

Nordkalk Milk of Lime

Date 15.5.2014

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SECTION 1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY

- 1.1 Product identifier**
Name of Mixture: Mixture of Calcium Dihydroxide and water
Synonymes: Milk of Lime
Commercial Product Name: Nordkalk Aito Lime Paint, Nordkalk Milk of Lime
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
Purpose of use:
 The substance is intended for the following non-exhaustive list of uses:
 Building material industry, Chemical industry, Agriculture, Environmental protection (e.g. flue gas treatment, waste water treatment, sludge treatment), Drinking water treatment, Feed, food and pharmaceutical industry, Civil engineering, Paper and paint industry
- 1.2.1 Recommended use**
 All uses listed in table 1 of the Appendix of this SDS are identified uses.
- 1.2.2 Uses advised against**
 No use identified in Table 1 of the Appendix of this SDS is advised against.
- 1.3 Details of the supplier of the safety data sheet**
Name: Nordkalk Oy Ab
Address: Skräbbölevägen 18, 21600 Pargas, Finland
Telephone: +358 20 753 7000,
 Joona Mannermaa +358 20 753 7374
Email for person responsible: sds@nordkalk.com
- 1.4 Emergency telephone number**
European emergency number: 112
Poison Control Centre: Poison Control Centre, Helsinki, 24 h
 +358 9 471 977; +358 9 4711

SECTION 2. HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture**
 Information on a mixture containing a Ca(OH)₂ content above 20 %.
- 2.1.1 Classification according to Regulation 1272/2008/EC (CLP)**
 Skin Irrit. 2, H315
 STOT SE 3, H335
 Eye Dam. 1, H318
- 2.1.2 Classification according to Directive 1999/45/EC & 67/548/EEC**
 Xi; R37, R38, R41
- 2.1.3 Additional information**
 For full text of H-statements and R- phrases: see SECTION 16
- 2.2 Label elements**
Labelling according to Regulation 1272/2008/EC (CLP)

Signal Word: Danger

Hazard Pictograms:



GHS05



GHS07

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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+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P302+P352 IF ON SKIN: Wash with plenty of soap and water
 P261 Avoid breathing dust/spray
 P310 Immediately call a poison center or doctor/physician.
 P501 Dispose of contents/container in accordance with national regulation.
 P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

2.3 Other hazards

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**3.2 Mixtures**

Mixture of calcium dihydroxide and water

Hazardous ingredients:

CAS number	EC number	Registration No	Identification name	Content [m-%]	Classification according to 67/548/EEC
1305-62-0	215-137-3	01-2119475151-45-0031	Calcium dihydroxide	10-60	Xi: R37,R38, R41

CAS number	EC number	Registration No	Identification name	Content [m-%]	Classification according to Regulation No 1272/2008/EC (CLP)
1305-62-0	215-137-3	01-2119475151-45-0031	Calcium dihydroxide	10-60	Eye Dam 1 H318 Skin Irrit. 2 H315 STOT SE 3 (inhalation) H335

The mixture does not contain hazardous impurities above or equal to concentration limit.

SECTION 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

Remove source of mist/spray or move person to fresh air. Obtain medical attention immediately.

Following skin contact

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.

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4.2 Most important symptoms and effects, both acute and delayed

The mixture is not acutely toxic via the oral, dermal, or inhalation route. It is classified as irritating to skin and to the respiratory system 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

Follow the advises given in Section 4.1

SECTION 5. FIREFIGHTING MEASURES**5.1 Extinguishing media****5.1.1 Suitable extinguishing media**

The mixture 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

None.

5.2 Special hazards arising from the substance or mixture

None.

5.3 Advice for fire fighters

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Keep mist and spray 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 mist and spray – 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. 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 materials for containment and cleaning up

Must be collected in inert porous substance (for instance sand, silica gel, acid binding substance, common binder or sawdust). Clean up promptly by scoop or vacuum. Avoid dust formation. Do not use compressed air for cleaning purposes. Pick up when dry.

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.

SECTION 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 mist and spray levels to a minimum. Handling systems should preferably be enclosed. When handling bulks 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 of mists and sprays, 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.

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7.2 Conditions for safe storage, including any incompatibilities

Bulk storage should be in purpose – designed silos. Keep away from acids and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage.

7.3 Specific end use(s)

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

For more information please see the relevant exposure scenario, available in the Appendix.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

All the information of this section refers to the main ingredient calcium dihydroxide.

8.1 Control parameters

8.1.1 National levels for hazardous dosage (Finland)

1305-62-0 Calcium hydroxide 5 mg/m³ (8 h)

8.1.2 Other information on limit values

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

8.1.3 Limit values in other countries

No information available.

8.1.4 DNELs

Route of exposure	Workers			
	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
<i>Oral</i>	Not required			
<i>Inhalation</i>	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
<i>Dermal</i>	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

Route of exposure	Consumers			
	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
<i>Oral</i>	No exposure expected	No hazard identified	No exposure expected	No hazard identified
<i>Inhalation</i>	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
<i>Dermal</i>	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

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8.1.5 PNECs

Environment protection target	PNEC	Remarks
<i>Fresh water</i>	0,49 mg / L	
<i>Freshwater sediments</i>	No PNEC available	Insufficient data available
<i>Marine water</i>	0,32 mg / L	
<i>Marine sediments</i>	No PNEC available	Insufficient data available
<i>Food (bioaccumulation)</i>	No hazard identified	No potential for bioaccumulation
<i>Microorganisms in sewage treatment</i>	3 mg / L	
Soil (agricultural)	1080 mg / kg soil dw	
Air	No hazard identified	

8.2 Exposure controls

To control potential exposures, intentional generation of mists and spray should be avoided. Consequential misting caused by interaction of fluid with fast moving machinery 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 of this SDS.

8.2.1 Appropriate engineering controls

If user operations intentionally or consequently generate mist or spray, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne mist levels below recommended exposure limits. Exposure scenario attached.

8.2.2 Individual protection measures, such as personal protective equipment

8.2.2.1 Eye/face protection

Do not wear contact lenses. 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 dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.

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.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1	Information on basic physical and chemical properties	
	Appearance	White or off white (beige) suspension in water
	Odour	Odourless
	Odour threshold	Not Applicable
	pH	12,4 (Ca(OH) ₂ saturated solution at 20 °C)
	Melting point/freezing point	0 °C (water)
	Initial boiling point and boiling range	100 °C (water)
	Flash point	Not Applicable
	Evaporation rate	Not Available
	Flammability (solid, gas)	Non Flammable (study result for calcium dihydroxide, EU A.10 method)
	Explosive properties	non explosive (void of any chemical structures commonly associated with explosive properties)
	Vapour pressure	2,3 kPa at 20 °C
	Vapour density	0,62
	Relative density	1,06 – 1,38 g/ml depending on Ca(OH) ₂ concentration
	Solubility(ies)	
	Water solubility	1844,9 mg/L (study results for calcium dihydroxide, EU A.6 method)
	Fat solubility (solvent - oil to be)	Not Applicable
	Partition coefficient: n-octanol/water	Not Applicable
	Auto-ignition 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)
	Viscosity	Not Applicable
	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)
9.2	Other information	
		No other essential information.

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SECTION 10. STABILITY AND REACTIVITY**10.1 Reactivity**

The mixture dissociates resulting in the formation of calcium cations and hydroxyl anions (when below the limit of water solubility). Calcium dihydroxide has exothermic reaction with acids.

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

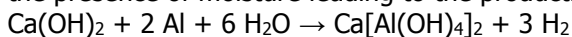
The mixture reacts exothermically with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H₂O): $\text{Ca(OH)}_2 \rightarrow \text{CaO} + \text{H}_2\text{O}$. Calcium oxide reacts with water and releases heat, which can form risk with easily flammable materials. Calcium oxide reacts with aluminium and brass in moist conditions forming hydrogen gas (H₂)

10.4 Conditions to avoid

None.

10.5 Incompatible materials

The mixture reacts exothermically with acids to form salts. The mixture reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen gas (H₂).

**10.6 Hazardous decomposition products**

None.

Further information: The constituent calcium dihydroxide reacts with carbon dioxide (CO₂) to form calcium carbonate, which is a common material in nature.

SECTION 11. TOXICOLOGICAL INFORMATION

The mixture is classified as irritating to skin and to the respiratory system and entails a risk of serious damage to the eye.

11.1 Information on toxicological effects**a. Acute toxicity**

The substance 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.

b. Skin corrosion/irritation

The mixture is irritating to skin (*in vivo*, rabbit).

c. Serious eye damage/irritation

The mixture entails a risk of serious damage to the eye (eye irritation studies (*in vivo*, rabbit)).

d. Respiratory or skin sensitisation

The constituent calcium dihydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition.

Classification for sensitisation is not warranted.

e. Germ cell mutagenicity

Bacterial reverse mutation assay (Ames test, OECD 471): Negative

Mammalian chromosome aberration test: Negative

In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, the mixture is obviously void of any genotoxic potential, including germ cell mutagenicity.

Classification for genotoxicity is not warranted.

f. Carcinogenicity

Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat).

The pH effect of the mixture does not give rise to a carcinogenic risk.

Human epidemiological data support lack of any carcinogenic potential of calcium dihydroxide.

Classification for carcinogenicity is not warranted.

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- 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 dihydroxide.
Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium dihydroxide is not toxic for reproduction and/or development.
Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.
- h. STOT-single exposure**
From human data it is concluded that Ca(OH)₂ is irritating to the respiratory tract.
- i. STOT-repeated exposure**
No classification warranted.
- j. Aspiration hazard**
No classification warranted.

SECTION 12. ECOLOGICAL INFORMATION

All the information of this section refers to the main constituent calcium dihydroxide.

- 12.1 Toxicity**
- 12.1.1 Acute/Prolonged toxicity to fish**
LC₅₀ (96 h) for freshwater fish: 50,6 mg/l
LC₅₀ (96 h) for marine water fish: 457 mg/l
- 12.1.2 Acute/Prolonged toxicity to aquatic invertebrates**
EC₅₀ (48 h) for freshwater invertebrates: 49,1 mg/l
LC₅₀ (96 h) for marine water invertebrates: 158 mg/l
- 12.1.3 Acute/Prolonged toxicity to aquatic plants**
EC₅₀ (72 h) for freshwater algae: 184,57 mg/l
NOEC (72 h) for freshwater algae: 48 mg/l
- 12.1.4 Toxicity to micro-organisms e.g. bacteria**
High concentration, with the rise of pH, calcium dihydroxide is used for disinfection of sewage sludges.
- 12.1.5 Chronic toxicity to aquatic organisms**
NOEC (14 d) for marine water invertebrates: 32 mg/l
- 12.1.6 Toxicity to soil dwelling organisms**
EC₁₀/LC₁₀ or NOEC for soil macroorganisms: 2000 mg/kg soil dw
EC₁₀/LC₁₀ or NOEC for soil microorganisms: 12000 mg/kg soil dw
- 12.1.7 Toxicity to terrestrial plants**
NOEC (21 d) for terrestrial plants: 1080 mg/kg
- 12.1.8 General effect**
Acute pH-effect. Although the mixture is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH-value above 12 will rapidly decrease as result of dilution and carbonation.
- 12.2 Persistence and degradability**
- 12.2.1 Biodegradation**
The methods for determining biodegradability are not applicable to inorganic substances.
- 12.2.2 Chemical degradation**
No information available.
- 12.3 Bioaccumulative potential**
The methods for determining biodegradability are not applicable to 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**
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).
- 12.6 Other adverse effects**
No other adverse effects are identified.

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SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of the mixture 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.

SECTION 14. TRANSPORT INFORMATION

Calcium dihydroxide is not classified as hazardous for transport (ADR (road), RID (rail), ICAO/IATA (air), ADN (inland waterways) and IMDG (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 users	Avoid any release of dust during transportation
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not regulated

SECTION 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 EU regulations:	The substance calcium dihydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant
National regulations:	OEL levels in SECTION 8.

15.2 Chemical safety assessment

A chemical safety assessment has been carried out for the ingredient calcium dihydroxide.

SECTION 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 Additions, Deletions, Revisions

This safety data sheet is the first version.

16.2 Key or legend to abbreviations and acronyms

- DNEL	-	No observed adverse effect level
- PNEC	-	Predicted No Effect Concentration
- EC ₅₀	-	Median effective concentration
- LC ₅₀	-	Median lethal concentration
- LD ₅₀	-	Median lethal dose
- NOEC	-	No observable effect concentration
- PBT	-	Persistent, bioaccumulating and toxic substance
- vPvB	-	Very persistent and very bioaccumulating substance
- OEL	-	Occupational exposure limit
- STEL	-	Short-term exposure limit
- TWA	-	Time weighted average

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16.3 Key literature references and sources for data

- ❖ REGULATION (EC) No 1272/2008
- ❖ 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, 2007: HERAG fact sheet - assessment of occupational dermal exposure and dermal absorption for metals and inorganic metal compounds; EBRC Consulting GmbH, Hannover, Germany; August 2007
- ❖ Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008
- ❖ ECHA, 2013: Guidance on the compilation of safety data sheets

16.5 List of relevant R phrases, hazard statements, safety phrases and precautionary statements

R37	Irritating to respiratory system
R38	Irritating to skin
R41	Risk of severe damage to eyes
H315	Causes skin irritation
H318	Causes serious eye damage
H335	May cause respiratory irritation
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
P102	Keep out of reach of children
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.
P302+P352	IF ON SKIN: Wash with plenty of water
P310	Immediately call a poison center or doctor/physician.
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 national regulation

16.6 Training advice

Provide adequate information, instruction and training for operators. Refer to attached safety data sheets and/or instructions for use.

16.7 Additional information available from:***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.