

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Cerium Oxide, Enriched Cerium Oxide
Synonyms	Ceria, Ceric dioxide, Ceric oxide, Cerium dioxide, Cerium(4+) oxide, Molycomp 5310, Needlal, Needlal U15, Needlal W15, Needlal W10-01, Nidoral, Opaline
Chemical Formula	CeO ₂
Molecular Weight	172
CAS No.	1306-38-3
RTECS No.	FK6310000
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053
Email	*May include subsidiaries or affiliate companies/divisions iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDOUS IDENTIFICATION

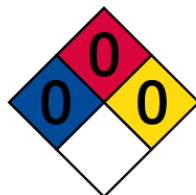
Emergency Overview:

Caution: Avoid contact and inhalation.

Target organ(s): Blood

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 0 Flammability = 0 Reactivity = 0



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 1* Flammability = 0 Physical Hazard = 0

HEALTH HAZARD	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

*additional chronic hazards present

Potential Health Effects

<i>Skin Contact</i>	May cause skin irritation
<i>Skin Absorption</i>	May be harmful if absorbed through the skin
<i>Eye Contact</i>	May cause eye irritation
<i>Inhalation</i>	May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
<i>Ingestion</i>	May be harmful if swallowed
<i>Target Organ(s) or System(s)</i>	Blood
<i>Signs and Symptoms</i>	To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated. Rare-earth compounds may cause delayed blood clotting, leading to hemorrhages. Inhalation of rare earths may cause sensitivity to heat, itching, and increased awareness of odor and taste.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name:	Cerium Oxide
CAS No.:	1306-38-3
Chemical Formula:	CeO ₂
Molecular Weight:	172

4. FIRST AID MEASURES

<i>Oral Exposure</i>	If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
<i>Inhalation Exposure</i>	If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
<i>Dermal Exposure</i>	In case of contact, immediately wash skin with soap and copious amounts of water.
<i>Eye Exposure</i>	In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

5. FIREFIGHTING MEASURES

<i>Flash Point</i>	N/A
<i>Autoignition Temperature</i>	N/A
<i>Flammability</i>	N/A
<i>Suitable Extinguishing Media</i>	Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting

<i>Protective Equipment</i>	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
<i>Specific Hazard(s)</i>	Emits toxic fumes under fire conditions

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of dust.
<i>Methods for Cleaning Up</i>	Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

<i>Handling</i>	User Exposure: Avoid inhalation. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.
<i>Storage</i>	Keep tightly closed

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Safety shower and eye bath. Mechanical exhaust required.
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Personal Protective Equipment

<i>Respiratory</i>	Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks.
<i>Hand</i>	Protective gloves
<i>Eye</i>	Chemical safety goggles
<i>General Hygiene Measures</i>	Wash thoroughly after handling

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

<i>Physical State</i>	Solid
<i>Form</i>	Powder
<i>Color</i>	Faintly yellow

Safety Data

Molecular Weight:	172.12 amu	pH:	N/A
BP/BP Range:	N/A	MP/MP Range:	N/A
Freezing Point:	N/A	Vapor Pressure:	N/A
Vapor Density:	N/A	Saturated Vapor Concentration:	N/A
SG/Density:	7.13 g/cm ³	Bulk Density:	N/A
Odor Threshold:	N/A	Volatile%:	N/A
VOC Content:	N/A	Water Content:	N/A
Solvent Content:	N/A	Evaporation Rate:	N/A
Viscosity:	N/A	Surface Tension:	N/A
Partition Coefficient:	N/A	Decomposition Temperature:	N/A
Flash Point:	N/A	Explosion Limits:	N/A
Flammability:	N/A	Autoignition Temperature:	N/A
Refractive Index:	N/A	Optical Rotation:	N/A
Miscellaneous Data:	N/A	Solubility:	N/A

10. STABILITY AND REACTIVITY

<i>Stability</i>	Stable
<i>Conditions of Instability</i>	Absorbs carbon dioxide from air
<i>Materials to Avoid</i>	Strong oxidizing agents
<i>Hazardous Decomposition Products</i>	Cerium/Cerium oxides
<i>Hazardous Polymerization</i>	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

<i>Oral LD50</i>	LD50 Oral - Rat - Male and female - > 5,000 mg/kg
<i>Inhalation LC50</i>	LC50 Inhalation - Rat - Male and female - 4 h - > 5.05 mg/l
<i>Dermal LD50</i>	LD50 Dermal - Rat - Male and female - > 2,000 mg/kg
<i>Other Information on Acute Toxicity</i>	No data available
<i>Skin Corrosion/Irritation</i>	Skin - Rabbit - No skin irritation - 4 h - OECD Test Guideline 404
<i>Serious Eye Damage/ Eye Irritation</i>	Eyes - Rabbit - Mild eye irritation - OECD Test Guideline 405
<i>Respiratory or Skin Sensitization</i>	Maximization Test - Guinea pig - Did not cause sensitization on laboratory animals - OECD Test Guideline 406
<i>Germ Cell Mutagenicity</i>	Genotoxicity in vitro - Ames test - <i>S. typhimurium</i> - with and without metabolic activation - Negative Genotoxicity in vivo - Mouse - Male and female - Oral - Negative

Carcinogenicity

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<i>Reproductive Toxicity</i>	No data available
<i>Teratogenicity</i>	No data available
<i>Specific Target Organ Toxicity / Single Exposure (Globally Harmonized System)</i>	No data available
<i>Specific Target Organ Toxicity / Repeated Exposure (Globally Harmonized System)</i>	No data available
<i>Aspiration Hazard</i>	No data available

Potential Health Effects

<i>Skin Contact</i>	May cause skin irritation
<i>Skin Absorption</i>	May be harmful if absorbed through the skin
<i>Eye Contact</i>	May cause eye irritation
<i>Inhalation</i>	May be harmful if inhaled; material may be irritating to mucous membranes and upper respiratory tract
<i>Ingestion</i>	May be harmful if swallowed
<i>Target Organ(s) or System(s)</i>	Blood
<i>Signs and Symptoms of Exposure</i>	To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated. Rare-earth compounds may cause delayed blood clotting, leading to hemorrhages. Inhalation of rare earths may cause sensitivity to heat, itching, and increased awareness of odor and taste.
<i>Synergistic effects</i>	No data available
<i>Additional Information</i>	RTECS: FK6310000

12. ECOLOGICAL INFORMATION

Toxicity

<i>Toxicity to Fish</i>	Semi-static test EC50 - <i>Danio rerio</i> (zebra fish) - > 200 mg/l - 72 h
<i>Toxicity to Daphnia and other Aquatic Invertebrates</i>	Immobilization EC50 - <i>Daphnia magna</i> (Water flea) - > 1,000 mg/l - 48 h Method: OECD Test Guideline 202
<i>Toxicity to Bacteria</i>	EC50 - Sludge Treatment - > 1,000 mg/l - 3 h
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	No data available
<i>Mobility in Soil</i>	No data available
<i>PBT and vPvB Assessment</i>	No data available
<i>Other Adverse Effects</i>	No data available

13. DISPOSAL CONSIDERATION

<i>Product</i>	Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state and local environmental regulations. Catalysts and expensive metals should be recovered for reuse or recycling.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	None
Non-Hazardous for Transport	This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport	Non-hazardous for air transport.
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15. REGULATORY INFORMATION**EU Additional Classification**

S	22-24/25
Safety Statements	Do not breathe dust. Avoid contact with skin and eyes.

US Classification and Label Text

US Statements	Caution: Avoid contact and inhalation. Target organ(s): Blood.
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United States Regulatory Information

SARA Listed	No
TSCA Inventory Item	Yes

Canada Regulatory Information

WHMIS Classification	This product has been classified in accordance with the hazard criteria of the CPR, and the SDS contains all the information required by the CPR.
DSL	Yes
NDSL	No

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Issuing Date	January 12, 2014
Revision Date	August 01, 2021
Revision Number	2
Revision Note	Required review and update

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration

ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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