

SAFETY DATA SHEET

PermeOx® Ultra

SDS #: 1305-79-9-2
Revision date: 2018-01-31
Version 2.02



1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

| | |
|---------------------------|--------------------------|
| Chemical name | CALCIUM PEROXIDE MIXTURE |
| Product Name | PermeOx® Ultra |
| Alternate Commercial Name | PermeOx® Ultra 2018 |
| Synonyms | Calcium Peroxide |
| CAS-No | 1305-79-9 |
| EC-No | 215-39-4 |

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

Recommended Use: Environmental applications For the remediation of contaminated groundwater.

Restrictions on Use No uses to be advised against were identified

1.3. Details of the supplier of the safety data sheet

Manufacturer
PeroxyChem LCC
Only Representative: PeroxyChem Spain s.l.u.
C/ Afueras s/n 50784 La Zaida (Zaragoza) Spain
Tel: +34 976 179600

Manufacturer/Supplier
PeroxyChem LCC
Only Representative: PeroxyChem Spain s.l.u.
C/ Afueras s/n 50784 La Zaida (Zaragoza) Spain
Tel: +34 976 179600

E-mail address sdsinfo-emea@peroxychem.com

1.4. Emergency telephone numbers

La Zaida:
Tel: +34 976 17 96 00
Fax: +34 976 17 96 01

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Classified as dangerous in accordance with Regulation (EC) No 1272/2008.

| | |
|---|---------------------------------|
| Serious eye damage/eye irritation | Category 1 |
| Specific target organ systemic toxicity (single exposure) | Category 3 Respiratory Irritant |
| Oxidizing Solids | Category 2 |

For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16.

2.2. Label Elements



Signal word:

DANGER

Hazard Statements

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

Precautionary statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
 P221 - Take any precaution to avoid mixing with combustibles
 P280 - Wear protective gloves/ protective clothing/ 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
 P261 - Avoid breathing dust.

2.3. OTHER INFORMATION

General Hazards

Reacts with moisture to liberate oxygen

3. COMPOSITION/INFORMATION ON INGREDIENTS

Multi-constituent substance

CALCIUM PEROXIDE MIXTURE

| Chemical name | EC-No | CAS-No | Weight % | Classification according to Regulation (EC) No. 1272/2008 [CLP] | REACH registration number |
|-------------------|-----------|-----------|----------|---|---------------------------|
| Calcium Peroxide | 215-139-4 | 1305-79-9 | >75 | Eye corr. 1 (H318) STOT SE 3 (H335) Ox. Sol. 2 (H272) | see 930-930-0 |
| Calcium Hydroxide | 215-137-3 | 1305-62-0 | <25 | Skin corr. 1 (H314) eye. corr. 1 (H318) STOT SE 3(H335) | see 930-930-0 |

For the full text of the H- and EUH- phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES**4.1. Description of first-aid measures**

| | |
|---------------------|---|
| Skin Contact | Wash off with soap and water. Get medical attention if irritation develops and persists. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. |
| 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. |

4.2. Most important symptoms and effects, both acute and delayed

Corneal lesions and irreversible damage if contact with the eyes

4.3. Indication of immediate medical attention and special treatment needed, if necessary

| | |
|---|------------------------|
| Indication of immediate medical attention and special treatment needed, if necessary | Treat symptomatically. |
|---|------------------------|

5. FIRE-FIGHTING MEASURES**5.1. Extinguishing media**

Suitable Extinguishing Media
Flood with water

5.2. Special hazards arising from the substance or mixture

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
Decomposes under fire conditions to release oxygen that intensifies the fire.

5.3. Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental Precautions

Local authorities should be advised if significant spillages cannot be contained. Try to prevent the material from entering drains or water courses.

6.3. Methods and materials for containment and cleaning up

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

6.4. Reference to other sections.

See section 13 for disposal information.

7. HANDLING AND STORAGE

7.1. Precautions for Safe 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.

7.2. Conditions for safe storage, including any incompatibilities

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.

Materials to avoid

Heavy metals. Combustible materials.

7.3. Specific end uses

Refer to Section 1 and the Annex.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits

The product does not contain any hazardous materials with occupational exposure limits established for the EEC or its members

| Chemical name | European Union | The United Kingdom | Ireland |
|--------------------------------|-------------------------|---|---|
| Calcium Hydroxide 1305-62-0 | | STEL 4 mg/m ³ STEL 15 mg/m ³ TWA 1 mg/m ³ TWA 5 mg/m ³ | TWA 1 mg/m ³ STEL 4 mg/m ³ |
| Chemical name | France | Spain | Portugal |
| Calcium Hydroxide 1305-62-0 | TWA 5 mg/m ³ | TWA 1 mg/m ³ STEL 4 mg/m ³ | TWA 5 mg/m ³ |
| Chemical name | Germany | Italy | The Netherlands |
| Calcium Hydroxide | AGW 1 mg/m ³ | | STEL 4 mg/m ³ |

| | | | |
|--------------------------------|---|--|--|
| 1305-62-0 | | | TWA 1 mg/m ³ |
| Chemical name | Denmark | Finland | Norway |
| Calcium Hydroxide 1305-62-0 | TWA 1 mg/m ³ TWA 5 mg/m ³ | TWA 1 mg/m ³ STEL 4 mg/m ³ | TWA 1 mg/m ³ STEL 2 mg/m ³ |
| Chemical name | Sweden | Austria | Slovenia |
| Calcium Hydroxide 1305-62-0 | TLV 1 mg/m ³ Binding STEL 4 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ |
| Chemical name | Luxembourg | Poland | Estonia |
| Calcium Hydroxide 1305-62-0 | TWA 1 mg/m ³ | TWA 2 mg/m ³ TWA 1 mg/m ³ STEL 4 mg/m ³ STEL 6 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ |
| Chemical name | Latvia | Lithuania | Czech Republic |
| Calcium Hydroxide 1305-62-0 | TWA 1 mg/m ³ STEL 4 mg/m ³ | S* TWA 1 mg/m ³ STEL 4 mg/m ³ | TWA 1 mg/m ³ Ceiling 4 mg/m ³ |
| Chemical name | Romania | Bulgaria | Russia |
| Calcium Hydroxide 1305-62-0 | STEL 4 mg/m ³ TWA 1 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ | S* MAC 2 mg/m ³ |
| Chemical name | Greece | Hungary | Croatia |
| Calcium Hydroxide 1305-62-0 | TWA 1 mg/m ³ STEL 4 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ | STEL 4 mg/m ³ TWA 1 mg/m ³ |

| DNELs - General Population | | | | |
|-------------------------------|-------------------|-------------|-----------------------|-------------------------|
| Calcium Hydroxide (1305-62-0) | | | | |
| Exposure pattern | Route of Exposure | Description | DNEL/DMEL | Most Sensitive Endpoint |
| Long term - local | Inhalation | DNEL | 1.0 mg/m ³ | |
| Acute - local | Inhalation | DNEL | 4.0 mg/m ³ | |

8.2. Exposure Controls

Engineering measures

Ensure adequate ventilation.

Personal protective equipment

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.

Respiratory Protection

Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust): Effective dust mask. The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.

Eye/Face Protection

For dust, splash, mist or spray exposure, wear chemical protective goggles.

Skin and Body Protection

Long sleeved clothing. Chemical resistant apron. Rubber or plastic 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.

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.

Environmental exposure controls

The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

| | |
|----------------|--------------------|
| Appearance | Powder |
| Color | White to off white |
| Physical State | Solid |
| Odor | odorless |

| | |
|---------------------------|--|
| Odor threshold | Not applicable |
| pH | 11.4 - 11.7 @ 25 °C |
| Flash point | Not flammable No information available |
| Melting Point/Range | Decomposes on heating @ ~275 °C |
| Freezing Point | No information available |
| Boiling Point/Range | No information available |
| Autoignition temperature | Product is not self-ignitable. |
| Explosive properties | Not explosive |
| Vapor pressure | No information available |
| Vapor density | No information available |
| Relative Density | ~ 2.92 |
| Partition coefficient | No information available |
| Water solubility | slightly soluble |
| Viscosity | Not applicable |
| Evaporation Rate | No data available |
| Decomposition temperature | 275 °C |

9.2. OTHER INFORMATION

| | |
|------------------|---------------------------------------|
| Bulk Density | 544.6 kg/m ³ (34 lb/cu ft) |
| Molecular weight | 72.8 (CaO ₂) |

10. STABILITY AND REACTIVITY

10.1. Reactivity

None under normal use conditions

10.2. Chemical Stability

Stable under recommended storage conditions.

10.3. Possibility of Hazardous Reactions

Contamination, heat, and humid conditions will enhance and accelerate decomposition. However, unlike most oxidizers, decomposition is endothermic.

10.4. Conditions to avoid

Heat. (decomposes at 275 °C). Humid air. Contamination. Grinding with organics.

10.5. incompatible materials

Heavy metals. Combustible materials.

10.6. Hazardous Decomposition Products

Oxygen which supports combustion. Calcium oxides

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

| | |
|-----------------|----------------------|
| LD50 Dermal | > 10 g/kg (rat) |
| LD50 Oral | > 5 g/kg (rat) |
| LC50 Inhalation | > 17 mg/L 1 hr (rat) |

Skin Contact Non-irritant.
Eye Contact Corrosive to the eyes and may cause severe damage including blindness.
Inhalation Irritating to respiratory system.

Chronic toxicity

Sensitization No information available.
Carcinogenicity There are no known carcinogenic chemicals in this product.
Mutagenicity This product is not recognized as mutagenic by Research Agencies

12. ECOLOGICAL INFORMATION**12.1. Toxicity****Ecotoxicity effects**

The environmental impact of this product has not been fully investigated.

| Chemical name | Toxicity to algae | Toxicity to fish | Toxicity to Microorganisms | Toxicity to daphnia and other aquatic invertebrates |
|-------------------|-------------------|--|----------------------------|---|
| Calcium Hydroxide | | 96 h LC50: = 160 mg/L (Gambusia affinis) static | | |

12.2. Persistence and degradability

Biodegradability does not pertain to inorganic substances.

12.3. Bioaccumulative potential

Does not bioaccumulate.

12.4. Mobility in soil

No information available.

12.5. Results of PBT and vPvB assessment

PBT/vPvB assessment is not required for inorganic substances.

12.6. Other Adverse Effects

None known.

13. DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Product / Packaging disposal Dispose of as hazardous waste in compliance with local and national regulations.
Contaminated Packaging Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

ADR/RID

UN/ID no UN 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

ICAO/IATA

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

Transport Symbol**Environmental Hazards**

This product contains no chemical substance that is listed as a marine pollutant according to DOT

Special Precautions for users

According to United Nations "Recommendations on the transport of dangerous goods"

Transport in bulk according to MARPOL 73/78 and the IBC Code

See IMDG above

15. REGULATORY INFORMATION

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

International Inventories

| Chemical name | TSCA (United States) | DSL (Canada) | EINECS/ELI NCS (Europe) | ENCS (Japan) | China (IECSC) | KECL (Korea) | PICCS (Philippines) | AICS (Australia) | NZIoC (New Zealand) |
|--------------------------------|-------------------------|-----------------|-------------------------------|-----------------|------------------|-----------------|------------------------|---------------------|------------------------|
| Calcium Peroxide 1305-79-9 | X | X | 215-139-4 | X | X | X | X | X | X |
| Calcium Hydroxide 1305-62-0 | X | X | 215-137-3 | X | X | X | X | X | X |

Directive 2008/98/EC on waste

Applicable

CWC (Chemical Weapons Convention) - Annex on Chemicals

Not applicable

EU Export and import of dangerous chemicals (Regulation (EC) No 304/2003)

Not Applicable

Water contamination class (Germany):

No information available

15.2. Chemical Safety Report

A Chemical Safety Assessment has not yet been completed for this substance.

16. OTHER INFORMATION

Full text of H-phrases referred to in sections 2 and 3

H272 - May intensify fire; oxidizer

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

Issuing Date: 2017-10-17

Restrictions on Use

This product's foreseen or recommended applications are: Environmental applications, For the remediation of contaminated groundwater

Revision date: 2018-01-31

Revision note SDS sections updated: 1, 15

List of Abbreviations and Acronyms

ATE Acute Toxicity Estimate
 ADR European Agreement concerning the International Carriage of Dangerous Goods by Road
 AND European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 CE50 Concentración Efectiva MediaCEN European Committee for Standardisation
 C&L Classification and Labelling
 CLP Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
 CLV Ceiling Limit Value Par CAS# Chemical Abstracts Service number
 CMR Carcinogen, Mutagen, or Reproductive Toxicant
 CSA Chemical Safety Assessment
 CSR Chemical Safety Report
 DNEL Derived No Effect Level
 DOT Department of Transportation
 DPD Dangerous Preparations Directive 1999/45/EC
 DSD Dangerous Substances Directive 67/548/EEC
 DU Downstream User
 EC European Community
 ECHA European Chemicals Agency
 EC-Number EINECS and ELINCS Number (see also EINECS and ELINCS)
 EEA European Economic Area (EU + Iceland, Liechtenstein and Norway)
 EEC European Economic Community
 EINECS European Inventory of Existing Commercial Substances
 ELINCS European List of notified Chemical Substances
 EN European Standard
 EQS Environmental Quality Standard
 EU European Union
 Euphrac European Phrase Catalogue EWC
 European Waste Catalogue (replaced by LoW –see below)
 FDS Ficha de Datos de Seguridad
 GES Generic Exposure Scenario
 GHS Globally Harmonized System
 IATA International Air Transport Association
 ICAO-TI Technical Instructions for the Safe Transport of Dangerous Goods by Air
 IMDG International Maritime Dangerous Goods
 IMO International Maritime Organization
 IMSBC International Maritime Solid Bulk Cargoes
 IT Information Technology
 IUCLID International Uniform Chemical Information Database
 IUPAC International Union for Pure Applied Chemistry
 JRC Joint Research Centre
 Kow octanol-water partition coefficient
 LC50 Lethal Concentration to 50 % of a test population Lethal Dose to 50% of a test population (Median Lethal Dose)
 LE Legal Entity

LLV Level Limit Value
LoW List of Wastes (see <http://ec.europa.eu/environment/waste/framework/list.htm>)
LR Lead Registrant
M/I Manufacturer / Importer
MS Member States
MSDS Material Safety Data Sheet
NOEC No observed effect concentration
OC Operational Conditions
OECD Organization for Economic Co-operation and Development
OEL Occupational Exposure Limit
OJ Official Journal
OR Only Representative
OSHA European Agency for Safety and Health at work
PBT Persistent, Bioaccumulative and Toxic substance
PEC Predicted Effect Concentration
PNEC(s) Predicted No Effect Concentration(s)
PPE Personal Protection Equipment
(Q)SAR Qualitative Structure Activity Relationship
RCR Risk Characterization ratio
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID Regulations concerning the International Carriage of Dangerous Goods by Rail
RIP REACH Implementation Project
RMM Risk Management Measure
SADT Self-accelerating decomposition temperature
SCBA Self-Contained Breathing Apparatus
SDS Safety data sheet
SIEF Substance Information Exchange Forum
SME Small and Medium sized Enterprises
STEL Short-term exposure limit
STOT Specific Target Organ Toxicity (STOT)
RE Repeated Exposure(STOT)
SE Single Exposure Par SVHC Substances of Very High Concern
TSCA Toxic Substances Control Act
TWA Time Weighed Average
UN United Nations
vPvB Very Persistent and Very Bioaccumulative / mPmB Muy Persistente y Muy Bioacumulativo
WGK Wassergefährdungsklassen

Disclaimer

PeroxyChem believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN.** The information provided herein relates only to the specified product designated and may not be applicable where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of PeroxyChem, PeroxyChem expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

Prepared By:

PeroxyChem
© 2019 PeroxyChem. All Rights Reserved.

End of Safety Data Sheet