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

Product Identifier:

Chemical Name (EINECS): Calcium dihydroxide

Chemical Formula: Ca(OH)2

Synonyms: Slaked lime, Air slaked lime, building lime, Fat lime, Chemical lime, Finishing lime, Mason's lime, Calcium dihydroxide, Calcium hydroxide, Calcium hydrate, Lime, Lime water.

CAS Number: 1305-62-0

EINECS Number: 215-137-3

Molecular weight: 74.09g/mol

REACH Registration Number: 01-2119475151-45-XXXX

Relevant identified uses of the substance or mixture and uses advised against:

Identified use(s): Please check the identified uses in table 1 of the Appendix of this SDS.
Uses advised against There are no uses advised against.

Company name:
Nexchem Ltd
Unit 3 Barshaw Park
Leycroft Road
Leicester
LE4 1ET
Tel: 0116 2311130
24/7 Emergency Tel: 0800 246 1274
Email: sales@nexchem.co.uk

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

Regulation 1272/2008 (CLP): STOT Single Exp. 3, Route of exposure: Inhalation
Skin Irritation 2
Eye Damage 1

[cont…]

Label elements:

According to Regulation (EC) No. 1272/2008 (CLP).

Trade name:

Hazard Pictogram:

Signal word(s): Danger.

Hazard statement(s):
H315: Causes skin irritation.
H318: Causes serious eye damage.
H335: May cause respiratory irritation.

Precautionary statement(s):
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 local/regional/national/international regulation.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances:

Name: Calcium dihydroxide
CAS: 1305-62-0
EINECS: 215-137-3
Impurities: No impurities relevant for classification and labelling.

4. FIRST AID MEASURES

Description of first aid measures:

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

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

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.

[cont…]

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

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

Most import 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 advises given in section 4.1.

5. FIRE-FIGHTING MEASURES

Extinguishing Media:

Suitable extinguishing media: The product is not combustible. Use a dry powder, foam or CO2 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.

6. ACCIDENTAL RELEASE MEASURES

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: Keep dust levels to a minimum.
Ensure adequate ventilation.
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).

[cont…]

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.

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.

Reference to other sections: For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13 and the annex of this safety data sheet.

7. HANDLING AND STORAGE

Precautions for safe handling: 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. Minimize 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.
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

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.

Specific end use(s): Please check the identified uses in table 1 of the Appendix of this SDS.
For more information, please see the relevant exposure scenario, available via your supplier/given in the Appendix and check section 2.1: Control of worker exposure.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters: SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6):
Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m³ respirable dust of calcium dihydroxide
Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable dust of calcium dihydroxide

PNEC aqua = 490 µg/l
PNEC soil/groundwater = 1080 mg/l

[cont…]

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. Please check the relevant exposure scenario, given in the Appendix/available via your supplier.

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.

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 - please check the relevant exposure scenario, given in the Appendix/available via your supplier.

Eye 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 & hand 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.

Thermal hazards: The substance does not represent a thermal hazard; thus special consideration is not required.

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.
For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available via your supplier.
For further detailed information, please check the Appendix of this SDS.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance:	White or off white (beige) fine powder
Odour:	Odourless
Odour threshold:	Not applicable
pH in water solution:	12.4 (saturated solution @ 20°C
Melting point/freezing point:	>450°C (study result, EU A.1 method)
Boiling point/boiling range:	Not applicable (solid with melting point > 450°C)
Flash point:	Not applicable (solid with melting point > 450°C)
Evaporation rate:	Not applicable (solid with melting point > 450°C)

[cont…]

Flammability (solid, gas): Non-flammable (study result, EU A.10 method)
Explosive limit: Non-explosive (void of any chemical structures commonly associated with explosive properties)
Vapour pressure: Not applicable (solid with melting point > 450°C)
Vapour density: Not applicable
Relative density: 2.24 (study result, EU A.10 method)
Water solubility: 1844.9 mg/l (study result, EU A.6 method)
Partition of coefficient: n-octanol/water: Not applicable (inorganic substance)
Auto-ignition temperature: No relative self-ignition temperature below 400oC (study result, EU A.16 method).
Thermal decomposition: When heated above 580°C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H2O).
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).
Other information: Not available

10. STABILITY AND REACTIVITY

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

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

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 (H2O): $Ca(OH)_2 \rightarrow CaO + H_2O$.Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

Conditions to avoid: Minimise exposure to air and moisture to avoid degradation.

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. $Ca(OH)_2 + 2\ Al + 6\ H_2O \rightarrow Ca[Al(OH)_4]_2 + 3\ H_2$.

Hazardous decomposition products: None.
Further information: Calcium dihydroxide reacts with carbon dioxide to form calcium carbonate, which is a common material in nature.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects: Calcium dihydroxide is not acutely toxic.
Classification for acute toxicity is not warranted

Acute Oral Toxicity: LD50 > 2000 mg/kg bw (OECD 425, rat)
Acute Dermal Toxicity: LD50 > 2500 mg/kg bw (OECD 402, rabbit)
Acute inhalation Toxicity: No data available.

[cont…]

Skin Corrosion/Irritation: Calcium dihydroxide is irritating to skin (*in vivo*, rabbit).
Based on experimental results, calcium dihydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)].

Serious eye damage/eye irritation: Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (*in vivo*, rabbit). Based on experimental results, calcium dihydroxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)].

Respiratory or skin 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.

Germ cell 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, including germ cell mutagenicity.
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.

Reproductive toxicity: 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.

STOT-single exposure: From human data it is concluded that Ca(OH)2 is irritating to the respiratory tract.
As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium dihydroxide is classified as irritating to the respiratory system [STOT SE 3 (H335 – May cause respiratory irritation)].

[cont…]

STOT-repeated exposure: 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)2 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)2 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/m³ respirable dust (see Section 8.1).
Therefore, classification of Ca(OH)2 for toxicity upon prolonged exposure is not required.

Aspiration hazard: Calcium hydroxide is not known to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

Toxicity:

Acute/Prolonged toxicity to fish: LC50 (96h) for freshwater fish: 50.6 mg/l
LC50 (96h) for marine water fish: 457 mg/l

Acute/Prolonged toxicity to aquatic invertebrates: EC50 (48h) for freshwater invertebrates: 49.1 mg/l
LC50 (96h) for marine water invertebrates: 158 mg/l

Acute/Prolonged toxicity to aquatic plants: EC50 (72h) for freshwater algae: 184.57 mg/l
NOEC (72h) for freshwater algae: 48 mg/l

Toxicity to micro-organisms e.g. bacteria: At high concentration, through the rise of temperature and pH, calcium dihydroxide is used for disinfections of sewage sludge.

Chronic toxicity to aquatic organisms: NOEC (14d) for marine water invertebrates: 32 mg/l

Toxicity to soil dwelling organisms: EC10/LC10 or NOEC for soil macro-organisms: 2000 mg/kg soil dw
EC10/LC10 or NOEC for soil micro-organisms: 12000 mg/kg soil dw

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

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.

Persistence and degradability: Not relevant for inorganic substances.

Bio accumulative potential: Not relevant for inorganic substances

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

[cont…]

Results of PBT and vPvB assessment: Not relevant for inorganic substances.

Other adverse effects: No other adverse effects are identified.

13. DISPOSAL CONSIDERATIONS

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.

14. TRANSPORT INFORMATION

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

UN No: Not regulated
UN Proper Shipping Name: Not regulated
Transport Hazard classes: Not regulated
Packing Group: Not regulated
Environmental hazards: None
Special precautions for user: Avoid any release of dust during transportation, by using air-tight tanks
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not regulated

15. REGULATORY INFORMATION

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: Water endangering class 1 (Germany)

Chemical safety assessment: A chemical safety assessment has been carried out for this substance.

Note: The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

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

[cont…]

Precautionary Statements:

P102: Keep out of reach of children
P280: Wear protective gloves/protective clothing/eye protection/face protection
P305+P351: IF IN EYES: Rinse cautiously with water for several minutes
P310: Immediately call a POISON CENTRE or doctor/physician
P302+P352: IF ON SKIN: Wash with plenty of soap and water
P261: Avoid breathing dust/fume/gas/mist/vapours/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

Abbreviations:

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

Legal disclaimer:

The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.