



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

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## CHEMICAL IDENTITY

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LABEL IDENTITY	<b>CERIUM</b>
FORMULA	<b>Ce</b>
CHEMICAL FAMILY	<b>ELEMENT</b>
CAS NUMBER	<b>7440-45-1</b>
HAZARDOUS INGREDIENTS	<b>Cerium, OSHA Hazardous (H), &gt;99%</b>
SARA TITLE III HAZARD CLASSIFICATION	<b>Fire Hazard, Reactive Hazard</b>

**WARNING STATEMENTS:** *Flammable solid in all forms. May be spontaneously combustible in air. All forms will react with water emitting flammable/explosive hydrogen gas. All forms will react with dilute acids emitting flammable/explosive hydrogen gas.*

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## PHYSICAL AND CHEMICAL PROPERTIES

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COLOR AND FORM	<b>Silver solid, (ingot, chunk, foil, powder)</b>
ODOR	<b>Odorless</b>
BOILING POINT	<b>6204°F</b>
VAPOR DENSITY	<b>NA</b>
VAPOR PRESSURE	<b>NA</b>
% VOLATILE BY VOLUME (%)	<b>NA</b>
SPECIFIC GRAVITY	<b>6.65</b>
EVAPORATION RATE (H2O=1)	<b>NA</b>
SOLUBILITY IN WATER	<b>Insoluble/reacts</b>
MELTING POINT	<b>1470°F</b>

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## FIRE AND EXPLOSION HAZARD DATA

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FLASH POINT	<b>NA</b>
FLAMMABLE LIMITS	<b>NA</b>
EXTINGUISHING MEDIA	<b>Dry chemical, Class D extinguisher, DO NOT USE WATER</b>
SPECIAL FIRE FIGHTING PROCEDURES	<b>Wear NIOSH/MSHA approved self-contained breathing apparatus &amp; full protective clothing.</b>
UNUSUAL FIRE & EXPLOSION HAZARDS	<b>When heated, all forms of the metal, will react with water or steam to produce flammable/ explosive H2. Avoid creating fine dusts, because as a powder, this product is capable of creating a dust explosion.</b>



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### HEALTH HAZARD INFORMATION

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#### EXPOSURE LIMITS IN AIR (TWA or suggested control figure)

CHEMICAL NAME	ACGIH (TLV)	OSHA (TWA)	OTHER
<b>Particulates</b>	<b>10mg/m<sup>3</sup></b>	<b>15mg/m<sup>3</sup></b>	
<b>Not otherwise</b>	<b>(TWA)</b>	<b>total dust</b>	
<b>Regulated</b>	<b>total dust</b>	<b>5mg/m<sup>3</sup></b>	
		<b>respirable</b>	

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**CARCINOGENICITY: This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as a probable human carcinogen.**

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#### EFFECTS OF A SINGLE OVEREXPOSURE:

**SWALLOWING: Evidence suggests low toxicity potential due to poor absorption by the oral route (1)**

**SKIN ABSORPTION: Evidence suggests low toxicity potential due to poor skin absorption.**

**INHALATION: May be harmful if inhaled. Good industrial hygiene practice suggest limiting exposure to all respirable particulates.**

**SKIN CONTACT: May cause skin irritation.**

**EYE CONTACT: May cause eye irritation.**

**EFFECTS OF REPEATED OVEREXPOSURE: No data found.**

**SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO MAN: No data found**

**MEDICAL CONDITIONS POSSIBLE AGGRAVATED BY OVEREXPOSURE: No data found**

#### FIRST AID PROCEDURES:

**EYES: In case of contact, immediately flush with plenty of water for at least 15 minutes using an eyewash fountain. Lift upper and lower lids and rinse well under them. Get medical attention if irritation develops or persists.**

**SKIN: In case of contact, immediately wash with soap and plenty of water for at least 5 minutes. Remove contaminated clothing and shoes. Thoroughly clean contaminated clothing and shoes before reuse. Get medical attention if irritation develops or persists.**

**INHALATION: Remove from area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. GET IMMEDIATE MEDICAL ATTENTION.**

**INGESTION: If swallowed and victim is fully conscious, induce vomiting immediately by giving two glasses of water and sticking finger down throat. GET IMMEDIATE MEDICAL ATTENTION.**

**NOTE TO PHYSICIAN: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.**

**TREAT SYMPTOMATICALLY. NO SPECIFIC INFORMATION FOUND.**



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### REACTIVITY DATA

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STABILITY	<b>Unstable</b>
CONDITIONS TO AVOID	<b>Creating dust, air &amp; moisture sensitive</b>
INCOMPATIBILITY (MATERIALS TO AVOID)	<b>Water, Strong acids &amp; oxidizers. Halogens, Reaction with antimony or bismuth is exothermic. Reaction with Zinc may be pyrophoric.</b>
HAZARDOUS DECOMPOSITION PRODUCTS	<b>All forms will react with water at room temperature to produce flammable/explosive Hydrogen gas (H2)</b>
HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID	<b>Will Not Occur NA</b>

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### SAFE HANDLING AND USE

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: **Eliminate all sources of ignition. Evacuate area. Wear appropriate protective gear. Sweep into appropriate container. Avoid creating dust. DO NOT use "SHOP" vacuum as this may cause a fire. Ventilate area. Wash spill area after material pickup is complete.**

WASTE DISPOSAL METHOD: **In accordance with local, state and federal regulations.**

HANDLING AND STORAGE: **Store in cool, dry place in tightly closed containers. Air and moisture sensitive. Store away from oxidizers and other materials listed under incompatibility materials. STORE UNDER ARGON OR OTHER INERT ENVIRONMENT. Avoid breathing dusts. Avoid direct or prolonged contact with skin and eyes. Wash hands thoroughly after handling. Do not rub eyes with soiled hands. Do not eat, drink or smoke in the work area.**

OTHER PRECAUTIONS: **Avoid creating dusts as this product, like most materials in powder form is capable of creating a dust explosion.**

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### SPECIAL PROTECTIVE INFORMATION

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RESPIRATORY PROTECTION	<b>In dusting conditions use a NIOSH/MSHA approved dust mask.</b>
VENTILATION	<b>Provide adequate ventilation. Use local exhaust as needed to maintain airborne exposure below control limits.</b>
PROTECTIVE CLOTHING	<b>Gloves, and clothing.</b>
EYE PROTECTION	<b>Safety glasses, chemical workers dust proof goggles (under dusting conditions)</b>

*MAINTAIN A SINK, SAFETY SHOWER & EYEWASH FOUNTAIN IN THE WORK AREA, HAVE OXYGEN AVAILABLE.*



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### SPECIAL PRECAUTIONS

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#### TSCA INVENTORY STATUS:

**Product is TSCA certified.**

#### PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE:

**Store in cool, dry area avoiding contact with fumes or hot surfaces.**

#### TRANSPORTATION STATUS:

DOT CLASS: **Water Reactive Solid, n.o.s. (cerium metal), flammable Solid UN# 2813**

UN NUMBER: **1333**

IMCO CLASS: **Cerium Crude (powder, slabs or ingots), Flammable solid.**

OTHER: ---

REPORTABLE QUANTITY (RQ), under U.S. EPA CERCLA: **NONE LISTED**

SPECIFICALLY LISTED UNDER SARA TITLE III: **Not Listed**

#### REFERENCES:

- 1) **Patty's Industry Hygiene and Toxicology (Vol. IIA,B,C) 1981 (for rare earth oxides)**
- 2) **Unpublished Rhone-Poulenc sponsored study.**
- 3) **The Consolidated Chemical Regulations Guidebook (Vol. 1 and 2) A.B. Waldo, 1989.**
- 4) **Sigma-Aldrich Library of Chemical Safety (ed. II) 1988.**

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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**

**NC = NOT CLASSIFIED**