



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

DATE OF LAST REVISION: 04-25-96

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## CHEMICAL IDENTITY

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LABEL IDENTITY	<b>CERIUM OXIDE</b>
CHEMICAL NAME/SYNONYMS	<b>DICERIUM TRIOXIDE, CERIUM (III) OXIDE</b>
FORMULA	<b>Ce2O3</b>
CHEMICAL FAMILY	<b>METAL OXIDE</b>
CAS REGISTRY NUMBER	<b>1345-13-7, LISTED IN THE EPA TSCA INVT.</b>
HAZARDOUS INGREDIENTS	<b>CERIUM OXIDE</b>
%: <b>100</b>	TLV: <b>10mg/m3</b> OSHA/PEL: <b>15mg/M3</b>
	(as nuisance particles)                      (as nuisance particles)

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## PHYSICAL AND CHEMICAL PROPERTIES

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COLOR, FORM	<b>Slight yellow (possibly reddish)</b>
<b>powder/pieces</b>	
ODOR	<b>Odorless</b>
BOILING POINT	<b>ND</b>
DENSITY (gm/cc)	<b>6.86</b>
VAPOR PRESSURE @ 20°	<b>NA</b>
% VOLATILE BY VOLUME (%)	<b>NA</b>
REACTION WITH WATER	<b>None</b>
EVAPORATION RATE (H2O=1)	<b>NA</b>
SOLUBILITY IN WATER	<b>Insoluble</b>
MELTING POINT°C	<b>1692 (ignites at 200)</b>

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## FIRE AND EXPLOSION HAZARD DATA

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FLASH POINT	<b>NA</b>
AUTOIGNITION TEMPERATURE (°C)	<b>NA</b>
FLAMMABILITY	<b>Non-flammable</b>
EXTINGUISHING MEDIA	<b>Use dry chemical, CO<sub>2</sub>.</b>
SPECIAL FIRE FIGHTING PROCEDURES	<b>Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.</b>
UNUSUAL FIRE & EXPLOSION HAZARDS	<b>Material may emit toxic fumes if involved in a fire</b>



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### HEALTH HAZARD INFORMATION

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#### TOXICITY DATA

**CeO2 data:**

**\*\*No data on this compound\*\*  
orl-rat LDLO: 1000mg/kg**

#### 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 may occur. May irritate the mucous membranes of the throat and nose. May affect the central nervous system.**

DERMAL: **irritation, inflammation and redness possible. May cause dermatitis.**

EYE: **irritation, inflammation, water & redness possible. Lanthanide salts cause blistering of cornea, and cause a diffuse gray opacity, related to the amount of metal which binds to the cornea.**

OTHER: **Rare earth elements usually have a high toxicity via intraperitorial route and is highly to moderately toxic via subcutaneous route. May act as an anticoagulant.**

**\*please see attached sheet on Ce2O3\***

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

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#### EMERGENCY FIRST AID PROCEDURES:

INGESTION: **give 1-2 glasses of milk or water to induce vomiting.**

INHALATION: **remove victim to fresh air, give oxygen if breathing is difficult.**

SKIN CONTACT: **brush off skin, wash area with soap and water thoroughly**

EYE CONTACT: **flush eyes with lukewarm water for 15 minutes**

**\*SEE MEDICAL ATTENTION UNDER ALL SITUATIONS MENTIONED ABOVE\***

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### REACTIVITY DATA

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#### STABILITY

**Stable**

CONDITIONS CONTRIBUTING TO UNSTABILITY

**None**

INCOMPATIBILITY (MATERIALS TO AVOID)

**Strong acids and strong bases**

HAZARDOUS DECOMPOSITION PRODUCTS

**CE**

HAZARDOUD POLYMERZATION

**Will Not Occur**

CONDITIONS TO AVOID

**Heat and incompatible materials**



## CERIUM OXIDE MATERIAL SAFETY DATA SHEET

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### SAFE HANDLING AND USE

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

**Wear self-contained breathing apparatus and full protective clothing, isolate area where spill occurred and insure proper ventilation, vacuum spill using a high efficiency unit and place in container for proper disposal. Take care not to raise dust.**

WASTE DISPOSAL METHOD:

**Consult federal, state and local regulations for proper disposal.**

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### SPECIAL PROTECTIVE INFORMATION

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RESPIRATORY PROTECTION	<b>NIOSH approved dust-mist-fume respirator</b>
LOCAL EXHAUST	<b>Maintain below TLV</b>
MECHANICAL (general)	<b>Recommended</b>
SPECIAL	<b>Handle in controlled atmosphere</b>
OTHER	<b>NA</b>
PROTECTIVE GLOVES	<b>Neoprene</b>
EYE PROTECTION	<b>Safety glasses</b>
OTHER PROTECTIVE EQUIPMENT	<b>Wear protective clothing to prevent contamination of skin and clothes</b>

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### SPECIAL PRECAUTIONS

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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:	<b>Not Classified</b>
	UN NUMBER:	<b>NC</b>
	IMCO CLASS:	<b>NC</b>
	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



**\*\*ATTACHED SHEET FOR Ce<sub>2</sub>O<sub>3</sub>\*\***

OTHER:

**Insoluble cerium oxides are non-toxic when ingested. Intravenous injection of CeC13 causes fatty liver degeneration, increased liver levels of neutral fats, liver mitochondria damage, decreased liver glycogen levels, and reduced detoxification capacity in rats. Parental injection of CeC13 has cardiotoxic effect in rats, disturbing cardia contraction and rhythm. Causes calcification of soft tissue when injected subcutaneously.**

**Symptoms of acute lanthanide, intoxication in rats are immediate defecation, writhing, ataxia, sedation, labored respiration and reduced activity. Death is mainly due to respiratory and cardiac failure. Chronic intoxication causes renal and hepatic derangement and longer coagulation times. May be caustic and damaging to cornea by discoloration. Parental injection leads to lowered liver glycogen and blood glucose levels.**

**The rare earth elements exhibit low toxicity via oral exposure. However, the intraperitoneal route is highly toxic while the subcutaneous route is high to moderately toxic. The production of skin and lung granulomas after exposure to them requires extensive protection to prevent such exposure.**