None</b>	LEL <b>N/A</b>	UEL <b>N/A</b>
EXTINGUISHING MEDIA <b>Non-flammable</b>			
SPECIAL FIRE FIGHTING PROCEDURES <b>Wear SCBA unit and full protective gear when fighting fires were radioactive material may be present.</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>A mildly radioactive material.</b>			

### Section 5- REACTIVITY DATA

STABILITY <b>Stable</b>	INCOMPATIBILITY (MATERIALS TO AVOID) <b>Strong acids and oxidizers.</b>
CONDITIONS TO AVOID <b>None</b>	

HAZARDOUS DECOMPOSITION PRODUCTS

**Emits gamma and alpha radiation and thoron daughter decay products.**

## Section 6- HEALTH HAZARD GUIDE

MAJOR EXPOSURE HAZARD

Inhalation  Skin  Skin Absorption  Eye Contact  Ingestion

EFFECTS OF OVEREXPOSURE

**INHALATION:** No specific data on effects of inhalation. May be respiratory irritant. Inhaled ThO<sub>2</sub> tends to remain in the lungs and may increase the risk of cancer due to alpha and gamma radiation emission.

**SKIN/EYE CONTACT:** A skin and eye irritant. Can cause dermatitis upon repeated contact.

**OTHER:** Insoluble thorium compounds are toxicologically inert on the basis of their chemical properties. However, once deposited in the body, thorium remains for a long period of time and may increase the risk of radiation induced cancer in tissues where it is deposited.

EMERGENCY & FIRST AID PROCEDURES

**INHALATION:** Remove victim from exposed area to fresh air. Treat symptomatically.

**SKIN CONTACT:** Remove contaminated clothing and shoes immediately. Brush material off skin and wash affected area with mild soap and water. Check for contamination.

**EYE CONTACT:** Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes. Seek medical attention.

**INGESTION:** Give 1-2 glasses of water and induce vomiting; seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

## Section 7- SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES

**Use vacuum to clean up spills. Vacuum should be equipped with a high efficiency particulate absolute (HEPA) air filter and dedicated to use for radioactive spills only.**

WASTE DISPOSAL METHODS

**Limits for disposal of thorium natural: Sanitary sewer:  $2 \times 10^{-5}$  uCi/ml; air discharge:  $2 \times 10^{-12}$  uCi/ml. Dispose of contaminated waste in authorized landfills only.**

**Reference 10CFR Part 20 appendix B. Check with NRC for further restrictions.**

**Observe all federal, state and local regulations when storing or disposing of this substance.**

## Section 8- SPECIAL PROTECTION

RESPIRATORY

**Respirators approved for dusts, mists, fumes and radionuclides.**

VENTILATION

**Local exhaust: Recommended for all Th handling. Ventilation system should be filtered to prevent ThO<sub>2</sub> discharges. Mechanical ventilation is not recommended.**

EYE PROTECTION & PROTECTIVE CLOTHING

**Neoprene, nitrile, polyvinyl protective gloves; safety glasses, goggles; disposable clothing recommended. Prevent skin contact or clothing contamination. Employees should be monitored for exposure to airborne material and should be provided with dosimeters to monitor external exposure.**

## **Section 9- SPECIAL PRECAUTIONS**

Wash thoroughly after handling. Store in tight containers away from radiation sensitive equipment or devices.

DOT CLASS: Radioactive

UN Number: 2912

IMCO Class: 7

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