I. IDENTIFICATION

EMERGENCY PHONE:
CHEMTREC - (800) 424-9300
CCN 19481

Salem Distributing Company, Inc.
5901 Gun Club Road
Winston-Salem, NC 27103
Information: (800) 234-1982

PRODUCT NAME: Eclipse
SYNONYMS: Cerium Oxide, Rare Earth Oxide/Fluoride

Recommended Use:
Glass, ceramic, and electronic/optical products

Restrictions:
N/A

II. HAZARD IDENTIFICATION

Classification (§1910.1200):
Not a hazardous product according to Globally harmonized System (GHS)

Signal Word/Symbols:

N/A

Hazard Statement:
Slightly hazardous for skin contact (irritant), eye contact (irritant), ingestion, and inhalation.

Precautionary Statement:
Do not eat, breathe or swallow. Keep away from food products and children.
III. COMPOSITION

<table>
<thead>
<tr>
<th>CHEMICAL NAME:</th>
<th>COMMON NAMES:</th>
<th>CAS:</th>
<th>% BY WEIGHT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerium Dioxide/Lanthanum Oxide</td>
<td>Cerium, Ceria</td>
<td>1306-38-3</td>
<td>&gt;60</td>
</tr>
<tr>
<td>Lanthanum Fluoride</td>
<td>N/A</td>
<td>&lt;20</td>
<td></td>
</tr>
</tbody>
</table>

*Information withheld as a trade secret

Classified Impurities and Additives:
N/A

IV. FIRST AID MEASURES

Inhalation:
If breathed in, move person into fresh air. If symptoms persist, call a physician.

Skin Contact:
Wash off with soap and water. If skin irritation persists, call a physician.

Eye Contact:
Rinse with running water whilst keeping the eyes wide open (at least 15 minutes). If eye irritation persists, consult a physician.

Ingestion:
If conscious, drink plenty of water. Never give anything by mouth to an unconscious person. Seek medical advice. Do not leave the victim unattended.

Symptoms/Effects:
Irritation

Level Of Medical Attention Needed:
Contact physician if symptoms persist.

V. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:
Water and foam. Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Collect contaminated fire...
extinguishing water separately. This must not be discharged into drains.

**Unsuitable Extinguishing Media:**

None known

**Specific Hazards:**

None known

**Special Protective Equipment:**

Gloves, in the case of dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

### VI. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**

Keep in well ventilated area.

**Protective Equipment:**

Wear suitable gloves, safety glasses, and protective clothing. If dust is present wear respirator.

**Emergency Procedures:**

Wear protective equipment and wash with water if necessary.

**Methods for Cleanup/Removal:**

Dam up and use non sparking tools. Sweep up and shovel to prevent buildup. Avoid contact with skin and eyes and wear a respirator if there is dust.

### VII. HANDLING AND STORAGE

**Handling Precautions:**

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

**Safe Storage Conditions:**

Provide sufficient air exchange and/or exhaust in work rooms. Dust must be extracted directly at the point of origin. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

**Incompatibilities:**

Strong acids and oxidizers.

### VIII. EXPOSURE CONTROLS AND PROTECTIVE EQUIPMENT

<table>
<thead>
<tr>
<th>OSHA PEL:</th>
<th>ACGIH TLV:</th>
<th>OTHER EXPOSURE LIMITS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None known</td>
<td>Rare Earth Oxides: 15mg/m³</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Appropriate Engineering Controls:

Use a respirator if needed and stay in a well ventilated area. Store in original container (polyethylene). Dust must be extracted directly at the point of origin.

Personal Protective Measures:

Wear suitable gloves, safety glasses, and protective clothing. If dust is present wear respirator. Wash hands before breaks and at the end of workday. The protective equipment must be selected in accordance with current CEN standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use.

IX. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance: | Odor: None | Odor Threshold: N/A | Ph: 7-9 |
| Melting/Freezing Point: 2600 °C | Boiling Point: N/A | Boiling Range: N/A |
| Flash Point: None | Evaporation Rate: None | Flammability (Solid, Gas): N/A |
| Upper/Lower Flammability/Explosive Limit: None | Vapor Pressure: None/solid | Vapor Density: None/solid |
| Relative Density: 6.8 | Solubility (ies): None known | Partition Coefficient: N-Octanol/Water: N/A |
| Auto Ignition Temperature: N/A | Decomposition Temperature: N/A | Viscosity: Not applicable, solid |

X. STABILITY AND REACTIVITY
Reactivity:
N/A

Chemical Stability:
Stable

Possibility of Hazardous Reactions:
None known

Conditions to Avoid: Static Discharge, Shock, Vibrations, Etc.
Dust generation, incompatible materials

Incompatible Materials:
Oxidizing agents and strong acids

Hazardous Decomposition Products:
None known

XI. TOXICOLOGICAL INFORMATION

Possible Exposure Routes (Inhalation Etc.):
Inhalation, skin contact, ingestion, and eye contact

Symptoms Related To Toxicological Characteristics:
Irritation

Delayed, Immediate, and Chronic Effects:
Irritation may persist

Numerical Toxicity Measurements:
Acute oral toxicity: Not classified as harmful if swallowed
Acute inhalation toxicity: LC50 - 4 h: 5.05 mg/l - rat
Acute dermal toxicity: LD50: > 2,000 mg/kg - rabbit
Acute toxicity (other routes of administration)
lanthanum oxide: LD50: 1,000 mg/kg - rat, female Intraperitoneal route

NTP/LARC/OSHA Known Carcinogen:
No genotoxicity, carcinogenic, mutagenic, or teratogenic effects known

XII. ECOLOGICAL INFORMATION

Ecotoxicity:

AQUATIC
Acute toxicity to fish:
cerium dioxide: LC50 - 96 h: > 100 mg/l - Danio rerio (zebra fish)
Method: OECD Test Guideline 203
Lanthanum oxide: LC50 - 96 h: > 100 mg/l - Danio rerio (zebra fish)

Acute toxicity to daphnia and other aquatic invertebrates:
Cerium dioxide: EC50 - 48 h: > 100 mg/l - Daphnia magna (Water flea)
Method: OECD Test Guideline 202

Lanthanum oxide: EC50 - 48 h: > 100 mg/l - Daphnia magna (Water flea)

Toxicity to aquatic plants:
Cerium dioxide: EC50 - 72 h: > 100 mg/l - Scenedesmus subspicatus
Method: OECD Test Guideline 201

NOEC: 50 mg/l - Scenedesmus subspicatus
Method: OECD Test Guideline 201

EC10: 91 mg/l - Scenedesmus subspicatus
Method: OECD Test Guideline 201

Lanthanum oxide: By analogy
EC50 - 72 h: > 100 mg/l - Scenedesmus subspicatus

Toxicity to microorganisms:
Cerium dioxide: EC50 - 3 h: > 1,003.8 mg/l - activated sludge
Method: OECD Test Guideline 209

Lanthanum oxide: By analogy
EC50 - 3 h: > 1,003.8 mg/l - activated sludge
Respiration inhibition

Chronic toxicity to daphnia and other aquatic invertebrates:
Cerium dioxide: NOEC: > 100 mg/l - 22 Days - Daphnia magna (Water flea)

Reproduction Test Method: OECD Test Guideline 211

Lanthanum oxide: NOEC: >= 100 mg/l - 21 d - Daphnia magna (Water flea)

Chronic Toxicity to aquatic plants:
Lanthanum oxide: The product does not have any known adverse effects on the aquatic organisms tested

TERRESTRIAL
Toxicity to soil dwelling organisms:
Cerium dioxide: NOEC: > 1,000 mg/kg - 14 Days - Eisenia fetida (earthworms)
Method: OECD Test Guideline 207
This product does not have any known adverse effect on the soil organisms tested.

NOEC: > 1,000 mg/kg - 28 Days - soil micro-organisms
Method: OECD Test Guideline 207
This product does not have any known adverse effect on the soil organisms tested.

lanthanum oxide: By analogy
NOEC: >= 1,000 mg/kg - 14 d - Eisenia fetida (earthworms)

NOEC: >= 1,000 mg/kg - 28 d - soil micro-organisms

Toxicity to terrestrial plants:
cerium dioxide: NOEC: > 1,000 mg/l - 17 Days - Avena sativa (oats)
Method: OECD Test Guideline 208
This product does not have any known adverse effects on the flora tested

NOEC: > 1,000 mg/l - 17 Days - Lactuca sativa (lettuce)
Method: OECD Test Guideline 208
This product does not have any known adverse effects on the flora tested

NOEC: > 1,000 mg/l - 18 Days - Brassica rapa
Method: OECD Test Guideline 208
This product does not have any known adverse effects on the flora tested

lanthanum oxide: By analogy
NOEC: >= 1,000 mg/kg - Lactuca sativa (lettuce)
Test period: 17 d

NOEC: >= 1,000 mg/kg - Avena sativa (oats)
Test period: 17 d

NOEC: >= 1,000 mg/kg - Brassica rapa
Test period: 18 d

**Persistence and Degradability:**
Mineral product, low degradation

**Bioaccumulative Potential:**
Not bioaccumulable

**Soil Mobility:**
Adsorbs into soil, will stay in soil and sedimentary regions
Other Adverse Effects:
Not classified as dangerous to the environment

XIII. DISPOSAL CONSIDERATIONS

Waste Residue and Disposal:
Clean with cold water. Dispose in accordance with local regulations

XIV. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>UN Number:</th>
<th>UN Proper Shipping Name:</th>
<th>Transport Hazard Class (es):</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Not hazardous</td>
<td>Not regulated as hazardous</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing Group:</th>
<th>Environmental Hazards:</th>
<th>Transport in Bulk (Annex LI MARPOL 73/78 and IBC Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>None</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Special Precautions:
None

XV. REGULATORY INFORMATION

Environmental/ Health/ Safety:

United States TSCA Inventory: y (positive listing)
On TSCA Inventory

Canadian Domestic Substances List (DSL): y (positive listing)
All components of this product are on the Canadian DSL.

Australia Inventory of Chemical Substances (AICS): y (positive listing)
On the inventory, or in compliance with the inventory

Japan. CSCL - Inventory of Existing and New Chemical Substances: y (positive listing)
On the inventory, or in compliance with the inventory

Korea. Korean Existing Chemicals Inventory (KECI): y (positive listing)
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances in China (IECSC): y (positive listing)
On the inventory, or in compliance with the inventory

XVI. OTHER INFORMATION
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