

# Samarium Doped Ceria

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations  
Revision Date: 10/01/2015 Date of issue: 06/01/2015

Version: 1.0

### SECTION 1: IDENTIFICATION

#### 1.1. Product Identifier

**Product Form:** Substance

**Product Name:** Samarium Doped Ceria

**CAS No:** 66402-68-4

**Synonyms:** Samarium doped cerium oxide; Cerium (IV) oxide – samarium doped; SDC; SCO

#### 1.2. Intended Use of the Product

Laboratory chemicals and manufacture of substances

#### 1.3. Name, Address, and Telephone of the Responsible Party

##### Company

Nexceris

404 Enterprise Dr.

Lewis Center, OH 43035

T 614-842-6606

www.nexceris.com

info@nexceris.com

#### 1.4. Emergency Telephone Number

**Emergency Number** : 1-800-535-5053 / Contract # 106832

INFOTRAC

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1. Classification of the Substance or Mixture

**Classification (GHS-US)**

Not classified

#### 2.2. Label Elements

**GHS-US Labeling** No labeling applicable

#### 2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations.

**2.4. Unknown Acute Toxicity (GHS-US)** No data available

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substances

Name	Product Identifier	% (w/w)	Classification (GHS-US)
Ceramic materials and wares, chemicals	(CAS No) 66402-68-4	100	Not classified
Contains	Product Identifier	% (w/w)	Classification (GHS-US)
Cerium oxide	(CAS No) 1306-38-3	70 - 90	Not classified
Samarium oxide (Sm <sub>2</sub> O <sub>3</sub> )	(CAS No) 12060-58-1	10 - 30	Not classified

#### 3.2. Mixture

Not applicable

A range of concentration as prescribed by the Controlled Products Regulations has been used where necessary, due to varying composition.

### SECTION 4: FIRST AID MEASURES

#### 4.1. Description of First Aid Measures

**General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). IF exposed or concerned: Call a POISON CENTER or doctor.

**Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. If exposed or concerned: Get medical advice/attention.

# Samarium Doped Ceria

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

**Skin Contact:** Brush off loose particles from skin. Wash skin with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

**Eye Contact:** Rinse with plenty of water immediately. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

**Ingestion:** Rinse mouth. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

### 4.2. Most Important Symptoms and Effects Both Acute and Delayed

**General:** Prolonged contact with large amounts of dust may cause mechanical irritation.

**Inhalation:** Prolonged inhalation of dust may cause respiratory irritation.

**Skin Contact:** Skin contact with large amounts of dust may cause mechanical irritation.

**Eye Contact:** Eye contact with dust may cause mechanical irritation.

**Ingestion:** Ingestion is likely to be harmful or have adverse effects.

**Chronic Symptoms:** None expected under normal conditions of use.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Use extinguishing media appropriate for surrounding fire.

**Unsuitable Extinguishing Media:** Do not use water jet. Use of heavy stream of water may spread fire.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Product is not flammable.

**Explosion Hazard:** Product itself is not explosive but if dust is generated, dust clouds suspended in air can be explosive.

**Reactivity:** Hazardous reactions will not occur under normal conditions.

### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

**Firefighting Instructions:** Avoid dust clouds in combination with static electricity. Avoid inhalation of material or combustion by-products. Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

**Hazardous Combustion Products:** Oxides of Samarium, Cerium. Carbon oxides (CO, CO<sub>2</sub>).

**Other Information:** Do not allow run-off from fire fighting to enter drains or water sources.

### Reference to Other Sections

Refer to section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Avoid all unnecessary exposure. Avoid generating dust. Remove ignition sources. Use special care to avoid static electric charges.

#### 6.1.1. For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### 6.1.2. For Emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Stop leak if safe to do so. Ventilate area.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters. Contact competent authorities after a spill.

### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Contain and collect as any solid. Do not take up in combustible material such as: saw dust or cellulosic material.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Collect spillage. Utilize a dust suppressant when removing mechanically.

# Samarium Doped Ceria

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

### 6.4. Reference to Other Sections

See Section 8, Exposure Controls and Personal Protection. See Section 13, Disposal Considerations.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Accumulation and dispersion of dust with an ignition source can cause a combustible dust explosion. Keep dust levels to a minimum and follow applicable regulations. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Wash hands and forearms thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Ground/bond container and receiving equipment. Good housekeeping is needed during storage, transfer, handling, and use of this material to avoid excessive dust accumulation.

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Hygroscopic. Store in glovebox, dry box or desiccator located in exhausted environment. Protect from moisture.

**Incompatible Materials:** Strong oxidizers.

### 7.3. Specific End Use(s)

Laboratory chemicals and manufacture of substances

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

### 8.2. Exposure Controls

**Appropriate Engineering Controls:** Proper grounding procedures to avoid static electricity should be followed. Ensure all national/local regulations are observed. Provide adequate ventilation to minimize dust concentrations. Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

**Personal Protective Equipment:** Dust formation: dust mask.



**Materials for Protective Clothing:** Suitable materials with adequate protection.

**Hand Protection:** In case of repeated or prolonged contact wear gloves.

**Eye Protection:** In case of dust production: protective goggles.

**Skin and Body Protection:** Wear suitable protective clothing.

**Respiratory Protection:** If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

**Other Information:** When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: White/yellow
Odor	: Not available
Odor Threshold	: Not available
pH	: Unknown
Evaporation Rate	: Not available
Melting Point	: Not available

# Samarium Doped Ceria

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Unknown
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20 °C	: Not available
Relative Density	: Not available
Specific Gravity	: Not available
Solubility	: Not available
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available
Explosion Data – Sensitivity to Mechanical Impact	: Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	: Static discharge could act as an ignition source.

### SECTION 10: STABILITY AND REACTIVITY

- 10.1. **Reactivity:** Hazardous reactions will not occur under normal conditions.
- 10.2. **Chemical Stability:** Stable under normal ambient conditions.
- 10.3. **Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4. **Conditions to Avoid:** Direct sunlight. Extremely high or low temperatures. Sparks. Heat. Overheating. Open flame.
- 10.5. **Incompatible Materials:** Strong oxidizers.
- 10.6. **Hazardous Decomposition Products:** Oxides of Samarium, Cerium. Carbon oxides (CO, CO<sub>2</sub>).

### SECTION 11: TOXICOLOGICAL INFORMATION

#### 11.1. Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Not classified

**pH:** Unknown

**Serious Eye Damage/Irritation:** Not classified

**pH:** Unknown

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Teratogenicity:** Not available

**Carcinogenicity:** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Not classified

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** Prolonged inhalation of dust may cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** Skin contact with large amounts of dust may cause mechanical irritation.

**Symptoms/Injuries After Eye Contact:** Eye contact with dust may cause mechanical irritation.

**Symptoms/Injuries After Ingestion:** Ingestion is likely to be harmful or have adverse effects.

**Chronic Symptoms:** None expected under normal conditions of use.

#### 11.2. Information on Toxicological Effects - Ingredient(s)

**LD50 and LC50 Data:**

**Cerium oxide (1306-38-3)**

**LD50 Oral Rat**

> 5 g/kg

# Samarium Doped Ceria

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

LD50 Dermal Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 2.01 mg/l/4h
<b>Samarium oxide (Sm<sub>2</sub>O<sub>3</sub>) (12060-58-1)</b>	
LD50 Oral Rat	> 5 g/kg

### SECTION 12: ECOLOGICAL INFORMATION

- 12.1. Toxicity** Not classified
- 12.2. Persistence and Degradability** Not available
- 12.3. Bioaccumulative Potential** Not available
- 12.4. Mobility in Soil** Not available
- 12.5. Other Adverse Effects**

**Other Information:** Avoid release to the environment.

### SECTION 13: DISPOSAL CONSIDERATIONS

#### 13.1. Waste treatment methods

**Sewage Disposal Recommendations:** Do not empty into drains; dispose of this material and its container in a safe way.

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

### SECTION 14: TRANSPORT INFORMATION

- 14.1. In Accordance with DOT** Not regulated for transport
- 14.2. In Accordance with IMDG** Not regulated for transport
- 14.3. In Accordance with IATA** Not regulated for transport
- 14.4. In Accordance with TDG** Not regulated for transport

### SECTION 15: REGULATORY INFORMATION

#### 15.1. US Federal Regulations

<b>Ceramic materials and wares, chemicals (66402-68-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>SARA Section 311/312 Hazard Classes</b>	Immediate (acute) health hazard
<b>Cerium oxide (1306-38-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Samarium oxide (Sm<sub>2</sub>O<sub>3</sub>) (12060-58-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

#### 15.2. US State Regulations

<b>Ceramic materials and wares, chemicals (66402-68-4)</b>	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	
<b>Cerium oxide (1306-38-3)</b>	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	

#### 15.3. Canadian Regulations

<b>Samarium Doped Ceria (66402-68-4)</b>	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Ceramic materials and wares, chemicals (66402-68-4)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
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<b>Cerium oxide (1306-38-3)</b>	
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WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
<b>Samarium oxide (Sm<sub>2</sub>O<sub>3</sub>) (12060-58-1)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

### SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Revision Date** : 10/01/2015

**Other Information** : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

#### **Party Responsible for the Preparation of This Document**

Nexceris, LLC. 404 Enterprise Dr. Lewis Center, OH 43035. T 614-842-6606

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

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