SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance (UVCB)
Substance name : Gadolinium Doped Ceria
EC no : 266-340-9
CAS No : 66402-68-4
Other means of identification : Ceramic Materials and Wares
GDC
GCO
Gadolinium doped cerium oxide
Cerium(IV) oxide – gadolinium doped

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Laboratory chemicals, Manufacture of substances

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Nexceris, LLC
404 Enterprise Drive
Lewis Center, Ohio USA 43035
T: 614-842-6606
http://www.nexceris.com

1.4. Emergency telephone number


<table>
<thead>
<tr>
<th>Country</th>
<th>Official advisory body</th>
<th>Address</th>
<th>Emergency number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRELAND (REPUBLIC OF)</td>
<td>National Poisons Information Centre</td>
<td>Beaumont Hospital PO Box 1297</td>
<td>+353 1 809 2166</td>
</tr>
<tr>
<td></td>
<td>Beaumont Road</td>
<td>9 Dublin</td>
<td></td>
</tr>
<tr>
<td>UNITED KINGDOM</td>
<td>National Poisons Information Service</td>
<td>Dudley Road</td>
<td>0870 600 6266 (UK only)</td>
</tr>
<tr>
<td></td>
<td>(Birmingham Centre)</td>
<td>B18 7QH Birmingham</td>
<td></td>
</tr>
<tr>
<td></td>
<td>City Hospital</td>
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</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Irrit. 2  H319

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Xi; R36

Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects

Causes serious eye irritation.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) : GHS07

Signal word (CLP) : Warning
Hazard statements (CLP) : H319 - Causes serious eye irritation
Precautionary statements (CLP) : P264 – Wash hands thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove
2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Substance type</th>
<th>Product identifier</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Gadolinium Doped Ceria</td>
<td>UVCB</td>
<td>(CAS No) 66402-68-4</td>
<td>100</td>
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<tr>
<td></td>
<td></td>
<td>(EC no) 266-340-9</td>
<td></td>
</tr>
</tbody>
</table>

Full text of R-, H- and EUH-phrases: see section 16

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

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).

First-aid measures after inhalation
If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact
Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.

First-aid measures after eye contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion
Rinse mouth. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/injuries after eye contact
Causes serious eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media
None known.

5.2. Special hazards arising from the substance or mixture
No additional information available

5.3. Advice for firefighters

Firefighting instructions
Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting
Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Wear a self contained breathing apparatus. EN469.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures
Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment
Equip cleanup crew with proper protection. Chemical goggles or safety glasses.

Emergency procedures
Ventilate area.
6.2. Environmental precautions
Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: On land, sweep or shovel into suitable containers. Minimize generation of dust.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in a well-ventilated area.
Hygiene measures: Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep only in the original container in a cool well ventilated place.

7.3. Specific end use(s)
Laboratory chemicals, Manufacture of substances

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Gadolinium Doped Ceria</th>
<th>ACGIH TWA (mg/m³)</th>
<th>10 mg/m³ 8 hour TWA as Total dust</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA - ACGIH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls: Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Either local exhaust or general room ventilation is usually required.
Personal protective equipment: Avoid all unnecessary exposure.
Hand protection: Dust impervious gloves. EN374.
Eye protection: Chemical goggles or safety glasses. In case of dust production: protective goggles. EN166.
Respiratory protection: Where excessive dust may result, use approved respiratory protection equipment. Use air-purifying respirator equipped with particulate filtering cartridges. Filtering Half-face mask (DIN EN 149).

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
Colour: White/Yellow
Odour: Odourless.
Odour threshold: No data available
pH: Not applicable
Relative evaporation rate (butylacetate=1): Not applicable
Melting point: No data available
Freezing point: No data available
Boiling point: Not applicable
Flash point: Not applicable
Self ignition temperature: Not applicable
Decomposition temperature: No data available
Flammability (solid, gas): Non flammable.
Vapour pressure: Not applicable
Relative vapour density at 20 °C: No data available
Relative density: No data available
Solubility: Insoluble in water.
Log Pow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: Product is not explosive.
**Gadolinium Doped Ceria**

**Safety Data Sheet**

according to Regulation (EC) No. 453/2010

Oxidising properties : No oxidizing properties.

Explosive limits : No data available

9.2. **Other information**

VOC content : 0 %

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**SECTION 10: Stability and reactivity**

10.1. **Reactivity**

No dangerous reactions known.

10.2. **Chemical stability**

The product is stable at normal handling and storage conditions.

10.3. **Possibility of hazardous reactions**

Hazardous polymerization will not occur.

10.4. **Conditions to avoid**

No additional information available

10.5. **Incompatible materials**

No additional information available

10.6. **Hazardous decomposition products**

Oxides.

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**SECTION 11: Toxicological information**

11.1. **Information on toxicological effects**

Acute toxicity : Not classified

<table>
<thead>
<tr>
<th><strong>Gadolinium Doped Ceria (Based on Cerium dioxide (1306-38-3))</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Causes serious eye irritation.

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Causes serious eye irritation.

---

**SECTION 12: Ecological information**

12.1. **Toxicity**

<table>
<thead>
<tr>
<th><strong>Gadolinium Doped Ceria (Based on Cerium dioxide (1306-38-3))</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fishes 1</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
</tr>
</tbody>
</table>

12.2. **Persistence and degradability**

**Gadolinium Doped Ceria**

Persistence and degradability : Not established.

12.3. **Bioaccumulative potential**

**Gadolinium Doped Ceria**

Bioaccumulative potential : Not established.

12.4. **Mobility in soil**

No additional information available
Gadolinium Doped Ceria
Safety Data Sheet
according to Regulation (EC) No. 453/2010

12.5. Results of PBT and vPvB assessment

<table>
<thead>
<tr>
<th>Gadolinium Doped Ceria</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT: not relevant – no registration required</td>
</tr>
<tr>
<td>vPvB: not relevant – no registration required</td>
</tr>
</tbody>
</table>

12.6. Other adverse effects

: Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Not considered a dangerous good for transport regulations

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable

14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available.

14.6. Special precautions for user

14.6.1. Overland transport

No additional information available

14.6.2. Transport by sea

No additional information available

14.6.3. Air transport

No additional information available

14.6.4. Inland waterway transport

No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions
Contains no REACH candidate substance
VOC content : 0 %

15.1.2. National regulations

Germany

Water hazard class (WGK) : 1 - slightly hazardous to water
WGK remark : Classification based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out
SECTION 16: Other information

Indication of changes:
Original Document.

Data sources
- Chemical Inspection & Regulation Service; accessed at: http://www.cirs-reach.com/Inventory/Global_Chemical_Inventories.html
- TSCA Chemical Substance Inventory. Accessed at http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html

Abbreviations and acronyms
- CAS (Chemical Abstracts Service) number.
- GHS: Globally Harmonized System (of Classification and Labeling) of Chemicals
- OSHA: Occupational Safety & Health Administration.
- TSCA: Toxic Substances Control Act.

Other information
- None.

Full text of R-, H- and EUH-phrases:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Irrit. 2</td>
<td>Serious eye damage/eye irritation Category 2</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>R36</td>
<td>Irritating to eyes.</td>
</tr>
<tr>
<td>Xi</td>
<td>Irritant</td>
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</table>

SDS EU (REACH Annex II)

SDS Prepared by: The Redstone Group, LLC
6397 Emerald Pkwy.
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Dublin, OH USA 43016
T 614-923-7472
www.redstonegrp.com

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.