

# HYDRATED LIME

## MATERIAL SAFETY DATASHEET



### Section 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product Identifier

Hydrated lime (Synonyms - Calcium dihydroxide, Calcium hydrate, Calcium hydroxide, Lime putty, Lime water, Slaked lime)  
EINECS: 215-137-3  
CAS: 1305-62-0  
Reach Registration No. 01-2119475151-45-0135

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

Professional and Consumer use (DIY – do it yourself) as a building and construction material. No uses advised against.

#### 1.3 Details of the supplier of the safety data sheet

CEMEX UK Operations Ltd  
CEMEX House, Evreux Way  
Rugby, Warwickshire CV21 2DT  
Tel: 01788 517000 (out of hours 01932 568833)  
Fax: 01788 517009  
www.cemex.co.uk

#### 1.4 Emergency Telephone Number

01788 517000 (Available 9am–5pm Mon–Fri)

01932 568833 (Available outside normal office hours)

Fax: 01788 517009

Email: gb-enquiries@cemex.com

### Section 2: Hazard information

#### 2.1 Classification of the substance or mixture According to Regulation (EC) No 1272/2008

HAZARD CLASS	HAZARD CATEGORY
Skin irritation	2
Serious eye damage/eye irritation	1
Specific target organ toxicity single exposure respiratory tract irritation	3

#### Hazard statements:

H315: Causes skin irritation  
H318: Causes serious eye damage  
H335: May cause respiratory irritation

**Classification according to Council Directive 67/548/EEC:**  
Xi irritant

#### 2.2 Label elements

**According to Regulation (EC) No 1272/2008:**



#### Danger:

P102: Keep out of reach of children  
P280: Wear protective gloves/protective clothing/eye protection/face protection  
P305+P351+P310: IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTRE or doctor/physician  
P302+P352: IF ON SKIN: Wash with plenty of water  
P261: Avoid breathing dust/spray  
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P501: Dispose of contents/container in accordance with current waste regulations.

Wear protective gloves/protective clothing/eye protection/face protection.

**If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

**If on skin:** Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Avoid breathing dust/fume/gas/mist/vapours/spray.

**If inhaled:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

**According to Council Directive 67/548/EEC:**



#### Indication of danger:

Xi irritant

**Risk phrases:**

R37: Irritating to respiratory system  
 R38: Irritating to skin  
 R41: Risk of serious damage to eyes

**Safety phrases:**

S2: Keep out of the reach of children  
 S25: Avoid contact with eyes  
 S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
 S37: Wear suitable gloves  
 S39: Wear eye/face protection

**2.3 Other hazards**

The substance does not meet the criteria for PBT or vPvB substance. No other hazards identified.

**Section 3: Composition/information on ingredients****3.1 Substances**

Main constituent:  
 Name: Calcium dihydroxide  
 CAS: 1305-62-0  
 EINECS: 215-137-3

**Impurities:**

No impurities relevant for classification and labelling. Small quantities of calcium carbonate, calcium oxide and impurities. Impurities in lime products will vary from source to source.

**Section 4: Emergency action****4.1 First aid measures**

**General notes:** No known delayed effects. Consult a physician for all exposures except for minor instances.

Following contact with eyes: Rinse eyes immediately with plenty of water and seek medical advice.

**Following skin contact:** Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.

**Following inhalation:** Move source of dust or move person to fresh air. Obtain medical attention immediately

**Following ingestion:** Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Obtain medical attention.

**Most important symptoms and effects, both acute and delayed**

Calcium dihydroxide is not acutely toxic via the oral, dermal, or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entails a risk of serious damage to the eye.

There is no concern for adverse systemic effects because local effects (pH effect) are the major health hazard.

**Indication of any immediate medical attention and special treatment needed**

Follow the advice given in section 4.1

**4.2 Fire-fighting measures**

**Suitable Extinguishing media:** The product is not combustible. Use a dry powder, foam or CO<sub>2</sub> fire extinguisher to extinguish the surrounding fire. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media:** Do not use water.

**Special hazards arising from the substance or mixture:** None

**Advice for fire-fighters:** Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Section 5: Accidental release measures****5.1 Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel:**

- Ensure adequate ventilation.
- Keep dust levels to a minimum.
- Keep unprotected persons away.
- Avoid contact with skin, eyes, and clothing.
- Wear suitable protective equipment. (see section 8)
- Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment. (see section 8)

**For emergency responders:**

See above.

**5.2 Environmental precautions**

Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

**5.3 Methods and material for containment and cleaning up**

- In all cases avoid dust formation.
- Keep the material dry if possible.
- Pick up the product mechanically in a dry way.
- Use vacuum suction unit, or shovel into bags.

**5.4 Reference to other sections**

See sections 8 and 13 for more details

## Section 6: Handling and storage

### 6.1 Precautions for safe handling

**Protective Measures:** Avoid contact with skin and eyes. Wear protective equipment (refer to section 8 of this safety data sheet). Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimise dust generation.

Enclose dust sources, use exhaust ventilation (dust collector at handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC.

**Information on general occupational hygiene:** Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

### 6.2 Conditions for safe storage, including any incompatibilities

The substance should be stored under dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose-designed silos. Keep away from acids, significant quantities of paper, straw, and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage if there is a risk of contact with water.

### 6.3. Specific end use(s)

No additional information for the specific end uses (see section 1.2).

## Section 7: Handling and storage

### 7.1 Control parameters

SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6): Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m<sup>3</sup> respirable dust of calcium dihydroxide

Short-term exposure limit (STEL), 15 min: 4 mg/m<sup>3</sup> respirable dust of calcium dihydroxide

PNEC aqua = 490 µg/l

PNEC soil/groundwater = 1080 mg/l

### 7.2 Exposure controls

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.

**Appropriate engineering controls:** If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits.

Individual protection measures such as personal protection equipment



**Eye /face protection:** Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.



**Skin protection:** Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.



**Respiratory protection:** Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended depending on the expected exposure levels. When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. It should be adapted to the dust level and conform to the relevant EN standard.

**Environmental exposure controls:** All ventilation systems should be filtered before discharge to atmosphere. Avoid releasing to the environment. Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.

## Section 8: Physical and chemical properties

### 8.1 Information on basic physical and chemical properties

**Appearance:** White or off-white (beige) fine powder

**Odour:** odourless

**Odour threshold:** not applicable

**pH:** 12.4 (saturated solution at 20 °C)

**Melting point:** > 450 °C (study result, EU A.1 method)

**Boiling point:** not applicable (solid with a melting point > 450 °C)

**Flash point:** not applicable (solid with a melting point > 450 °C)

**Evaporation rate:** not applicable (solid with a melting point > 450 °C)

**Flammability:** non flammable (study result, EU A.10 method)

**Explosive limits:** non explosive (void of any chemical structures commonly associated with explosive properties)

**Vapour pressure:** not applicable (solid with a melting point > 450 °C)

**Vapour density:** not applicable

**Relative density:** 2.24 (study result, EU A.3 method)

**Solubility in water:** 1844.9 mg/L (study results, EU A.6 method)

**Partition coefficient:** not applicable (inorganic substance)

**Auto ignition temperature:** no relative self-ignition temperature below 400 °C (study result, EU A.16 method)

**Decomposition temperature:** When heated above 580°C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H<sub>2</sub>O)

**Viscosity:** not applicable (solid with a melting point > 450 °C)

**Oxidising properties:** no oxidising properties (Based on the chemical structure, the substance does not contain a surplus of oxygen or any structural groups known to be correlated with a tendency to react exothermally with combustible material)

## 8.2 Other information

Not applicable.

## Section 9: Stability and reactivity

### 9.1 Reactivity

In aqueous media Ca(OH)<sub>2</sub> dissociates resulting in the formation of calcium cations and hydroxyl anions (when below the limit of water solubility).

### 9.2 Chemical stability

Under normal conditions of use and storage, calcium dihydroxide is stable.

### 9.3 Possibility of hazardous reactions

Calcium dihydroxide reacts exothermically with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H<sub>2</sub>O):  $\text{Ca(OH)}_2 \rightarrow \text{CaO} + \text{H}_2\text{O}$ .

Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

### 9.4 Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

### 9.5 Incompatible materials

Calcium dihydroxide reacts exothermically with acids to form salts. Calcium dihydroxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen.  $\text{Ca(OH)}_2 + 2 \text{Al} + 6 \text{H}_2\text{O} \rightarrow \text{Ca[Al(OH)}_4\text{]}_2 + 3 \text{H}_2$

### 9.6 Hazardous decomposition products

None.

**Further information:** Calcium dihydroxide reacts with carbon dioxide to form calcium carbonate, which is a common material in nature.

## Section 10: Toxicological information

### 10.1 Information on toxicological effects

(Key - Toxicity endpoints: Outcome of the effects assessment)

**Absorption:** The primary health effect of calcium dihydroxide is local irritation due to a pH shift. Therefore, absorption is not a relevant parameter for the effects assessment.

Acute toxicity: Calcium dihydroxide is not acutely toxic. Oral LD<sub>50</sub> > 2000 mg/kg bw (OECD 425, rat)  
Dermal LD<sub>50</sub> > 2500 mg/kg bw (OECD 402, rabbit)  
Inhalation no data available  
Classification for acute toxicity is not warranted.  
For irritating effects to the respiratory tract see below.

#### Irritation / corrosion:

**Eye irritation:** Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit)).

**Skin irritation:** Calcium dihydroxide is irritating to skin (in vivo, rabbit).

**Respiratory irritation:** From human data it is concluded that Ca(OH)<sub>2</sub> is irritating to the respiratory tract.

Based on experimental results, calcium dihydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)] and as severely irritating to the eye [R41,

Risk of serious damage to eye; Eye Damage 1 (H318 – Causes serious eye damage)].

As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium dihydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].

**Sensitisation:** No data available.

Calcium dihydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition.

Classification for sensitisation is not warranted.

**Repeated dose toxicity:** Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium.

Toxicity of Ca(OH)<sub>2</sub> via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift).

Toxicity of Ca(OH)<sub>2</sub> via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m<sup>3</sup> respirable dust (see Section 8.1).

Therefore, classification of Ca(OH)<sub>2</sub> for toxicity upon prolonged exposure is not required.

**Mutagenicity:** Bacterial reverse mutation assay (Ames test, OECD 471): Negative

Mammalian chromosome aberration test: Negative

In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential.

Classification for genotoxicity is not warranted.



**Carcinogenicity:** Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat).

The pH effect of calcium dihydroxide does not give rise to a carcinogenic risk.

Human epidemiological data support lack of any carcinogenic potential of calcium dihydroxide.

Classification for carcinogenicity is not warranted.

#### **Toxicity for reproduction:**

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse). The pH effect does not give rise to a reproductive risk. Human epidemiological data support lack of any potential for reproductive toxicity of calcium dihydroxide.

Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium dihydroxide is not toxic for reproduction and/or development.

Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.

## **Section 11: Ecological information**

### **12.1 Toxicity**

#### **12.1.1: Acute/Prolonged toxicity to fish:**

LC50 (96h) for freshwater fish: 50.6 mg/l

LC50 (96h) for marine water fish: 457 mg/l

#### **12.1.2: Acute/Prolonged toxicity to aquatic invertebrates:**

EC50 (48h) for freshwater invertebrates: 49.1 mg/l

LC50 (96h) for marine water invertebrates: 158 mg/l

#### **12.1.3: Acute/Prolonged toxicity to aquatic plants:**

EC50 (72h) for freshwater algae: 184.57 mg/l

NOEC (72h) for freshwater algae: 48 mg/l

#### **12.1.4: Toxicity to micro-organisms e.g. bacteria:**

At high concentration, through the rise of temperature and pH, calcium dihydroxide is used for disinfection of sewage sludges.

#### **12.1.5: Chronic toxicity to aquatic organisms:**

NOEC (14d) for marine water invertebrates: 32 mg/l

#### **12.1.6: Toxicity to soil dwelling organisms:**

EC10/LC10 or NOEC for soil macroorganisms: 2000 mg/kg soil dw

EC10/LC10 or NOEC for soil microorganisms: 12000 mg/kg soil dw

#### **12.1.7: Toxicity to terrestrial plants:**

NOEC (21d) for terrestrial plants: 1080 mg/kg

#### **12.1.8: General effect:**

Acute pH effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH value of > 12 will rapidly decrease as result of dilution and carbonation.

### **12.2 Persistence and degradability**

Not relevant for inorganic substance.

### **12.3 Bioaccumulative potential**

Not relevant for inorganic substance.

### **12.4 Mobility in soil**

Calcium dihydroxide, which is sparingly soluble, presents a low mobility in most soils.

### **12.5. Results of PBT and vPvB assessment**

Not relevant for inorganic substances.

### **12.6. Other adverse effects**

No other adverse effects are identified.

## **Section 12: Disposal considerations**

### **13.1 Waste treatment methods**

Disposal of calcium dihydroxide should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements.

The used packing is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packing completely.

## **Section 13: Transport information**

Calcium dihydroxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea)).

### **13.1. UN number**

Not relevant.

### **13.2. UN proper shipping name**

Not relevant.

### **13.3. Transport hazard class(es)**

Not relevant.

### **13.4. Packing group**

Not relevant.

### **13.5. Environmental hazards**

Not relevant.

### **13.6. Special precautions for user**

Avoid any release of dust during transportation, by using air-tight tanks.

### **13.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not relevant.

## Section 14: Regulatory information

### 14.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**Authorisations:** Not required

**Restrictions on use:** None

**Other EU Regulations:** Calcium dihydroxide is not a SEVESO substance, not an ozone-depleting substance and not a persistent organic pollutant.

**National regulations:** None

## Section 15: Other information

### 15.1 Indication of changes

Supersedes March 2009 version and incorporates requirements of Regulation (EC) No 1272/2008.

### 15.2 Abbreviations and acronyms

**EC50:** median effective concentration

**LC50:** median lethal concentration

**LD50:** median lethal dose

**NOEC:** no observable effect concentration

**OEL:** occupational exposure limit

**PBT:** persistent, bioaccumulative, toxic chemical

**PNEC:** predicted no-effect concentration

**SCOEL:** Scientific Committee on occupational exposure limits

**STEL:** short-term exposure limit

**TWA:** time weighted average

**vPvB:** very persistent, very bioaccumulative chemical

### 15.3 Key literature references and sources of data

1. Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee

on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document]

2. Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure

Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)<sub>2</sub>)

3. European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

### 15.4 Training Advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

### 15.5 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided

that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.