SECTION 1: IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

1.1 Product identifiers

Product Name : ACS Material Yttrium Oxide
Brand : ACS Material LLC
CAS-No. : 1314-36-9

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
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.
Precautionary statement(s)

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ eye protection/ face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do continue rinsing.
P337+P313 If eye irritation persists get medical advice/attention.

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>Yttrium Oxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No</td>
<td>1314-36-9</td>
</tr>
<tr>
<td>EC-No.</td>
<td>215-233-5</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Yttrium(III) oxide, Yttria, diyttrium trioxide, yttrium</td>
</tr>
<tr>
<td>Linear formula</td>
<td>Y₂O₃</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>255.81 g/mol</td>
</tr>
</tbody>
</table>

Hazardous ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>Concentration</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yttrium Oxide</td>
<td>&gt;99.99%</td>
<td>1314-36-9</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**
Yttrium oxides

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**
Avoid dust formation. Avoid breathing vapours, mist or gas. Avoid breathing dust. For personal protection see section 8.

6.2 **Environmental precautions**
No special environmental precautions required.

6.3 **Methods and materials for containment and cleaning up**
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
General industrial hygiene practice.

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 body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
No special environmental precautions required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

1) Appearance
   Form: powder
   Colour: white

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  
   5.01 g/cm³ at 20 °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  
   The substance or mixture is not classified as oxidizing.

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
   Water, Strong acids, Carbon dioxide (CO2), Ammonium salts

10.6 Hazardous decomposition products
   Hazardous decomposition products formed under fire conditions - Yttrium 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 (Yttrium oxide) (OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - > 5.09 mg/L (Yttrium oxide) (OECD Test Guideline 436)
LD50 Intraperitoneal - Rat - 230 mg/Kg (Yttrium oxide)

Skin corrosion/irritation
Skin - Rabbit(Yttrium oxide)
Result: No skin irritation

Serious eye damage/eye irritation
Eyes - Rabbit(Yttrium oxide)
Result: Mild eye irritant

Respiratory or skin sensitisation
Maximisation Test - Guinea pig(Yttrium oxide)
Result: Did not cause sensitisation on laboratory animals. (Directive 67/548/EEC, Annex V, B.6.)

Germ cell mutagenicity
Chromosome aberration test in vitro(Yttrium oxide)
Chinese hamster fibroblasts
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: ZG3850000

Rare earth compounds may cause delayed blood clotting leading to hemorrhag heat, itching, and increased awareness of odor and taste., Coagulation abnormalities., Gastrointestinal disturbance, Skin contact or inhalation may result in:, Asthma, Cough, muscles, Damage to the lungs.. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.(Yttrium oxide)
SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence 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
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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
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

**HMIS Rating**

Health hazard: 1

**Chronic Health Hazard:**

Flammability: 0
Physical Hazard: 0

**NFPA Rating**

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

**Disclaimer:** ACS Material, LLC believes that the information in this Safety Data Sheet is accurate and represents the best and most current information available to us. ACS Material makes no representations or warranties either express or implied, regarding the suitability of the material for any purpose or the accuracy of the information contained within this document. Accordingly, ACS Material will not be responsible for damages resulting from use of or reliance upon this information.