

Samarium (-144, -148, -149, -150, -152, -154) Oxide

Chemwatch: 4601-49

Version No: 3.1.1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 01/01/2013

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 Initial Date: **Not Available**

S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	Samarium Oxide
Chemical Name	Samarium Oxide
Synonyms	Samarium Oxide
Proper shipping name	Not Applicable
Chemical formula	Sm ₂ O ₃
Other means of identification	Not Available
CAS number	Not Applicable

Relevant identified uses of the substance

	Medical and research applications
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Details of the manufacturer

Registered company name	Oak Ridge National Laboratory
Address	P.O. Box 2008, Oak Ridge, Tennessee 37831-6158
Telephone	(865) 574-6984
Fax	(865) 574-6986
Website	http://isotopes.gov/
Email	isotopes@ornl.gov

Emergency telephone number

Association / Organization	Oak Ridge National Laboratory
Emergency telephone numbers	(865) 574-6606
Other emergency telephone numbers	CHEMTREC: 1-800-424-9300

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	0	
Toxicity	1	
Body Contact	1	
Reactivity	0	
Chronic	2	

0 = Minimum
 1 = Low
 2 = Moderate
 3 = High
 4 = Extreme



	Not Applicable
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Label elements

	Not Applicable
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Hazard statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**Substances**

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
12060-58-1	100	samarium(III) oxide

SECTION 4 FIRST AID MEASURES**Description of first aid measures**

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> If dust is inhaled, remove from contaminated area. Encourage patient to blow nose to ensure clear passage of breathing. If irritation or discomfort persists seek medical attention.
Ingestion	<ul style="list-style-type: none"> Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES**Extinguishing media**

	<ul style="list-style-type: none"> There is no restriction on the type of extinguisher which may be used.
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Special hazards arising from the substrate or mixture

	Avoid contamination with strong oxidizing agents as ignition may result
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> Use water delivered as a fine spray to control fire and cool adjacent area. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	<ul style="list-style-type: none"> Noncombustible. Not considered a significant fire risk, however containers may burn.

SECTION 6 ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Minor Spills	<ul style="list-style-type: none"> Clean up all spills immediately. Avoid contact with skin and eyes. Wear impervious gloves and safety glasses. Use dry clean up procedures and avoid generating dust.
Major Spills	<ul style="list-style-type: none"> Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Control personal contact with the substance, by using protective equipment and dust respirator. Prevent spillage from entering drains, sewers or water courses.
	Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> ■ Limit all unnecessary personal contact. ■ Wear protective clothing when risk of exposure occurs. ■ Use in a well-ventilated area. ■ When handling DO NOT eat, drink or smoke.
Other information	<ul style="list-style-type: none"> ■ Keep dry. ■ Store in original containers. ■ Keep containers securely sealed. ■ No smoking, naked lights or ignition sources.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ■ Polyethylene or polypropylene container. ■ Packing as recommended by manufacturer. ■ Check all containers are clearly labelled and free from leaks.
Storage incompatibility	<ul style="list-style-type: none"> ■ Avoid reaction with oxidizing agents

PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA


Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
samarium(III) oxide	Samarium(III) oxide	15 mg/m3	170 mg/m3	990 mg/m3

Ingredient	Original IDLH	Revised IDLH
samarium(III) oxide	Not Available	Not Available

Exposure controls

Appropriate engineering controls	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p>
Personal protection	
Eye and face protection	<ul style="list-style-type: none"> ■ Safety glasses. ■ Safety glasses with side shields. ■ Chemical goggles. ■ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.
Skin protection	See Hand protection below
Hands/feet protection	Wear general protective gloves, e.g. Light weight rubber gloves.
Body protection	See Other protection below
Other protection	<p>Overalls</p> <ul style="list-style-type: none"> ■ Impervious protective clothing ■ Eyewash unit.
Thermal hazards	Not Available

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

Forsberg Clothing Performance Index.

The effect(s) of the following substance(s) are taken into account in the computer generated selection:

Samarium Oxide 99.9% Not Available

Material	CPI

* CPI - Chemwatch Performance Index

A: Best Selection

Respiratory protection

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	- -	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

Continued...

Samarium Oxide

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

* - Negative pressure demand ** - Continuous flow

A(All classes) = Organic vapors, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

	Beige, hygroscopic, crystalline powder		
Physical state	Solid	Relative density (Water = 1)	8.347
Odor	Not Available	Partition coefficient n-octanol / water	Not Available
Odor threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Applicable	Decomposition temperature	Not available.
Melting point / freezing point (°C)	2325	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	348.7
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Available	Oxidizing properties	Not Available
Upper Explosive Limit (%)	Not available.	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Negligible
Vapor pressure (kPa)	Negligible	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution(1%)	Not Available
Vapor density (Air = 1)	>1	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> ■ Unstable in the presence of incompatible materials. ■ Product is considered stable. ■ Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	<p>The dust may be discomforting to the upper respiratory tract. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations or particulate are inhaled.</p> <p>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</p>
Ingestion	<p>Considered an unlikely route of entry in commercial/industrial environments The material is moderately discomforting to the gastrointestinal tract and may be harmful if swallowed in large quantity.</p>
Skin Contact	<p>The material may be mildly discomforting to the skin. Open cuts, abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.</p>
Eye	<p>The material is moderately discomforting to the eyes and is capable of causing a mild, temporary redness to the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.</p>

Samarium Oxide

Principal routes of exposure are usually by skin contact and inhalation of generated dust.

Samarium exists as seven isotopes of which three are radioactive. Prolonged exposure to samarium, its compounds and salts may produce cumulative health effects.

As with any chemical product, contact with unprotected bare skin; inhalation of vapor, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

Samarium Oxide 99.9%	Not Available	Not Available
samarium(III) oxide	Oral (rat) LD50: >1000 mg/kg*	*[Bisley]
	Not Available	Not Available

Not available. Refer to individual constituents.

Lanthanide poisoning causes immediate defecation, writhing, incoordination, labored breathing, and inactivity. Respiratory and heart failure may follow causing death.

Acute Toxicity	<input type="checkbox"/>	Carcinogenicity	<input type="checkbox"/>
Skin Irritation/Corrosion	<input type="checkbox"/>	Reproductivity	<input type="checkbox"/>
Serious Eye Damage/Irritation	<input type="checkbox"/>	STOT - Single Exposure	<input type="checkbox"/>
Respiratory or Skin sensitization	<input type="checkbox"/>	STOT - Repeated Exposure	<input type="checkbox"/>
Mutagenicity	<input type="checkbox"/>	Aspiration Hazard	<input type="checkbox"/>

Legend: – Data required to make classification available
 – Data available but does not fill the criteria for classification
 – Data Not Available to make classification

CMR STATUS

Not Applicable

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

- Consult manufacturer for recycling options and recycle where possible.
- Consult State Land Waste Management Authority for disposal.
- Incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorized landfill.

SECTION 14 TRANSPORT INFORMATION

Labels Required

NO

Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

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SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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