1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**Lutetium (III) Oxide, Enriched Lutetium Oxide**
Synonyms	Lutetia, Lutetium trioxide, Cassiopeium oxide
Chemical Formula	Lu_2O_3
Molecular Weight	397.94
CAS No.	12032-20-1
EINECS/ELINCS No.	234-764-3
Hazard Symbols	None listed
Risk Phrases	None listed
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 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance: White crystalline powder. Hygroscopic. Warning! Causes eye and skin irritation. May cause digestive tract irritation. Causes respiratory tract irritation. The toxicological properties of this material have not been fully investigated. *Target Organs*: No data found.

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

Health Hazard = 1 **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

Potential Health Effects

Eye Contact	Causes eye irritation. May cause chemical conjunctivitis.
Skin Contact	Causes skin irritation.
Ingestion	May cause gastrointestinal irritation with nausea, vomiting and diarrhea. The toxicological properties of this substance have not been fully investigated.
Inhalation	Causes respiratory tract irritation. Can produce delayed pulmonary edema. The toxicological properties of this substance have not been fully investigated.
Chronic	Effects may be delayed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Lutetium Oxide
CAS No.:	12032-20-1
Chemical Formula:	Lu_2O_3
Molecular Weight:	397.94

4. FIRST AID MEASURES

Eye Exposure	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Dermal Exposure	Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Oral Exposure	Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, patient should rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician	Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

General Information	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Suitable Extinguishing Media	Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point	Not applicable
Autoignition Temperature	Not applicable
Explosion Limits:	
Lower	Not available
Upper	Not available

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Use proper personal protective equipment as indicated in Section 8. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental Precautions	Do not let product enter drains.
Methods for Cleaning Up	Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Provide ventilation.

7. HANDING AND STORAGE

Handling	Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation. Wash clothing before reuse. Keep from contact with moist air and steam.
Storage	Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
ACGIH	None listed
NIOSH	None listed
OSHA - Final PELs	None listed

Personal Protective Equipment

Eyes	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin	Wear appropriate protective gloves to prevent skin exposure.
Clothing	Wear appropriate protective clothing to prevent skin exposure.
Respirators	A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Crystalline powder
Color	White
Odor	None reported

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Safety Data

pH:	Not available
Molecular Weight:	397.94
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	Not available
Freezing/Melting Point:	2487 ° C
Flammability:	Product is not flammable
Ignition Temperature:	Not available
Decomposition Temperature:	Not available
Solubility:	Insoluble
Specific Gravity/Density:	9.4200g/cm^3
Molecular Formula:	Lu_2O_3
Danger of Explosion:	Product does not present an explosion hazard

10. STABILITY AND REACTIVITY

Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid	Incompatible materials, excess heat, strong oxidants
Incompatible Materials	Strong oxidizing agents, carbon dioxide, moisture
Hazardous Decomposition Products	Irritating and toxic fumes and gases
Hazardous Polymerization	Has not been reported

11. TOXICOLOGICAL INFORMATION

Primary Irritant Effects	On the skin: irritant effect On the eye: irritant effect
Sensitization	No sensitizing effects known
Subacute to Chronic Toxicity	Lanthanons can cause delayed blood clotting, leading to hemorrhages. Exposure may also lead to sensitivity to heat, itching, increased awareness of odor and taste, and liver damage.
Additional Toxicological Information	To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known.
Germ Cell Mutagenicity	No data available

Carcinogenicity

EPA	No classification data on carcinogenic properties of this material is available.
IARC	No classification data on carcinogenic properties of this material is available.
NTP	No classification data on carcinogenic properties of this material is available.
OSHA	No classification data on carcinogenic properties of this material is available.
ACGIH	No classification data on carcinogenic properties of this material is available.

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Reproductive Toxicity	No data available
Teratogenicity	No data available
Specific Target Organ Toxicity/ Single Exposure (Globally Harmonized System)	Inhalation - May cause respiratory irritation
Specific Target Organ Toxicity / Repeated Exposure (Globally Harmonized System)	No data available
Aspiration Hazard	No data available
Signs and Symptoms of Exposure	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Synergistic Effects	No data available
Additional Information	RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity	No data available
Persistence and Degradability	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
PBT and vPvB Assessment	No data available
Other Adverse Effects	No data available

13. DISPOSAL CONSIDERATIONS

Product	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. **RCRA P-Series**: None listed. **RCRA U-Series**: None listed.
Contaminated Packaging	Dispose of as unused product.

14. TRANSPORT INFORMATION

Not a hazardous material for transportation.

DOT **Land transport ADR/RID (Cross-Border)**	*Hazard Class:* None *ADR/RID Class:* None
Maritime transport IMDG	*IMDG Class:* None
Air transport ICAO-TI and IATA-DGR	*ICAO/IATA Class:* None
Transport/Additional Information	Not dangerous, according to the above specifications

15. REGULATORY INFORMATION

US FEDERAL

TSCA:	CAS# 12032-20-1 is listed on the TSCA inventory.
Health & Safety Reporting List:	None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules:	None of the chemicals in this product are under a Chemical Test Rule.
Section 12b:	None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule:	None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and Corresponding RQs:	None of the chemicals in this material have an RQ.
SARA	
Section 302	None of the chemicals in this product have a TPQ.
Section 313	No chemicals are reportable under Section 313.
SARA 311/312	Acute Health Hazard
Clean Air Act	This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act	None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA	None of the chemicals in this product are considered highly hazardous by OSHA.
STATE	CAS# 12032-20-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level	None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols	Not available
Risk Phrases	Not available
Safety Phrases	**S 24/25** Avoid contact with skin and eyes

WGK (Water Danger/Protection)	CAS# 12032-20-1: No information available.
Canada - DSL/NDSL	CAS# 12032-20-1 is listed on Canada's DSL List.
Canada – WHMIS	This product has a WHMIS classification of D2B.

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16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Issuing Date	January 14, 2015
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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