

1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| Product Name | Samarium |
| Chemical Formula | Sm |
| Molecular Weight | 150.36 g/mol |
| CAS No. | 7440-19-9 |
| EC No. | 231-128-7 |
| 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, flammable solid, water reactive |
| Target Organs: | Blood, heart, central nervous system |
| GHS Classifications: | Flammable solids (Category 2); Substances which, in contact with water, emit flammable gases (Category 2); Specific target organ toxicity - repeated exposure (Category 2) |
| GHS Label Elements, Including Precautionary Statements | Signal word: Danger |
| Hazard Statement(s): | H228 Flammable solid; H261 In contact with water, releases flammable gases; H373 May cause damage to organs through prolonged or repeated exposure |
| Precautionary Statement(s): | P210 Keep away from heat/sparks/open flames/hot surfaces – NO SMOKING; P231 + P232 Handle under inert gas - protect from moisture; P422 Store contents under inert gas |

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

Health Hazard = 0 Flammability = 2 Reactivity = 2 Special Hazard = W



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

Health Hazard = 0 Flammability = 3 Physical Hazard = 3

| | |
|------------------------|----------|
| HEALTH HAZARD | 0 |
| FLAMMABILITY | 3 |
| PHYSICAL HAZARD | 3 |

Potential Health Effects

| | |
|-------------------|--|
| <i>Inhalation</i> | May be harmful if inhaled; may cause respiratory tract irritation |
| <i>Skin</i> | May be harmful if absorbed through skin; may cause skin irritation |
| <i>Eyes</i> | May cause eye irritation |
| <i>Ingestion</i> | May be harmful if swallowed |

3. COMPOSITION / INFORMATION ON INGREDIENTS

| | |
|-------------------|--------------|
| Chemical Name: | Samarium |
| CAS No.: | 7440-19-9 |
| Chemical Formula: | Sm |
| Molecular Weight: | 150.36 g/mol |

4. FIRST AID MEASURES

| | |
|-----------------------|---|
| <i>General Advice</i> | Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. |
| <i>Inhalation</i> | Wash off with soap and plenty of water. Flush eyes with water as a precaution. |
| <i>Oral Exposure</i> | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. |

5. FIREFIGHTING MEASURES

| | |
|---|---|
| <i>Flammability</i> | Not flammable or combustible |
| <i>Suitable Extinguishing Media</i> | Dry powder |
| <i>Protective Equipment</i> | Wear self-contained breathing apparatus for firefighting if necessary |
| <i>Hazardous Decomposition Products</i> | Samarium oxides formed under fire conditions |

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods for Cleaning Up

Sweep up and shovel. Contain spillage, and then collect with an electrically-protected vacuum cleaner or by wet-brushing, and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition – NO SMOKING. Take measures to prevent the buildup of electrostatic charge.

Storage

Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Contains no substances with occupational exposure limit values.

Personal Protective Equipment

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand Protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye Protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Body Protection

Complete suit protecting against chemicals; flame-retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

General Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

| | |
|----------------|----------------------|
| Physical State | Solid |
| Form | Foil |
| Color | Silver-gray metallic |

Safety Data

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|---------------------------|--|----------------------------|-----------------|
| Molecular Weight: | 150.36 g/mol available | pH: | No data |
| BP/BP Range: | 1794 °C (3261 °F) 1074 °C (1965 °F) | MP/MP Range: | |
| Freezing Point: | N/A | Vapor Pressure: | |
| Vapor Density: | N/A | Saturated Vapor | |
| Density: | Concentration: N/A 7.47 g/mL @ 25 °C/77 °F N/A | Bulk Density: | |
| Odor Threshold: | N/A | Volatile %: | N/A |
| VOC Content: | N/A | Water Content: | |
| Solvent Content: | N/A | Evaporation Rate: | N/A |
| Viscosity: | N/A | Surface Tension: | |
| Partition Coefficient: | N/A | Decomposition Temperature: | |
| Flash Point: | N/A | Explosion Limits: | |
| Autoignition Temperature: | N/A | Ignition Temperature: | 150 °C (302 °F) |
| Refractive Index: | N/A | Optical Rotation: | N/A |
| Miscellaneous Data: | N/A | Solubility: | N/A |
| Flammability: | The substance or mixture is a flammable solid with the subcategory 2. N/A = not available | | |

10. STABILITY AND REACTIVITY

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|---|--|
| <i>Chemical Stability</i> | Stable under recommended storage conditions |
| <i>Hazardous Reactions</i> | Reacts violently with water |
| <i>Conditions to Avoid</i> | Heat, flames and sparks; extremes of temperature and direct sunlight; exposure to moisture |
| <i>Materials to Avoid</i> | Halogens, strong acids, strong oxidizing agents, water |
| <i>Hazardous Decomposition Products</i> | Samarium oxides formed under fire conditions |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

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|--|-------------------|
| <i>Oral LD50</i> | No data available |
| <i>Inhalation LC50</i> | No data available |
| <i>Dermal LD50</i> | No data available |
| <i>Other Information</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

Contains a radioactive isotope which may produce cancer and genetic mutation.

| | |
|--|---|
| <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>Specific Target Organ Toxicity / Single Exposure (Globally Harmonized System)</i> | No data available |
| <i>Specific Target Organ Toxicity / Repeated Exposure (Globally Harmonized System)</i> | May cause damage to organs through prolonged or repeated exposure |
| <i>Aspiration Hazard</i> | No data available |

Potential Health Effects

| | |
|---------------------------------------|---|
| <i>Inhalation</i> | May be harmful if inhaled; may cause respiratory tract irritation |
| <i>Ingestion</i> | May be harmful if swallowed |
| <i>Skin</i> | May be harmful if absorbed through skin; may cause skin irritation |
| <i>Eyes</i> | May cause eye irritation |
| <i>Signs and Symptoms of Exposure</i> | 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, abdominal pain, nausea, vomiting, salivation, fatigue, dizziness, confusion, palpitation, ataxia. To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated. |
| <i>Synergistic Effects</i> | No data available |
| <i>Additional Information</i> | RTECS: Not available |

12. ECOLOGICAL INFORMATION

| | |
|--------------------------------------|---------|
| <i>Ecotoxicity</i> | No data |
| <i>Persistence and Degradability</i> | No data |
| <i>Bioaccumulative Potential</i> | No data |
| <i>Mobility in Soil</i> | No data |

13. DISPOSAL CONSIDERATIONS*Product*

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated Packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**US DOT***Shipping Name*

Flammable Solid, Inorganic, N.O.S. (Samarium)

Hazard Class

4.1

UN Number

UN3178

Packing Group

II

IATA*Shipping Name*

Flammable Solid, Inorganic, N.O.S. (Samarium)

Hazard Class

4.1

UN Number

UN3178

Packing Group

II

15. REGULATORY INFORMATION**OSHA Hazards**

Target organ effect, flammable solid, water-reactive

SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Chronic health hazard

Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right to Know Components

Samarium / CAS No. 7440-19-9

New Jersey Right to Know Components

Samarium / CAS No. 7440-19-9

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

January 12, 2014

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|-----------------|-------------------------|
| Revision Date | October 18, 2024 |
| Revision Number | 4 |
| 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 |
| 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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