
1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Germanium, Enriched Germanium
CAS No.	7440-56-4
RTECS No.	LY5200000
Chemical Formula	Ge
Molecular Weight	72.64 g/mol
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 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:

OSHA Hazards:	Target Organ Effect, Irritant
Target Organs:	Liver injury may occur; kidney injury may occur.
GHS Classification:	Skin irritation (Category 2), Eye irritation (Category 2A), Specific target organ toxicity - single exposure (Category 3)

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

Health Hazard = 2 Flammability = 0 Reactivity = 0



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

Health Hazard = 2 Flammability = 0 Physical Hazard = 0

HEALTH HAZARD	2
FLAMMABILITY	0
PHYSICAL HAZARD	0

Potential Health Effects

<i>Eye</i>	May cause eye irritation
<i>Skin</i>	May cause skin irritation
<i>Ingestion</i>	The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.
<i>Inhalation</i>	May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.
<i>Chronic</i>	Not available

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Germanium
CAS No.:	7440-56-4
Chemical Formula:	Ge
Molecular Weight:	72.64 g/mol

4. FIRST AID MEASURES

<i>Eye Exposure</i>	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid.
<i>Dermal Exposure</i>	Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.
<i>Ingestion</i>	Get medical aid. Wash mouth out with water.
<i>Inhalation</i>	Remove from exposure to fresh air immediately. Get medical aid.
<i>Notes to Physician</i>	Treat symptomatically.

5. FIREFIGHTING MEASURES

<i>General Information</i>	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH-approved or equivalent, and full protective gear. Will burn if involved in a fire. Flammable solid.
<i>Suitable Extinguishing Media</i>	Use extinguishing media most appropriate for the surrounding fire.
<i>Autoignition Temp</i>	Not available
<i>Flash Point</i>	Not available
<i>Explosion Limits</i>	
<i>Lower</i>	Not available
<i>Upper</i>	Not available
<i>Protective Equipment</i>	Wear self-contained breathing apparatus for firefighting if necessary.
<i>Hazardous Combustion</i>	Hazardous decomposition products formed under fire conditions: <i>Products</i> germanium oxides

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	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.
<i>Environmental Precautions</i>	Do not let product enter drains.
<i>Methods for Cleaning Up</i>	Vacuum or sweep up material and place into a suitable disposal container. Remove all sources of ignition. Use a spark-proof tool.

7. HANDLING AND STORAGE

<i>Handling</i>	Minimize dust generation and accumulation. Use spark-proof tools and explosion-proof equipment. Avoid breathing dust, vapor, mist or gas. Avoid contact with skin and eyes. Take precautionary measures against static discharges.
<i>Storage</i>	Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Store in "flammables area."

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls Use adequate ventilation to keep airborne concentrations low.

Personal Protective Equipment

<i>Eye</i>	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.
<i>Hand</i>	Wear appropriate protective gloves to prevent skin exposure.
<i>Skin and Body</i>	Wear appropriate protective clothing to prevent skin exposure.
<i>Respirators</i>	Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH- or European Standard EN 149-approved respirator when necessary.
<i>Hygiene Measures</i>	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance

Form	Ingots
Color	Black
Odor	Odorless

Safety Data

pH:	Not available	Freezing/Melting Point:	937 °C
Vapor Pressure:	Not available	Decomposition Temperature:	Not available
Viscosity:	Not available	Solubility:	Insoluble
Boiling Point:	2830 °C @ 760.00 mm Hg	Specific Gravity/Density:	5.3500 g/cm ³
Molecular Weight	72.64 g/mol		

10. STABILITY AND REACTIVITY

<i>Chemical Stability</i>	Stable under normal temperatures and pressures
<i>Conditions to Avoid</i>	Incompatible materials
<i>Incompatible Materials</i>	Strong oxidizing agents, halogens, acids (mineral, non-oxidizing, e.g. hydrochloric acid, hydrofluoric acid, muriatic acid, phosphoric acid), acids (mineral, oxidizing, e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid)
<i>Hazardous Decomposition Products</i>	Not available
<i>Hazardous Polymerization</i>	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

<i>Oral LD50</i>	No data available
<i>Inhalation LC50</i>	
<i>Dermal LD50</i>	No data available
<i>Other Information on Acute Toxicity</i>	No data available
<i>Skin Corrosion/Irritation</i>	No data available
<i>Serious Eye Damage/Eye Irritation</i>	No data available
<i>Respiratory or Skin Sensitization</i>	No data available
<i>Germ cell mutagenicity</i>	No data available

Carcinogenicity

<i>IARC</i>	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.
<i>ACGIH</i>	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.
<i>NTP</i>	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.
<i>OSHA</i>	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>	Inhalation - may cause respiratory irritation
<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>Inhalation</i>	May be harmful if inhaled; causes respiratory tract irritation
<i>Ingestion</i>	May be harmful if swallowed
<i>Skin</i>	May be harmful if absorbed through skin; causes skin irritation
<i>Eyes</i>	Causes eye irritation
<i>Signs and Symptoms of Exposure</i>	Liver injury may occur; kidney injury may occur; blood disorders, cough, difficulty in breathing
<i>Synergistic Effects</i>	No data available
<i>Additional Information</i>	RTECS: LY5200000

12. ECOLOGICAL INFORMATION

<i>Toxicity</i>	No data available
<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 CONSIDERATIONS

<i>Product</i>	Dispose of in a manner consistent with federal, state and local regulations. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards	Target Organ Effect, Irritant
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (<i>De Minimis</i>) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Acute Health Hazard, Chronic Health Hazard

Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right to Know Components	Germanium / CAS No. 7440-56-4
New Jersey Right to Know Components	Germanium / CAS No. 7440-56-4
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Issuing Date	November 10, 2014
Revision Date	May 10, 2024
Revision Number	3
Revision Note	Update Supplier Address

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
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
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)
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
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)
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
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
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
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
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
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.

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between ISOFLEX USA (or any of its affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. ISOFLEX shall not be held liable for any damage resulting from handling or from contact with the above product.