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SAFETY DATA SHEET for *BioLime® Bond*

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

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

1.1 Product identifier: BioLime Bond; BioLime Bond INT; BioLime Bond EXT

Substance name: Calcium Hydroxide, Lime (Chemical)

Synonyms: Interior or Exterior Bond Coat Plaster

Chemical name and formula: Not applicable, multi constituent substance (origin: inorganic)

Trade name: Mineral-based bond coat plaster

CAS: 1305-62-0

EINECS: 215-137-3

REACH registration number: 01-2119475151-45-xxxx

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

Please check the identified uses in table 1 of the Appendix of this SDS.

Relevant Uses: Mortar. For professional use only.

Uses advised against: All uses not specified in this section or in section 7.3

1.3 Details of the supplier of the Safety Data Sheet

Name: BIOLIME INC.
Address: 4801 LANG AVE NE, Suite 110
ALBUQUERQUE, NM 87109
Phone: +1 (505) 234-1140
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E-mail: contact@biolime.com

1.4 Emergency telephone number

National center for Prevention and Treatment of Intoxications:	CHEMTREC INTERNATIONAL
Emergency telephone at the company	USA: +1 (800) 424-9300
Available outside office hours:	Yes, 24 HRS.

2 HAZARD IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

STOT Single Exp. 3: Respiratory tract toxicity, single exposure, Category 3

Skin Irritation 2: Dermal irritation, Category 2

Eye Damage 1: Serious eye damage, Category 1

Skin Sensitivity 1: Dermal, Category 1

2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant

2.2 Label elements

2.2.1 Labeling 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 hazardous waste disposal center

2.2.2 Labeling 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

2.3 Other hazards

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

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Main constituents

Name:	Calcium hydroxide
CAS:	1305-62-0
EINECS:	215-137-3
Concentration:	15–65 %

Name:	di-calcium silicate
CAS:	10034-77-2
EINECS:	233-107-8
Concentration:	10–45 % (w/w)

Name:	Limestone
CAS:	1317-65-3
EINECS:	215-279-6
Concentration:	10–40 % (w/w)

Impurities

No impurities relevant for classification and labeling.

4 FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

Following inhalation

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

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 eye contact

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

After ingestion

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

4.2 Most important symptoms and effects, both acute and delayed

Calcium Hydroxide 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 hazards.

4.3 Indication of any immediate medical attention and special treatment needed

Follow the advises given in section 4.1

5 FIRE FIGHTING MEASURES

5.1 Extinguishing media

5.1.1 Suitable 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.

5.1.2 Unsuitable extinguishing media

Do not use water

5.2 Special hazards arising from the substance or mixture

None

5.3 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

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 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).

6.1.2 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).

6.2 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.

6.3 Methods and material for containment and cleaning up

Avoid dust formation.

Keep the material dry if possible.

Pick up the product mechanically in dry form.

Use vacuum suction unit, or shovel into bags.

6.4 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

7.1 Precautions for safe handling

7.1.1 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. 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.

7.1.2 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.

7.2 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 aluminum for transport or storage if there is a risk of contact with water.

7.3 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

8.1 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 hydroxide

Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable dust of calcium hydroxide

This value is read-across to Calcium Hydroxide in view of the anticipated equivalent local effect (pH is comparable to that of CaO and Ca(OH)₂).

8.2 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.

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

8.2.1 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.

8.2.2 Individual protection measures, such as personal protective equipment

8.2.2.1 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.

8.2.2.2 Skin protection

Since Calcium Hydroxide is classified as irritating to skin (caustic), dermal exposure has to be minimized 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.

8.2.2.3 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.

8.2.2.4 Thermal hazards

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

8.2.3 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.

Volatile Organic Compounds:

V.O.C. (Supply): 0 % weight

V.O.C. density at 20°C: 0 kg/m³ (0 g/L)

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	solid, white powder
Odor:	odorless
Odor threshold:	not applicable
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:	nonflammable (study result, EU A.10 method)
Explosive limits:	non explosive (void of any chemical structures commonly associated with explosive properties)
Vapor pressure:	not applicable (solid with a melting point > 450 °C)
Vapor density:	not applicable
Relative density at 20°C:	2.674 (study result, EU A.3 method)
Solubility in water:	Moderately soluble (study result, modified 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:	not applicable
Viscosity:	not applicable (solid with a melting point > 450 °C)
Oxidizing properties:	no oxidizing 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)

10 STABILITY AND REACTIVITY

10.1 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).

10.2 Chemical stability

Under normal conditions of use and storage, the substance is stable.

10.3 Possibility of hazardous reactions

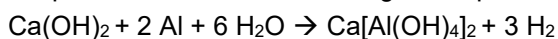
Calcium Hydroxide reacts exothermically with acids. When heated above 580 °C, calcium hydroxide decomposes to produce calcium oxide (CaO) and water (H₂O): $\text{Ca(OH)}_2 \rightarrow \text{CaO} + \text{H}_2\text{O}$. Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

10.4 Conditions to avoid

Minimize exposure to air and moisture to avoid degradation.

10.5 Incompatible materials

Calcium Hydroxide reacts exothermically with acids to form salts. Reacts with aluminum and brass in the presence of moisture leading to the production of hydrogen.



10.6 Hazardous decomposition products

None.

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

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a. Acute toxicity

Oral LD₅₀ > 2000 mg/kg bw (OECD 425, test substance Ca(OH)₂, rat); the results are also applicable to lime (chemical) by read-across.

Dermal no data available

Inhalation no data available

Calcium Hydroxide is not acutely toxic. An acute dermal or inhalation toxicity study with Calcium Hydroxide is considered to be scientifically unjustified.

Classification for acute toxicity is not warranted.

b. Skin corrosion/irritation

Calcium hydroxide is irritating to skin (caustic).

Based on experimental results on a similar substance, Calcium Hydroxide requires a classification as irritating to skin [R38, irritating to skin; Skin Irrit. 2 (H315 – Causes skin irritation)].

c. Serious eye damage/irritation

Calcium hydroxide entails a risk of serious damage to the eye.

Based on experimental results on a similar substance, Calcium Hydroxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)].

d. Respiratory or skin sensitization

No data available. Calcium Hydroxide is considered not to be a skin sensitizer, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition. Furthermore, none of the compounds making up the other main constituents or impurities, i.e. calcium carbonate, calcium silicate, and calcined clay minerals, are known to entail any sensitization potential.

Classification for sensitization is not warranted.

e. Germ cell mutagenicity

Bacterial reverse mutation assay (Ca(OH)₂ and CaO, Ames tests, OECD 471): Negative.

Mammalian chromosome aberration test (Ca(OH)₂): Negative.

These results are applicable to Calcium Hydroxide by read across. Calcium Hydroxide does not contain any main constituents or major impurities that are known to be genotoxic.

The pH effect of Calcium Hydroxide does not give rise to a mutagenic risk.

Human epidemiological data support lack of any mutagenic potential of Calcium Hydroxide.

In conclusion, Calcium Hydroxide is obviously void of any genotoxic potential, including germ cell mutagenicity.

Classification for genotoxicity is not warranted.

f. Carcinogenicity

Calcium (when administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of Calcium Hydroxide.

Classification for carcinogenicity is not warranted.

g. 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 Hydroxide.

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 Hydroxide is not toxic for reproduction and/or development.

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

h. STOT-single exposure

From human data on calcium oxide and hydroxide it is concluded by read-across (worst case approach) that Calcium Hydroxide is irritating to the respiratory tract.

As summarized and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data Calcium Hydroxide is classified as irritating to the respiratory system by read-across from CaO and Ca(OH)₂ [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].

i. 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 Calcium Hydroxide 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 Calcium Hydroxide via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined for CaO and Ca(OH)₂ by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m³ respirable dust (read-across from CaO and Ca(OH)₂; see Section 8.1).

Therefore, classification of Calcium Hydroxide for toxicity upon prolonged exposure is not required.

j. Aspiration hazard

Calcium Hydroxide is not known to present an aspiration hazard.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

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

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

12.1.2 Acute/Prolonged toxicity to aquatic invertebrates

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

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

12.1.3 Acute/Prolonged toxicity to aquatic plants

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

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

12.1.4 Toxicity to micro-organisms e.g. bacteria

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

12.1.5 Chronic toxicity to aquatic organisms

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

12.1.6 Toxicity to soil dwelling organisms

EC₁₀/LC₁₀ or NOEC for soil macroorganisms: 2000 mg/kg soil dw (calcium hydroxide)

EC₁₀/LC₁₀ or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium hydroxide)

12.1.7 Toxicity to terrestrial plants

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

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 substances

12.3 Bio-accumulative potential

Not relevant for inorganic substances

12.4 Mobility in soil

Calcium Hydroxide (in powder form) reacts with water and/or carbon dioxide to form respectively calcium hydroxide (in liquid form) and/or calcium carbonate, which are sparingly soluble, and present 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

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

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

14.1 UN-Number

Not regulated

14.2 UN proper shipping name

Not regulated

14.3 Transport hazard class(es)

Not regulated

14.4 Packing group

Not regulated

14.5 Environmental hazards

None

14.6 Special precautions for user

Avoid any release of dust during transportation, by using air-tight tanks for powders and covered trucks for pebbles.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not regulated

15 REGULATORY INFORMATION

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

Authorizations: Not required
Restrictions on use: None
Other EU regulations: Calcium Hydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant
National regulations: Water endangering class 1 (Germany) (Calcium hydroxide)

15.2 Chemical safety assessment

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

16 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.

16.1 Hazard Statements

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

16.2 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/vapors/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 hazardous waste disposal center

16.3 Risk Phrases

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

16.4 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

16.5 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
- STEL: short-term exposure limit
- TWA: time weighted average
- vPvB: very persistent, very bio-accumulative chemical

16.6 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 hydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

16.7 Revision

Revision (0) January 2014

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 instruction

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 MDS supersedes all previous versions.

ANNEX

Addition of exposure Scenarios

End of the Safety Data Sheet