

Product Safety Data Sheet


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



Version 0

Revision Date 11.04.2012

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1. Identification of the substance/mixture and of the company/undertaking	
1.1 Product identifier	
Substance name	Mixture of MgO and Mg(OH)₂
Synonyms	Turbo-Magnesium
Trade name	Turbo-Magnesium
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Find hereunder a general description of uses. All the identified combinations of use descriptors are listed in Table 1 of the Annex.	
Water treatment chemicals	
No uses identified in Table 1 of the Annex are advised against.	
1.3 Details of the supplier of the safety data sheet	
Company	AquaCare GmbH & Co. KG
Address	Am Wiesenbusch 11 45966 Gladbeck Deutschland
Telephone	+49 (0) 2043 - 375 758 - 0
Telefax	+49 (0) 2043 - 375 758 - 90
E-mail of competent person responsible for SDS in the MS or in the EU:	info@aquacare.de
1.4 Emergency telephone number	
Emergency telephone number (Europe)	112 <i>This telephone number is available 24 hours per day, 7 days per week.</i>
2. Hazards identification	
2.1 Classification of the substance or mixture	
REGULATION (EC) No 1272/2008	Eye effect, Category 2.
According to European Directive 67/548/EEC as amended.	This substance is not classified as dangerous according to Directive 67/548/EEC.
2.2 Label elements	
2.2.1 REGULATION (EC) No 1272/2008	
Signal word	Warning

<u>Hazard pictograms</u>							
<u>Hazard statements</u>	H319: Causes serious eye irritation.						
<u>Precautionary statements</u>	P264: Wash hands thoroughly after handling. P280: Wear protective gloves/ protective clothing/ eye protection/ face protection. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P313: IF exposed or concerned: Get medical advice/ attention.						
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 Mixture							
Identification of the mixture: Akdolit Hydrolit Mg							
Composition/information on ingredients:							
Chemical Name	CAS-No.	EC-No.	REACH No.	Index-No.	Concentration limits	Classification according to EU Directives 67/548/EEC or 1999/45/EC	REGULATION (EC) No 1272/2008
Calcium carbonate	471-34-1	207-439-9	01-2119486795-18	—	>=1 - <=5	—	—
Calcium dihydroxide	1305-62-0	215-137-3	01-2119475151-45	—	>=1 - <=3	Irritant; Xi R37 R38 R41	STOT SE3 Skin Irrit.2 Eye Dam.1 H315 H318 H335
Magnesium hydroxide	1309-42-8	215-170-3	—	—	>=45 - <=55	—	—
Magnesium oxide	1309-48-4	215-171-9	—	—	>=30 - <=40	—	—
For the full text of the R-phrases mentioned in this Section, see Section 16. For the full text of the H-Statements mentioned in this Section, see Section 16.							
4. First aid measures							
4.1 Description of first aid measures							
<u>General advice</u>	No known delayed effects. Consult a physician for all exposures except for minor instances.						
<u>Inhalation</u>	Move source of dust or move person to fresh air. Obtain medical attention immediately.						

<p><u>Skin contact</u></p> 	<p>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 skin irritation persists, call a physician.</p>
<p><u>Eye contact</u></p> 	<p>Rinse immediately with plenty of water and seek medical advice.</p>
<p><u>Ingestion</u></p>	<p>Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Obtain medical attention.</p>

4.2 Most important symptoms and effects, both acute and delayed

The mixture is not acutely toxic via the oral, dermal, or inhalation route. The mixture 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.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Follow the advises given in section 4.1.

5. Firefighting measures

5.1 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.

5.2 Special hazards arising from the substance or mixture

When heated above 580°C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H₂O): $\text{Ca(OH)}_2 \Rightarrow \text{CaO} + \text{H}_2\text{O}$.

When heated above 600°C, calcium carbonate decomposes to produce calcium oxide (CaO) and carbon dioxide (CO₂). Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

When heated above 400 °C magnesium oxide MgO magnesium hydroxide Mg(OH)₂ decomposes by releasing water.

5.3 Advice for firefighters

Avoid dust formation.

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 Advice 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 Advice for emergency responders	See section 6.1.1
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 rising). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.	
6.3 Methods and materials for containment and cleaning up	
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.	
6.4 Reference to other sections	
For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13.	
7. Handling and storage	
7.1 Precautions for safe handling	
7.1.1 Protective measures	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.
7.1.2 Advice on general occupational hygiene	Avoid inhalation, 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

Store in a dry place.
 Minimise exposure to air and moisture to avoid degradation.
 Bulk storage should be in purpose designed silos.
 Keep away from children.
 Keep away from acids, significant quantities of paper, straw and nitro compounds.
 DO NOT use aluminium for transport and storage if there is a risk of contact with water.

7.3 Specific end uses

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

Occupational exposure limit

Chemical Name	Form	Limit value	Legal basis
Calcium carbonate	No data available	No data available	No data available
Calcium di-hydroxide	Short term exposure limit Respirable dust	4 mg/m ³	- -
Magnesium hydroxide	Short term exposure limit Total dust	6 mg/m ³	-
Magnesium oxide	No data available	No data available	Calculated according to TRGS 900 RCP-method Calculated according to TRGS 900 RCP-method

Derived No Effect Level

Workers

Chemical Name	Expressed as	Acute effect local	Acute effect systemic	Chronic effect local	Chronic effect systemic
Calcium carbonate	Inhalation				
	Dermal				
Calcium di-hydroxide	Inhalation				
	Dermal				
Magnesium hydroxide	Inhalation				
	Dermal				
Magnesium oxide	Inhalation				
	Dermal				

Consumers

Chemical Name	Expressed as	Acute effect local	Acute effect systemic	Chronic effect local	Chronic effect systemic
Calcium carbonate	Oral				
	Inhalation				
	Dermal				
Calcium di-hydroxide	Oral				
	Inhalation				
	Dermal				
Magnesium hydroxide	Oral				
	Inhalation				
	Dermal				
Magnesium oxide	Oral				
	Inhalation				
	Dermal				

Predicted No Effect Concentration

Chemical Name	Environmental protection target							
	Fresh water	Fresh water sediment	Marine water	Marine sediment	Food chain	Microorganisms in sewage treatment	Soil	Air
Calcium carbonate	No data available	No data available	No data available	No data available	No data available	100 mg/l	No hazard identified	No data available
Calcium di-hydroxide	0,49 mg/l	No data available	0,32 mg/l	No data available	Does not bioaccumulate.	3.004 mg/l	1.080 mg/l	No data available
Magnesium hydroxide	0,1 mg/l	0,008188 mg/m ³ Listed	0,01 mg/l	0,008188 mg/m ³ Listed	No data available	1 mg/l	0,01912 mg/m ³ Listed	No data available
Magnesium oxide	No data available	No data available	No data available	No data available	No data available	No data available	No data available	No data available

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

Handling systems should preferably be enclosed or suitable ventilation installed to maintain atmospheric dust below the OES, if not wear suitable protective equipment.

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



Use approved nitrile impregnated gloves having CE marks. Use clothing fully covering skin, full length pants, long sleeved overalls, with close fittings at openings. Footwear resistant to caustics and avoiding dust penetration.

8.2.2.3 Respiratory protection	 <p>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.</p>
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	<p>All ventilation systems should be filtered before discharge to atmosphere. 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 rising). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.</p> <p>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.</p>
9. Physical and chemical properties	
9.1 Information on basic physical and chemical properties	
Appearance:	Colour: white, off-white, beige Form: granules
Odour:	Odourless
Odour threshold:	Not applicable
pH:	12,4; Temperature: 20 °C; saturated solution as Ca(OH) ₂
Melting point:	Temperature: > 450 °C; study result, EU A.1 method; as Ca(OH) ₂
Boiling point:	Not applicable (solid with a melting point > 450°C)
Flash point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	The product is not flammable
Explosive properties:	Not explosive.
Vapour pressure:	Not applicable
Vapour density:	Not applicable
Relative density:	2,24; study result, EU A.3 method; as Ca(OH) ₂
Water solubility:	1.884,9 g/l; Temperature: 20 °C; study result, EU A.6 method; as Ca(OH) ₂
Partition coefficient: n-octanol/water:	Not applicable

Autoignition 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 ₂ O): $\text{Ca(OH)}_2 \Rightarrow \text{CaO} + \text{H}_2\text{O}$. When heated above 400 °C magnesium oxide MgO magnesium hydroxide Mg(OH) ₂ decomposes by releasing water.
Viscosity:	Not applicable
Oxidising properties (liquids):	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).
9.2 Other information	
Bulk density	1.200 - 1.300 kg/m ³ Temperature: 20 °C
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). Reacts violently in contact with acids.	
10.2 Chemical stability	
Under normal conditions of use and storage (dry conditions), the product is stable.	
10.3 Possibility of hazardous reactions	
The product reacts exothermically with acids. When heated above 580°C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H ₂ 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.	
10.4 Conditions to avoid	
Minimize exposure to air and moisture to avoid degradation.	
10.5 Incompatible materials	
The product reacts exothermically with acids to form salts. Reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen. $\text{Ca(OH)}_2 + 2 \text{Al} + 6 \text{H}_2\text{O} \rightarrow \text{Ca(Al(OH)}_4)_2 + 3 \text{H}_2$	

10.6 Hazardous decomposition products

None

Further information:

When heated above 600°C, calcium carbonate decomposes to produce calcium oxide (CaO) and carbon dioxide (CO₂). Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Calcium dihydroxide 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.

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)].

Corrosivity

Calcium dihydroxide is irritating to skin (OECD 404, 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)].

Sensitisation

No data available.

The product is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium and magnesium 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 the product 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 the product 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 the product for toxicity upon prolonged exposure is not required.

Carcinogenicity

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

Classification for carcinogenicity is not warranted.

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 the product in aqueous media, the product is obviously void of any genotoxic potential, including germ cell mutagenicity.

Classification for genotoxicity 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 the product. 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, the product is not toxic for reproduction and/or development.

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

12. Ecological information

12.1 Toxicity

12.1.1 Toxicity to fish	LC50 (96h) for freshwater fish: 50.6 mg/l (calcium dihydroxide) LC50 (96h) for marine water fish: 457 mg/l (calcium dihydroxide)
12.1.2 Toxicity to aquatic invertebrates	EC50 (48h) for freshwater invertebrates: 49.1 mg/l (calcium dihydroxide) LC50 (96h) for marine water invertebrates: 158 mg/l (calcium dihydroxide)
12.1.3 Chronic toxicity to aquatic plants	EC50 (72h) for freshwater algae: 184.57 mg/l (calcium dihydroxide) NOEC (72h) for freshwater algae: 48 mg/l (calcium dihydroxide)
12.1.4 Toxicity to microorganisms / Toxicity to bacteria	At high concentration, through the rise of pH, the product is used for disinfection of sewage sludges.
12.1.5 Toxicity to daphnia and other aquatic invertebrates	NOEC (14d) for marine water invertebrates: 32mg/l (calcium dihydroxide)
12.1.6 Toxicity to soil dwelling organisms	EC10/LC10 or NOEC for soil macroorganisms: 2000 mg/kg soil dw (calcium dihydroxide) EC10/LC10 or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium dihydroxide)
12.1.7 Toxicity to terrestrial plants	NOEC (21d) for terrestrial plants: 1080 mg/kg (calcium dihydroxide)
12.1.8 Other effects	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.

12.1.9 Other information	None
12.2 Persistence and degradability	
Not relevant for inorganic substances.	
12.3 Bioaccumulative potential	
Not relevant for inorganic substances.	
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.	
13. Disposal considerations	
13.1 Waste treatment methods	
<p>Disposal of the product 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.</p> <p>The used packaging is only meant for packing this product; it should not be reused for other purposes.</p>	
14. Transport information	
The product 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.	
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
Not regulated	
15. Regulatory information	
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Authorisations	not required
Restrictions on use	None
Other regulations (European Union)	The product is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.
National regulatory information	slightly water endangering (WGK 1)
15.2 Chemical Safety Assessment	
A Chemical Safety Assessment has been carried out for Ca(OH) ₂ .	
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	
	H319:Causes serious eye irritation. :
16.2 Precautionary statements	
	P264: Wash hands thoroughly after handling. P280: Wear protective gloves/ protective clothing/ eye protection/ face protection. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P313: IF exposed or concerned: Get medical advice/ attention.
16.3 R-phrases(s)	
	Non-hazardous substance.
16.4 S-phrases(s)	
	Non-hazardous substance.

16.5 Abbreviations

DNEL: Derived no effect level
 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
 SDS: Safety data sheet
 STEL: short-term exposure limit
 STOT: specific target organ toxicity
 TWA: time weighted average
 vPvB: very persistent, very bioaccumulative chemical

16.6 Literary reference

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
 Data sheet prepared in accordance with: Annex II of the REACH Regulation (EC) 1907/2006.

References:

1. Council Directive 90/269/EEC
2. Booklet L64 - Safety Signs and Signals. The Health and Safety (Safety Signs and Signals) Regulations 1996 - Guidance on Regulations (HSE) - ISBN 978 0 7176 6359 0
3. <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
4. The Merck Index (Ed. Merck & Co, Rahway, USA)

16.7 Additions, Deletions, Revisions

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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.