SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH), changed with 2015/830 / EC

Greinox N

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

Information on the product / trade name: **Greinox N**

Identified uses: only for industrial use
neutralization

REACH Registration Number:
A registration number for this substance is not available as the substance or its use is exempted from registration under Article 2 of REACh Regulation (EC) No 1907/2006, which does not require registration or is planned for a later date.

Information of the manufacturer / supplier:
Kai Greising e. K. Clean Marker
Industriestraße 29/2
73340 Amstetten
Germany
phone: 0049-7331-3058-0
fax: 0049-7331-981722

Emergency phone number
Poison emergency center Freiburg
phone: 0049-761-19240

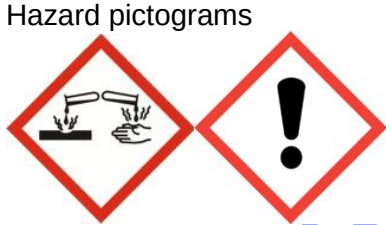
SECTION 2: Hazards identification:

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Skin corrosion / irritation: Skin corrosion. 1A, H314
Skin irrit. 2, H315
STOT SE 3, H335
Eye Dam. 1, H318
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms



Signal word
Danger

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

Precautionary statements

P260: Do not breathe dust / fume / gas / mist / vapors / spray.
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.
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 local/regional/national/international regulation

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

3.1 Substance
Not applicable

3.2 Mixture
Hazardous components (REGULATION (EC) No 1272/2008)
Chemical Name (Concentration)
Mixture of calcium dihydroxide and water

CAS-No.	Registration number	Classification
Calcium dihydroxide (10 % - 60 %)		
Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.		
1305-62-0	01-2119475151-45-00XX	Eye Dam 1 H318 Skin Irrit. 2 H315 STOT SE 3 (inhalation) H335

Substances of Very High Concern (SVHC) that have been published in accordance with Article 59 of Regulation (EC) No 1907/2006 **are not** included in concentrations above 0.1% by mass

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

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.

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 any immediate medical attention and special treatment needed
No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

The mixture is not combustible. Use a dry powder, foam or CO_2 fire extinguisher to extinguish the surrounding fire. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Not combustible.

Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters

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

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

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). Advice for emergency responders: 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

Pick up the product mechanically in.

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

Avoid contact with skin and eyes. Wear protective equipment (refer to Section 8 of this safety data sheet). 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

Hygiene measures
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.

7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
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)
Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Components with workplace control parameters
Components
Calcium dihydroxide (1305-62-0)

DNELs:

	Workers			
Route of exposure	**Acute effect local**	**Acute effects systemic**	**Chronic effects local**	**Chronic effects systemic**
Oral	Not required			
Inhalation	4 mg / m³ (Respirable dust)	No hazard identified	1 mg / m³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

PNECs:

Environment protection target	PNEC	Remarks
Fresh water	0.49 mg / L	
Freshwater sediments	No PNEC available	Insufficient data available
Marine water	0.32 mg / L	
Marine sediments	No PNEC available	Insufficient data available
Food (bioaccumulation)	No hazard identified	No potential for bioaccumulation
Microorganisms in sewage treatment	3 mg / L	
Soil (agricultural)	1080 mg / kg soil dw	
Air	No hazard identified	

National OELs for hazardous components of the mixture not applicable for Germany.

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.

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.

Eye/face protection	Safety glasses
Hand protection	
full contact:	
Glove material:	Nitrile rubber Glove thickness: 0.11 mm Break through time: > 480 min
splash contact:	
Glove material:	Nitrile rubber Glove thickness: 0.11 mm Break through time: > 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374.
The breakthrough times stated above were determined in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves.

Other protective equipment
protective clothing

Respiratory protection
required when vapours/aerosols are generated.
Recommended Filter type: Filter P 2 for solid and liquid particles of harmful substances devices are carried out according to the instructions of the producer. These measures have to be properly documented.

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. Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	White or off white (beige) suspension in water
Colour	blue
Odour	odourless
Odour Threshold	Not applicable
pH	> 12 at 20°C saturated solution
Melting point	0 °C (water)
Boiling point	100 °C (water)
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	non flammable
Lower explosion limit	none explosive
Upper explosion limit	none explosive
Vapour pressure	2.3 kPa at 20°C
Vapour density	0.62
Density	1,05 - 1,38 g/cm^3 at 20°C
Relative density	1,06 – 1,38 g/ml depending on concentration
Water solubility	1844.9 mg/L (study results for calcium dihydroxide, EU A.6 method)
Partition coefficient: n-octanol/water	No information available.
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, dynamic	No information available.
Oxidizing properties	none

9.2 Other data
none

SECTION 10: Stability and reactivity

10.1 Reactivity
See section 10.3

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

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.

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.

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral 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.

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

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

Sensitization
The constituent calcium dihydroxide 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.
Classification for sensitization is not warranted.

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.

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.

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.

Specific target organ toxicity - single exposure
From human data it is concluded that $Ca(OH)_2$ is irritating to the respiratory tract.

Specific target organ toxicity - repeated exposure
No classification warranted.

Aspiration hazard
No classification warranted.

11.2 Further information
None

SECTION 12: Ecological information

12.1 Toxicity
Acute/Prolonged toxicity to fish
LC_{50} (96h) for freshwater fish: 50.6 mg/l
LC_{50} (96h) for marine water fish: 457 mg/l

Acute/Prolonged toxicity to aquatic invertebrates
EC_{50} (48h) for freshwater invertebrates: 49.1 mg/l
LC_{50} (96h) for marine water invertebrates: 158 mg/l

Acute/Prolonged toxicity to aquatic plants
EC_{50} (72h) for freshwater algae: 184.57 mg/l
NOEC (72h) for freshwater algae: 48 mg/l

Toxicity to micro-organisms e.g. bacteria
At high concentration, through the rise of pH, calcium dihydroxide is used for disinfection of sewage sludges.

Chronic toxicity to aquatic organisms
NOEC (14d) for marine water invertebrates: 32 mg/l

Toxicity to soil dwelling organisms
EC_{10}/LC_{10} or NOEC for soil macroorganisms: 2000 mg/kg soil dw
EC_{10}/LC_{10} or NOEC for soil microorganisms: 12000 mg/kg soil dw

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

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
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

SECTION 13: Disposal considerations

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)] in Europe. It is classified in Germany.

14.1. UN-Number
Not regulated in Europe, Germany: 3266

14.2. UN proper shipping name
Not regulated in Europe, Germany: corrosive Liquid, Basic, inorganic, n.o.s.

14.3. Transport hazard class
Not regulated in Europe, Germany: 8

14.4. Packing group
Not regulated in Europe, Germany: III

14.5. Environmental hazards
None

14.6. Special precautions for user
None.

14.7. Transport in bulk according to Annex II of MARPOL73/78 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
EU regulations	
Major Accident Hazard	The substance calcium dihydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.SEVESO III
Legislation	Germany: water hazard class 1, self assessment
Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work.
Storage class	Not regulated in Europe, Germany: 8B

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated

Substances of very high concern (SVHC)	This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).

15.2 Chemical Safety Assessment

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

SECTION 16: Other Information

16.1. Hazard Statements

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

Labelling
Hazard pictograms

Signal word
Danger

P260: Do not breathe dust / fume / gas / mist / vapors / spray.
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 local/regional/national/ international regulation

16.3 Abbreviations

EC_{50}: median effective concentration
LC_{50}: median lethal concentration
LD_{50}: median lethal dose
NOEC: no observable effect concentration
OEL: occupational exposure limit
PBT: persistent, bioaccumulative, toxic chemical
PNEC: predicted no-effect concentration
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2017/2398/EC	Directive of the European Parliament and of the Council amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits, Table 1: List of approved workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
Eye Dam.	seriously damaging to the eye
Eye Irrit.	irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	indicative occupational exposure limit value
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant)
Met. Corr.	corrosive to metals

NLP	No-Longer Polymer
ppm	parts per million
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	corrosive to skin
Skin Irrit.	irritant to skin
STEL	short-term exposure limit
TWA	time-weighted average
VOC	Volatile Organic Compounds
vPvB	very Persistent and very Bioaccumulative
WEL	workplace exposure limit

Training advice
Provide adequate information, instruction and training for operators.

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.