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 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:

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

Inhalation	May be harmful if inhaled; may cause respiratory tract irritation
Skin	May be harmful if absorbed through skin; may cause skin irritation
Eyes	May cause eye irritation
Ingestion	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

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

5. FIREFIGHTING MEASURES

Flammability	Not flammable or combustible
Suitable Extinguishing Media	Dry powder
Protective Equipment	Wear self-contained breathing apparatus for firefighting if necessary
Hazardous Decomposition Products	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

Molecular Weight:	150.36 g/mol	pH:	No data available
BP/BP Range:	1794 °C (3261 °F)	MP/MP Range:	1074 °C (1965 °F)
Freezing Point:	N/A	Vapor Pressure:	N/A
Vapor Density:	N/A	Saturated Vapor Concentration: N/A	
Density:	7.47 g/mL @ 25 °C/77 °F	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
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

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10. STABILITY AND REACTIVITY

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

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11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral LD50	No data available
Inhalation LC50	No data available
Dermal LD50	No data available
Other Information	No data available
Skin Corrosion/Irritation	No data available
Serious Eye Damage/Eye Irritation	No data available
Respiratory or Skin Sensitization	No data available
Germ Cell Mutagenicity	No data available

Carcinogenicity

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

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

Potential Health Effects

Inhalation	May be harmful if inhaled; may cause respiratory tract irritation
Ingestion	May be harmful if swallowed
Skin	May be harmful if absorbed through skin; may cause skin irritation
Eyes	May cause eye irritation
Signs and Symptoms of Exposure	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.
Synergistic Effects	No data available
Additional Information	RTECS: Not available

12. ECOLOGICAL INFORMATION

Ecotoxicity	No data
Persistence and Degradability	No data
Bioaccumulative Potential	No data
Mobility in Soil	No data
Other Adverse Effects	Do not allow material to be released to the environment. No further relevant information available.

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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 29475 San Francisco CA 94129 United States
Issuing Date	January 12, 2014
Revision Date	July 29, 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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