SECTION 1: IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

1.1 Product identifiers
Product Name : ACS Material Cerium Oxide
Brand : ACS Material LLC
CAS-No. : 1306-38-3

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses : Laboratory chemicals, Manufacturing of substances

1.3 Details of the supplier of the safety data sheet
Company : ACS MATERIAL LLC
959 E Walnut Street, Suite 100
Pasadena, CA 91106
USA
Telephone : +1 (866)-227-0656
Fax : +1 (781)-518-0284

1.4 Emergency telephone number
Emergency Phone #: +1 (866)-227-0656

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Eye irritation (Category 2A), H319
Respiratory system, H335
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements
Pictogram

Signal word Warning

Hazard statement(s)
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do continue rinsing.
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.
P337+P313 If eye irritation persists get medical advice/attention.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/ container to an approved waste disposal plant.

Supplemental Hazard Statements
None

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS – none

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Concentration</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerium Oxide</td>
<td>&gt;99.99%</td>
<td>1306-38-3</td>
</tr>
</tbody>
</table>

For the full text of the phrases mentioned in this Section, see Section 16.

Hazardous impurities: None known.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a
physician.

**In case of skin contact**
Wash off with soap and plenty of water.

**In case of eye contact**
Flush eyes with water as a precaution.

**If swallowed**
Never give anything by mouth to an unconscious person. Rinse mouth with water.

### 4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

### 4.3 Indication of any immediate medical attention and special treatment needed
No data available

**SECTION 5: FIREFIGHTING MEASURES**

#### 5.1 Extinguishing media

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### 5.2 Special hazards arising from the substance or mixture
The product is not flammable

#### 5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

#### 5.4 Further information
No data available

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

#### 6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

#### 6.2 Environmental precautions
Do not let product enter drains.

#### 6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

#### 6.4 Reference to other sections
For disposal see section 13.

**SECTION 7: HANDLING AND STORAGE**
7.1 Precautions for safe handling

Suitable extinguishing media
Avoid contact with skin and eyes. Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

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

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin 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.

Body Protection
Choose Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
The EPA mandates the use of full face respirators with minimum N100 grade cartridges if there is any risk of exposure to the dust. For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains.
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

1) Appearance Form: powder
2) Odour Odourless
3) Odour Threshold No data available
4) pH No data available
5) Melting point/freezing point Melting point/freezing point: > 400 °C - OECD Test Guideline 102
6) Initial boiling point and boiling range > 400 °C - OECD Test Guideline 103
7) Flash point Not applicable
8) Evaporation rate No data available
9) Flammability (solid, gas) Not auto-flammable
10) Upper/lower flammability or explosive limits No data available
11) Vapour pressure No data available
12) Vapour density No data available
13) Relative density 7.13 g/cm³ at 25 °C
14) Water solubility Insoluble
15) Partition coefficient: n- octanol/water No data available
16) Auto-ignition temperature > 400 °C
17) Decomposition temperature No data available
18) Viscosity No data available
19) Explosive properties No data available
20) Oxidizing properties No data available

9.2 Other safety information
No data available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available.

10.5 Incompatible materials
Strong oxidizing agents
10.6 **Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - cerium oxides
Other decomposition products - No data available
In the event of fire: see section 5.

**SECTION 11: TOXICOLOGICAL INFORMATION**

11.1 **Information on toxicological effects**

**Acute toxicity**
LD50 Oral - Rat - male and female - > 5,000 mg/Kg (Cerium(IV) oxide)  
(OECD Test Guideline 401)  
LC50 Inhalation - Rat - male and female - 4 h - > 5.05 mg/L (Cerium(IV) oxide)  
(OECD Test Guideline 403)  
LD50 Dermal - Rat - male and female - > 2,000 mg/Kg (Cerium(IV) oxide)  
(OECD Test Guideline 402)  

**Skin corrosion/irritation**
Skin – Rabbit (Cerium(IV) oxide)  
Result: No skin irritation - 4 h  
(OECD Test Guideline 404)  

**Serious eye damage/eye irritation**
Eyes – Rabbit (Cerium(IV) oxide)  
Result: Mild eye irritation (OECD Test Guideline 405)  

**Respiratory or skin sensitisation**
Maximisation Test - Guinea pig(Cerium(IV) oxide)  
Result: Did not cause sensitisation on laboratory animals.  
(OECD Test Guideline 406)  

**Germ cell mutagenicity**
Ames test (Cerium(IV) oxide)  
S. typhimurium  
Result: negative  
Mutagenicity (micronucleus test)(Cerium(IV) oxide)  
Mouse - male and female  
Result: negative  

**Carcinogenicity**
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.  

**Reproductive toxicity**
No data available  

**Specific target organ toxicity - single exposure**
No data available  

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**Additional Information**
RTECS: FK6310000

Rare earth compounds may cause delayed blood clotting leading to hemorrhag heat, itching, and increased awareness of odor and taste. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Cerium(IV) oxide)

### SECTION 12: ECOLOGICAL INFORMATION

12.1 **Toxicity**

- Toxicity to fish: Semi-static test EC50 - Danio rerio (zebra fish) - > 200 mg/l – 72h (Cerium(IV) oxide)
- Toxicity to daphnia and other aquatic invertebrates: Immobilization EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 48 h (Cerium(IV) oxide) (OECD Test Guideline 202)
- Toxicity to bacteria: EC50 - Sludge Treatment - > 1,000 mg/l - 3 h (Cerium(IV) oxide)

12.2 **Persistance and degradability**
No data available

12.3 **Bioaccumulative potential**
No data available

12.4 **Mobility in soil**
No data available

12.5 **Results of PBT and vPvB assessment**
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 **Other adverse effects**
No data available

### SECTION 13: DISPOSAL CONSIDERATIONS

13.1 **Waste treatment methods**

- **Product**
  Offer surplus and non-recyclable solutions to a licensed disposal company.

- **Contaminated packaging**
  Dispose of as unused product.

### SECTION 14: TRANSPORT INFORMATION
14.1 UN number
ADR/RID: -  IMDG: -  IATA: -

14.2 UN proper shipping name
ADR/RID: Not dangerous goods
MDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)
ADR/RID: -  IMDG: -  IATA: -

14.4 Packaging group
ADR/RID: -  IMDG: -  IATA: -

14.5 Environmental hazards
ADR/RID: no  IMDG Marine pollutant: no  IATA: no

14.6 Special precautions for user
No data available

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006. Chemical safety assessment
For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.
Eye Irrit. Eye irritation
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

HMIS Rating
Health hazard: 1

Chronic Health Hazard:
Flammability: 0
Physical Hazard: 0

NFPA Rating
Health hazard: 1
Fire Hazard: 0
Reactivity Hazard: 0

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