1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name PermeOx® Ultra
CAS-No 1305-79-9
Synonyms Calcium Peroxide.
Alternate Commercial Name PermeOx® Ultra 2018

Recommended use of the chemical and restrictions on use

Recommended Use: Environmental applications; For the remediation of contaminated groundwater
Restrictions on Use No uses to be advised against were identified.

Manufacturer/Supplier

PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
Phone: +1 267/ 422-2400 (General Information)
E-Mail: sdsinfo@peroxychem.com

Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 303/ 389-1409 (Medical - U.S. - Call Collect)
2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Oxidizing Solids</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Danger

Hazard Statements
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H272 - May intensify fire; oxidizer

Precautionary Statements - Prevention
P280 - Wear eye protection/face protection
P261 - Avoid breathing dust.
P271 - Use only outdoors or in a well-ventilated area
P210 - Keep away from heat
P220 - Keep/Store away from clothing/combustible materials
P221 - Take any precaution to avoid mixing with combustibles

Precautionary Statements - Response
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312 - Call a POISON CENTER or doctor if you feel unwell
P370 + P378 - In case of fire: Use water spray for extinction

Precautionary Statements - Storage
P403 - Store in a well-ventilated place

Precautionary Statements - Disposal
P501 - Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
No hazards not otherwise classified were identified.

Other Information
Reacts with moisture to liberate oxygen

Unknown acute toxicity
0% of the mixture consists of ingredient(s) of unknown toxicity
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Peroxide</td>
<td>1305-79-9</td>
<td>&gt;75</td>
</tr>
<tr>
<td>Calcium Hydroxide</td>
<td>1305-62-0</td>
<td>&lt;25</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

**Eye Contact**
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician.

**Skin Contact**
Wash off with soap and water. Get medical attention if irritation develops and persists.

**Inhalation**
Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

**Ingestion**
Rinse mouth with water and afterwards drink plenty of water or milk. Do not induce vomiting or give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice. Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**
Corneal lesions and irreversible damage if contact with the eyes.

**Indication of immediate medical attention and special treatment needed, if necessary**
Treat symptomatically

5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Flood with water.

**Unsuitable extinguishing media**
Dry chemical. Foam.

**Specific Hazards Arising from the Chemical**
Not flammable. Decomposes under fire conditions to release oxygen that intensifies the fire.

**Explosion data**
Not sensitive.

**Sensitivity to Mechanical Impact**
Not sensitive.

**Sensitivity to Static Discharge**
Not sensitive.

**Protective equipment and precautions for firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Move containers from fire area if you can do it without risk.

6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions**
Avoid contact with the skin and the eyes. Avoid dust formation. Ensure adequate ventilation. For personal protection see Section 8.

**Other**
For further clean-up instructions, call PeroxyChem Emergency Hotline number listed in Section 1 “Product and Company Identification” above.

**Environmental Precautions**
Prevent material from entering into soil, ditches, sewers, waterways, and/or groundwater. See Section 12, Ecological Information for more detailed information.

**Methods for Containment**
Vacuum or shovel waste into a drum and label contents for disposal. Do not return product to the original storage container/tank due to risk of decomposition. Keep combustibles
(wood, paper, oil, etc) away from spilled material.

Methods for cleaning up
After cleaning, flush away traces with water. Do not flush powdered material to sewer; Runoff to sewer may create fire or explosion hazard.

### 7. HANDLING AND STORAGE

**Handling**
Avoid contact with skin and eyes. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment if release of airborne dust is expected. If compounded with organics or combustible materials be sure to exclude moisture.

**Storage**
Keep tightly closed in a dry and cool place. Do not store near combustible materials. Keep away from heat and sources of ignition i.e., steam pipes, radiant heaters, hot air vents or welding sparks. Reacts with moisture. Keep container tightly closed.

**Incompatible products**
Heavy metals. Combustible materials.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Control parameters

#### Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Hydroxide</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 15 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>Mexico: TWA 5 mg/m³</td>
</tr>
<tr>
<td>1305-62-0</td>
<td></td>
<td>TWA: 5 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>British Columbia</th>
<th>Quebec</th>
<th>Ontario TWAEV</th>
<th>Alberta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Hydroxide</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>1305-62-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Appropriate engineering controls

**Engineering measures**
Ensure adequate ventilation.

**Individual protection measures, such as personal protective equipment**

**Eye/Face Protection**
For dust, splash, mist or spray exposure, wear chemical protective goggles.

**Skin and Body Protection**
Wear suitable protective clothing. Protective shoes or boots.

**Hand Protection**
Rubber/latex/neoprene or other suitable chemical resistant gloves. Wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

**Respiratory Protection**
For dust, splash, mist or spray exposures wear a filtering mask.

**Hygiene measures**
Clean water, preferably an eyewash station and a safety shower, should be available for washing in case of eye or skin contamination. Handle in accordance with good industrial hygiene and safety practice.

**General information**
If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Powder</td>
</tr>
<tr>
<td><strong>Physical State</strong></td>
<td>Solid</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>White to off white</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>odorless</td>
</tr>
<tr>
<td><strong>Odor threshold</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>11.4 - 11.7 (1 % suspension in water) @ 25 °C</td>
</tr>
</tbody>
</table>
**PermeOx® Ultra**

**SDS #**: 1305-79-9-2  
**Revision date**: 2018-04-10  
**Version**: 1.02

**Melting point/freezing point**  
Decomposes on heating @ ~275 °C

**Boiling Point/Range**  
No information available

**Flash point**  
No information available

**Evaporation Rate**  
No information available

**Flammability (solid, gas)**  
Substance does not burn but will support combustion

**Flammability Limit in Air**  
Not applicable

- **Upper flammability limit:** No information available
- **Lower flammability limit:** No information available

**Vapor pressure**  
No information available

**Vapor density**  
No information available

**Density**  
No information available

**Specific gravity**  
2.92

**Water solubility**  
slightly soluble

**Solubility in other solvents**  
Soluble in acids

**Partition coefficient**  
No information available

**Autoignition temperature**  
Product is not self-ignitable.

**Decomposition temperature**  
275 °C

**Viscosity, kinematic**  
No information available (Solid)

**Viscosity, dynamic**  
No information available

**Explosive properties**  
Not explosive

**Kst**  
0

**Oxidizing properties**  
Strong oxidizer

**Molecular weight**  
72.8 (CaO2)

**Bulk density**  
34 lb/cu ft (loose)

### 10. STABILITY AND REACTIVITY

**Reactivity**  
Oxidizer: Avoid contact with combustible materials.

**Chemical Stability**  
Stable under recommended storage conditions. Decomposition can occur on exposure to heat or moisture.

**Possibility of Hazardous Reactions**  
Contamination, heat, and humid conditions will enhance and accelerate decomposition. However, unlike most oxidizers, decomposition is endothermic.

**Hazardous polymerization**  
Hazardous polymerization does not occur.

**Conditions to avoid**  

**Incompatible materials**  
Heavy metals. Combustible materials.

**Hazardous Decomposition Products**  
Oxygen which supports combustion. Calcium oxides

### 11. TOXICOLOGICAL INFORMATION

**Product Information**

- **Unknown acute toxicity**  
  0% of the mixture consists of ingredient(s) of unknown toxicity

- **LD50 Oral**  
  > 5 g/kg (rat)

- **LD50 Dermal**  
  > 10 g/kg (rat)

- **LC50 Inhalation**  
  > 17 mg/L 1 hr (rat)

- **Serious eye damage/eye irritation**  
  Corrosive. Risk of serious damage to eyes.

- **Skin corrosion/irritation**  
  Non-irritating (rabbit). May cause skin irritation in susceptible persons.

- **Sensitization**  
  No information available.

**Chemical name**  
Calcium Hydroxide (1305-62-0)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
<th>NOAEL Oral Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Hydroxide (1305-62-0)</td>
<td>7340 mg/kg ( Rat )</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Information on toxicological effects**
Symptoms

Dust is irritating eyes, nose, throat, and lungs.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity

There are no known carcinogenic chemicals in this product.

Mutagenicity

This product is not recognized as mutagenic by Research Agencies.

Reproductive toxicity

This product is not recognized as reprotox by Research Agencies.

STOT - single exposure

May cause respiratory irritation.

STOT - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects

The environmental impact of this product has not been fully investigated

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to Microorganisms</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Hydroxide</td>
<td></td>
<td>96 h LC50 = 160 mg/L (Gambusia affinis) static</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability

Biodegradability does not pertain to inorganic substances.

Bioaccumulation

Does not bioaccumulate.

Mobility

No information available.

Other Adverse Effects

None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods

This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Dispose of in accordance with local regulations.

US EPA Waste Number

D001.

Contaminated Packaging

Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

<table>
<thead>
<tr>
<th>UN/ID no</th>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1457</td>
<td>CALCIUM PEROXIDE MIXTURE</td>
<td>5.1</td>
</tr>
</tbody>
</table>
Packing Group  II

TDG
UN/ID no  1457
Proper Shipping Name  CALCIUM PEROXIDE MIXTURE
Hazard class  5.1
Packing Group  II

ICAO/IATA
UN/ID no  1457
Proper Shipping Name  CALCIUM PEROXIDE MIXTURE
Hazard class  5.1
Packing Group  II

IMDG/IMO
UN/ID no  1457
Proper Shipping Name  CALCIUM PEROXIDE MIXTURE
Hazard class  5.1
Packing Group  II

ADR/RID
UN/ID no  UN 1457
Proper Shipping Name  CALCIUM PEROXIDE MIXTURE
Hazard class  5.1
Packing Group  II

OTHER INFORMATION
This material is shipped in 25 lb. plastic pails, and 30 lb. and 100 lb. fiber drums.
15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
This product has the following hazards that are reportable under The Emergency Planning and Community Right-to-Know rule (EPCRA Tier II):

- Oxidizer
- Serious eye damage/eye irritation
- Specific Target Organ Toxicity (STOT) - Single Exposure

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA/EPCRA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State Regulations

U.S. State Right-to-Know Regulations
This product contains the following substances regulated under state Right-to-Know laws:

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Peroxide</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium Hydroxide</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

California Proposition 65
This product does not contain any Proposition 65 chemicals.

CANADA

Environmental Emergencies
This product contains no substances listed under Canada's Environmental Emergency regulations.

Canadian National Pollutant Release Inventory
This product contains no substances reportable under Canada's National Pollutant Release Inventory regulations.

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/EL INCS (Europe)</th>
<th>ENCS (Japan)</th>
<th>China (IECSC)</th>
<th>KECL (Korea)</th>
<th>PICCS (Philippines)</th>
<th>AICS (Australia)</th>
<th>NZIoC (New Zealand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Peroxide 1305-79-9</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Calcium Hydroxide 1305-62-0</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Stability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>OX</td>
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<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical hazard</th>
<th>Special precautions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>J</td>
</tr>
</tbody>
</table>

NFPA/HMIS Ratings Legend

Special Hazards: OX = Oxidizer
Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

Revision date: 2018-04-10
Revision note: SDS sections updated: 1, 15
Issuing Date: 2017-10-17

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Prepared By:
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End of Safety Data Sheet