

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

MICROBOND EXPANDING ADDITIVE

Revision Date: 21-Sep-2015

Revision Number: 25

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name MICROBOND EXPANDING ADDITIVE
Internal ID Code HM001064

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

Recommended Use Cement Additive
Sector of use Refer to the Annex for a listing of uses.

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
 Halliburton House, Howemoss Place
 Kirkhill Industrial Estate
 Dyce
 Aberdeen, AB21 0GN
 United Kingdom

www.halliburton.com

For further information, please contact

E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	112
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO): + 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 2 - (H315)
Serious Eye Damage / Eye Irritation	Category 1 - (H318)

2.2. Label Elements

Hazard Pictograms

**Signal Word****Danger****Hazard Statements**

H315 - Causes skin irritation

H318 - Causes serious eye damage

Precautionary Statements - EU (§28, 1272/2008)

P264 - Wash face, hands and any exposed skin thoroughly after handling

P280 - Wear protective gloves/eye protection/face protection

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P332 + P313 - If skin irritation occurs: Get medical advice/attention

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

Contains**Substances**

Calcium aluminate

Calcium hydroxide

CAS Number

12042-68-1

1305-62-0

2.3. Other Hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).

This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients
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3.2. Mixtures

Mixture

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Calcium aluminate	234-931-0	12042-68-1	10 - 30%	Acute Tox. 4 (H332) Eye Irrit. 2 (H319)	No data available
Calcium hydroxide	215-137-3	1305-62-0	10 - 30%	Skin Irrit. 2 (H315) Eye Corr. 1 (H318)	01-2119475151-45

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

SECTION 4: First aid measures

4.1. Description of first aid measures**Inhalation**

If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Ingestion

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

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

Causes serious eye damage. Causes skin irritation. May be harmful if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed**Notes to Physician**

Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry location.

7.3. Specific End Use(s)

Exposure Scenario

Please refer to the attached Annex for a listing of exposure scenarios.

Other Guidelines

No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Calcium aluminate	12042-68-1	Not applicable	2 mg/m ³	0,05 mg/m ³	Not applicable
Calcium hydroxide	1305-62-0	Not applicable	TWA: 5 mg/m ³ STEL: 15 mg/m ³	Not applicable	5 mg/m ³

Substances	CAS Number	Germany	Spain	Portugal	Finland
Calcium aluminate	12042-68-1	Not applicable	Not applicable	Not applicable	Not applicable
Calcium hydroxide	1305-62-0	5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Calcium aluminate	12042-68-1	Not applicable	Not applicable	Not applicable	Not applicable
Calcium hydroxide	1305-62-0	TWA: 2 mg/m ³ STEL: 4 mg/m ³	5 mg/m ³ TWA 15 mg/m ³ STEL (calculated)	TWA: 5 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Calcium aluminate	12042-68-1	Not applicable	Not applicable	Not applicable	Not applicable
Calcium hydroxide	1305-62-0	Not applicable	TWA: 2 mg/m ³	TWA: 5 mg/m ³	TWA: 2 mg/m ³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Calcium aluminate	12042-68-1	Not applicable	Not applicable	Not applicable	Not applicable
Calcium hydroxide	1305-62-0	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³

Derived No Effect Level (DNEL)

No information available.

Worker

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Hazards for the eyes - local effects
Calcium hydroxide	Not available	Not available	1 mg/m ³	4 mg/m ³	Not available	Not available	Not available	Not available	Not available

General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Calcium hydroxide	Not available	Not available	1 mg/m ³	4 mg/m ³	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Predicted No Effect Concentration (PNEC)

No information available.

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Calcium hydroxide	0.49 mg/L	0.32 mg/L	0.49 mg/L	3 mg/L	Not available	Not available	Not available	1080 mg/kg soil dw	Not available

8.2. Exposure controls**Engineering Controls**

Use in a well ventilated area.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Normal work coveralls.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties**Physical State:** Solid**Color:** Light red**Odor:** Odorless**Odor Threshold:** No information availablePropertyValuesRemarks/ - Method**pH:**

No data available

Freezing Point/Range

No data available

Melting Point/Range

No data available

Boiling Point/Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	3.2
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	No data available
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SECTION 10: Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

None known.

10.6. Hazardous Decomposition Products

Oxides of sulfur. Carbon monoxide and carbon dioxide.

SECTION 11: Toxicological Information
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11.1. Information on Toxicological Effects**Acute Toxicity****Inhalation**

May cause mild respiratory irritation. May be harmful if inhaled.

Eye Contact

Causes serious eye damage.

Skin Contact

Causes skin irritation.

Ingestion

Irritation of the mouth, throat, and stomach.

Chronic Effects/Carcinogenicity

No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium aluminate	12042-68-1	> 2000 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rat) (similar substance)	1.9 mg/L air (Rat) 4h (similar substance)
Calcium hydroxide	1305-62-0	7340 mg/kg (Rat) > 2000 mg/kg (Rat)	> 2500 mg/kg (Rabbit)	No data available

Substances	CAS Number	Skin corrosion/irritation
Calcium aluminate	12042-68-1	Contact with moist skin may cause skin burns
Calcium hydroxide	1305-62-0	Skin, rabbit: May cause moderate skin irritation.

Substances	CAS Number	Eye damage/irritation
Calcium aluminate	12042-68-1	Causes moderate eye irritation. (Rabbit) (similar substances)
Calcium hydroxide	1305-62-0	Eye, rabbit: Causes severe eye irritation.

Substances	CAS	Skin Sensitization
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	Number	
Calcium aluminate	12042-68-1	Did not cause sensitization on laboratory animals (similar substances)
Calcium hydroxide	1305-62-0	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Calcium aluminate	12042-68-1	No information available
Calcium hydroxide	1305-62-0	No data of sufficient quality are available.

Substances	CAS Number	Mutagenic Effects
Calcium aluminate	12042-68-1	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)
Calcium hydroxide	1305-62-0	In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Calcium aluminate	12042-68-1	No information available.
Calcium hydroxide	1305-62-0	Did not show carcinogenic effects in animal experiments (similar substances)

Substances	CAS Number	Reproductive toxicity
Calcium aluminate	12042-68-1	No information available
Calcium hydroxide	1305-62-0	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)

Substances	CAS Number	STOT - single exposure
Calcium aluminate	12042-68-1	No information available
Calcium hydroxide	1305-62-0	May cause mild respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Calcium aluminate	12042-68-1	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
Calcium hydroxide	1305-62-0	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Calcium aluminate	12042-68-1	Not applicable
Calcium hydroxide	1305-62-0	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Calcium aluminate	12042-68-1	EC50 (72h) 3.6 mg/L (Desmodesmus subspicatus) (similar substance) NOEC (72h) 2.6 mg/L (Desmodesmus subspicatus) (similar substance)	LC50 (96h) >100 mg/L (Danio rerio) (similar substance)	EC50 (3h) > 100 mg/L (Activated sludge of a predominantly domestic sewage) (similar substance)	EC50 (48h) 5.4 mg/L (Daphnia magna) (similar substance)
Calcium hydroxide	1305-62-0	EC50 (72h) 184.57 mg/L (Pseudokirchnerella subcapitata)	TLM96 100-500 ppm (Oncorhynchus mykiss) 33.884 mg/L (Clarias gariepinus) LC50 (96h) 50.6 mg/L (Oncorhynchus mykiss) LC50 (96h) 457 mg/L (Gasterosteus aculeatus)	EC50 (3h) 300.4 mg/L (respiration rate) (activated sludge of a predominantly domestic sewage)	TLM96 478,520 ppm (Mysidopsis bahia) EC50 (48h) 49.1 mg/L (Daphnia magna) LC50 (96h) 158 mg/L (Crangon septemspinosa) NOEC (14d) 32 mg/L (Crangon septemspinosa)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Calcium aluminate	12042-68-1	The methods for determining biodegradability are not applicable to inorganic substances.
Calcium hydroxide	1305-62-0	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Calcium aluminate	12042-68-1	No information available
Calcium hydroxide	1305-62-0	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Calcium aluminate	12042-68-1	No information available
Calcium hydroxide	1305-62-0	No information available

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Calcium aluminate	Not applicable
Calcium hydroxide	Not applicable

12.6. Other adverse effects**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations**13.1. Waste treatment methods****Disposal Method**

Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport Information**IMDG/IMO**

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

RID

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADR

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable

Environmental Hazards: Not applicable

14.1. UN Number: Not restricted

14.2. UN Proper Shipping Name: Not restricted

14.3. Transport Hazard Class(es): Not applicable

14.4. Packing Group: Not applicable

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory Information

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

International Inventories

EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

15.2. Chemical Safety Assessment

Yes

SECTION 16: Other Information

Full text of H-Statements referred to under sections 2 and 3

H315 - Causes skin irritation

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

Key or legend to abbreviations and acronyms

bw – body weight

CAS – Chemical Abstracts Service

CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures

EC – European Commission

EC10 – Effective Concentration 10%

EC50 – Effective Concentration 50%

EEC – European Economic Community

ErC50 – Effective Concentration growth rate 50%

IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL0 – Lethal Loading 0%

LL50 – Lethal Loading 50%

MARPOL – International Convention for the Prevention of Pollution from Ships

mg/kg – milligram/kilogram

mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NOEC – No Observed Effect Concentration

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

PC – Chemical Product category

PEL – Permissible Exposure Limit

ppm – parts per million

PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

STEL – Short Term Exposure Limit

SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 21-Sep-2015

Revision Note

SDS sections updated: 1

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

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End of Safety Data Sheet