



HEALTH AND SAFETY DATA

Calcium Oxide

RJ5.01B

(Prepared in accordance with Annex 11 of the REACH Regulation EC 1907/2006, Regulation (EC) 1272/2008 and Regulation (EC) 453/2010)

Identification

Substance Name:	Calcium Oxide, Quicklime
Synonyms:	Lime, Burnt lime, Un-slaked lime, Chemical lime, Calcium monoxide, Calcined limestone.
Chemical Name and Formula:	Calcium Oxide – (CaO)
Trade Name:	Calbux, Singleton Birch Fine Lime 2 & Micro Lime 90
CAS No:	1305-78-8
EINECS No:	215-139-9
Molecular Weight:	56.08 g/mol
Reach Registration No:	01-2119475325-36-0121 / 0061

Substance Uses:

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:	Rose of Jericho Ltd
Address:	Horchester Farm, Dorchester, Dorset, DT2 0LL
Phone:	+44 (0) 1935 83676

E-mail of competent person responsible for SDS in the MS or in the EU: info@roseofjericho.co.uk

Emergency Telephone:

UK/European Emergency No: 999/112

Transport Emergency Contact No: +44 (0) 1935 83676

Refer to Hospital Accident and Emergency Department

Hazards Identification:

Classification according to regulation (EC) 1272/2008

STOT Single Exp. Route of exposure: Inhalation 3, Skin Irritation, Eye Damage 1

Classification according to Directive 67/548/EEC: Xi – irritant

Labelling according to Regulation (EC) 1272/2008: Signal Word - Danger

Hazard pictogram:



Hazard statements: H315: Causes skin irritation

H318: Causes serious eye damage


H335: May cause respiratory irritation



Precautionary Statements:

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

Labelling according to 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	

Other Hazards:

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



Composition:

Name:	Calcium oxide
CAS:	1305-78-8
EINECS:	215-138-9
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.

First Aid Measures:

General Advice:	No known delayed effects. Consult a physician for all exposures except for minor instances
Eye Contact:	Rinse eyes immediately with plenty of water and seek medical advice
Inhalation:	Move source of dust or move person to fresh air. Obtain medical attention immediately.
Ingestion:	Clean mouth with water and drink plenty of water. Do NOT induce vomiting. Obtain medical attention.
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.

Calcium oxide is not acutely toxic via the oral, dermal, or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entrails 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.



Fire-Fighting Measures:

- 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. Avoid humidification.
- Special Hazards from the mixture:** Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.
- Advice for Fire-fighters:** Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Accidental Release Measures:

- 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).
Avoid humidification.
- 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 Appendix of this safety data sheet.



Handling & Storage:

Precautions for safe handling

Protective Measures:

Avoid contact with skin and eyes. Wear protective equipment (refer to section 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.

Advice 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.

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 in the Appendix, and check '2.1: Control of worker' in the relevant exposure scenario section in the Appendix.

Control Parameters:

SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6): Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m³ fine fraction dust of calcium oxide. Short-term exposure limit (STEL), 15 min: 4 mg/m³ fine fraction dust of calcium oxide
PNEC aqua = 370 g/l
PNEC soil/groundwater = 816 mg/l



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.

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 Protective Measures:

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

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

Environmental Exposure Control

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.



Physical and Chemical Properties:

Appearance:	White or off-white (beige) fine powder
Odour:	Odourless
Odour Threshold:	n/a
pH:	12.3 (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:	n/a (solid with a melting point > 450 °C)
Vapour Density:	n/a
Relative Density:	3.31 (study result, EU A.3 method)
Solubility in water:	1337.6 mg/L (study results, EU A.6 method)
Partition coefficient:	n/a (inorganic substance)
Auto ignition temperature:	no relative self-ignition temperature below 400 °C (study result, EU A.16 method)
Decomposition Temperature:	n/a 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)



Stability and Reactivity:

- Reactivity:** Calcium oxide reacts exothermically with water to form Calcium dihydroxide.
- Chemical Stability:** Under normal conditions of use and storage, calcium oxide is stable.
- Possibility of hazardous reactions:** Calcium oxide reacts exothermically with acids to form calcium salts.
- Conditions to avoid:** Minimise exposure to air and moisture to avoid degradation.
- Incompatible Materials:** Calcium oxide reacts exothermically with acids to form calcium dihydroxide:
 $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + 1155 \text{ kJ/kg CaO}$
Calcium oxide reacts exothermically with acids to form calcium salts.
Calcium oxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen:
 $\text{CaO} + 2\text{Al} + 7\text{H}_2\text{O} \rightarrow \text{Ca(Al(OH)}_4)_2 + 3\text{H}_2$

Hazardous Decomposition Products:

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

Toxicological Information:

- Toxicity Endpoints:** Outcome of the effects assessment
- Acute Toxicity:** Calcium oxide is not acutely toxic.
Oral LD50 > 2000 mg/kg bw (OECD 425, rat)
Dermal LD50 > 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.
- Skin Irritation/Corrosion:** Eye irritation: Calcium oxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit)). Based on experimental results, calcium oxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)]. Skin irritation: Calcium oxide is irritating to skin (in vivo, rabbit).
- Respiratory/Skin Sensitisation:** No data available. Calcium oxide 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:	<p>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.</p> <p>Toxicity of CaO 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).</p> <p>Toxicity of CaO 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 fine fraction dust (see Section 8.1).</p> <p>Therefore, classification of CaO for toxicity upon prolonged exposure is not required.</p>
Germ Cell Mutagenicity:	<p>Bacterial reverse mutation assay (Ames test, OECD 471): Negative</p> <p>In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by calcium oxide in aqueous media, CaO is obviously void of any genotoxic potential. Classification for genotoxicity is not warranted.</p>
Carcinogenicity:	<p>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 oxide. Classification for carcinogenicity is not warranted.</p>
Toxicity for reproduction:	<p>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 oxide.</p> <p>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 oxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.</p>
STOT - Single Exposure:	<p>From human data it is concluded that CaO is irritating to the respiratory tract. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium oxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].</p>



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 CaO 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 CaO 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 fine fraction dust (see Section 8.1). Therefore, classification of CaO for toxicity upon prolonged exposure is not required.

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

Ecological Information:

Acute/Prolonged Toxicity to fish: LC50 (96h) for freshwater fish: 50.6 mg/l (calcium dihydroxide)

Acute/Prolonged toxicity to aquatic invertebrates: LC50 (96h) for marine water fish: 457 mg/l (calcium dihydroxide)

to aquatic plants:

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

Toxicity to micro organisms: EC50 (72h) for freshwater algae: 184.57 mg/l (calcium dihydroxide), NOEC (72h) for freshwater algae: 48 mg/l (calcium dihydroxide)

organisms:

Chronic toxicity to aquatic At high concentration, through the rise of temperature and pH, calcium oxide is used for disinfection of sewage sludge's

organisms:

Toxicity to soil dwelling NOEC (14d) for marine water invertebrates: 32 mg/l (calcium dihydroxide)

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

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.

Further Information: The results by read across are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.



Persistence and Degradability:

Not relevant for inorganic substance

Bioaccumulative Potential:

Not relevant for inorganic substance

Mobility in Soils:

Calcium oxide reacts with water and/or carbon dioxide to form respectively calcium dihydroxide and/or calcium carbonate, which are sparingly soluble, and present a low mobility in most soils.

Results of PBT and vPvB assessment:

Not relevant for inorganic substances

Other Adverse Effects:

No other adverse effects are identified

Disposal considerations:

Waste treatment Disposal of calcium oxide 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.

Transport information :

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

UN No:	UN 1910 14.2: UN Proper Shipping Name Calcium oxide
Transport Hazard classes:	Class 8. Calcium oxide is listed in IMDG(Amendment 34-08).
Packing Group:	Group III (Air transport (ICAO/IATA))
Environmental hazards:	None



Special precautions for user:

Avoid any release of dust during transportation, by using air-tight tanks for bulk powders. In the case of smaller loads ie multiple 25kg or 1 ton bags, Calcium Oxide needs to be in sealed plastic or polypropylene bags shrunk wrapped to pallets and covered trucks must be used in there transport.

UNDER NO CIRCUMSTANCES MUST THE MATERIAL BE ALLOWED TO GET WET.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not regulated

Regulatory Information:

Authorisations:	Not Required
Restrictions on use:	None
Other EU Regulations:	Calcium oxide is not a SEVESO substance, not an ozone-depleting substance and not a persistent organic pollutant.
National Regulations:	None

Chemical Safety Assessment:

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

Other information:

Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

Hazard Statements:

H315: Causes skin irritation

H318: Causes serious eye damage

H335: May cause respiratory irritation



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

Risk Phases:

S2:	Keep out of 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



Abbreviations:

EC50:	median effective concentration
LC50:	median lethal concentration
LD50:	median lethal dose
NOEC:	no observable effect concentration
OEL:	occupational exposure limit
PBT:	persistent, bio accumulative, 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 bio accumulative chemical

Key Literature References :

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]
Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

Revision:

This version produced in reference to Annex II of the REACH Regulation (EC) 1907/2006. Disclaimer this safety data sheet (SDS) is based on the legal provisions of the REACH Regulation (EC 1907/2006; article 31 and Annex II), as amended. Its contents are intended as a guide to the appropriate precautionary handling of the material. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. Information and instructions provided in this SDS are based on the current state of scientific and technical knowledge at the date of issue indicated. It should not be construed as any guarantee of technical performance, suitability for particular applications, and does not establish a legally valid contractual relationship. This version of the SDS supersedes all previous versions.

APPENDIX: Exposure Scenarios Available on request from the supplier