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

1.1. Product identifier

Name of the substance:	Calcium oxide
CAS:	1305-78-8
EINECS:	215-138-9
Synonyms:	Burnt lime, quicklime, bulk lime, powdered lime, highly reactive quicklime, soft-burnt powdered quicklime, building lime, lime fertilizer
Chemical name and molecular formula:	calcium oxide – CaO **Ca=O**
Trade name:	EN 459-1 CL 90-Q building lime, bulk lime, highly reactive quicklime, hard-burnt powdered quicklime, AgroBIELIK 90, lime fertilizer type 01, Aqualime, Clavical, Domcalc, Ferrolime, Agrobielik, Paperlime, Purelime, Sanitlime
Molecular mass:	56,08 g/mol
Full registration number:	01-2119475325-36-0058
Register number in the Database on products, packaging and waste management:	BDO 000633450

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

In the industry of building materials for the production of autoclaved aerated concrete, silicate brick, mortars, in the chemical industry as a catalyst, neutraliser, pH-regulating agent, in the steel industry as a flux for pig iron desulphurization, in the pulp and paper industry, soda industry, environmental protection, agriculture as a fertilizer, for water treatment, sewage sludge hygienization and soil stabilization. All identified uses are given in Table 1 of the annex to this Material Safety Data Sheet.

Uses advised against: uses not given in Table 1 in the Annex to this Material Safety Data Sheet are uses advised against.

1.3. Details of the supplier of the Material Safety Data Sheet

Name:	NORDKALK Wapno Sp. z o.o.
Office address:	Sitkówka 24, 26-052 Nowiny
Production plant address:	Kujawy Plant, Bielawy 1, 88-192 Piechcin
Telephone number:	+48 52 38 34 400
Email address of the person responsible for the Material Safety Data Sheet:	reach.nkw@nordkalk.com

1.4. Emergency telephone number

Bureau for Chemical Substances:	+48 42 2538 400 (business days 8:00-16:00)
Twenty-four-hour phone NORDKALK Wapno Sp. z o.o.:	+48 41 34 69 383

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Skin irritation: Skin Irritation 2

Specific target organ toxicity – single exposure: route of exposure: respiratory tract: STOT SE 3

Serious eye damage: Eye Damage 1

Hazards:

Causes skin irritation (H315)

Causes serious eye damage (H318)

May cause respiratory irritation (H335)

2.2. Label elements

Hazard pictograms:

Warning signal: Danger

Hazard statements:

H315: causes skin irritation

H318: causes serious eye damage

H335: may cause respiratory irritation

Phrases indicating precautions:

P102: keep out of reach of children **(NOTE: as the label can include only a maximum of 6 P statements, the P102 statement has not been included on the label)**

P261: avoid breathing dust

P280: wear protective gloves/protective clothing/eye protection/face protection

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

P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing

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/doctor

P501: remove the content/container to a closable container or a dust-tight waste bag according to local/regional/national/international regulations. **(NOTE: as the label can include only a maximum of 6 P statements, the P501 statement has not been included on the label)**

2.3. Other hazards

The substance does not meet the classification criteria for PBT or vPvB of the substance.

No other risks have been identified.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances

Main ingredient:

Name: Calcium oxide

CAS: 1305-78-8

EINECS (EC): 215-138-9

Typical concentration: 92,23%

Classification according to Regulation (EC) No. 1272/2008
Skin irritation: Skin Irritation 2
Specific target organ toxicity – single exposure: route of exposure:
respiratory tract: STOT SE 3
Serious eye damage: Eye Damage 1
Warning signal: Danger

Hazard statements:
H315: causes skin irritation
H318: causes serious eye damage
H335: may cause respiratory irritation

Impurities:

No pollutants relevant for classification and labelling.

3.2. Mixtures

N/a

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

General advice:

The delayed effects on the organism are not known. In case of exposure (except of minor cases) consult a physician, show the product packaging. Personal protective equipment for first-aiders is recommended.

Type of route of entry	Symptoms	First aid provision manner
Inhalation	Cough, burning sensation, short breath	Remove dust source and remove the person from the exposure location to fresh air. Immediate medical help required.
Dermal	Reddening of skin, burning sensation, pain	Remove contaminated outfit, carefully and gently wipe the contaminated surfaces of the body with a dry cloth to remove any traces of the product and then wash with plenty of cool water. Seek medical advice if necessary.
Contact with eyes	Reddening, sore, sight disorders	Remove contact lenses, if present and easy to do. Immediately wash your eyes with plenty of saline solution or water (avoid intense stream due to risk of damage to cornea). **Caution: persons exposed to the risk of contact with calcium oxide through eyes should be advised about the**

		need and methods for immediate eyes washing. The workstation must be equipped with saline. In case of eyes contamination urgent ophthalmologic consultation is required.
Digestive tract	Burning sensation, stomach-ache, vomiting	Do not provoke vomit. Wash the mouth with water and serve cold pure water for drinking in small portions. Do not give anything to drink to unconscious person. Immediate medical help required.

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

Calcium oxide is not highly toxic in contact with people through ingestion, skin or respiratory tracts. The substance is classified as irritating to the skin and respiratory tracts and carries a risk of serious damage to the eye. There are no indications of side effects, as the main health risk is local change due to an increase in pH.

4.3. Indication for any immediate medical attention and special treatment needed

Follow the advice given in 4.1.

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing agents

Non-combustible solid in powder an/or dust form. Does not support combustion. Reacts with water with high heat release, which may be sufficient to ignite flammable materials. In the event of a fire in the immediate vicinity, it is necessary to use powder or snow ABC fire extinguishers, appropriate for local conditions and the environment.

Unsuitable extinguishing agents

Do not use water or related products.

5.2. Special hazards arising from the substance or mixture

Reacts with water with high heat release, which may be sufficient to ignite flammable materials.

5.3. Advice for firefighters

Rescue services should wear protective clothing and personal respiratory and eye protection and avoid the formation of dust. There are no special requirements for protective equipment for rescue services.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Avoid inhalation of dust - ensure adequate ventilation or personal respiratory protection for persons in the danger zone (see section 8). Keep the dust level to a minimum. Disallow persons unequipped with personal protection from staying in the danger zone. Prevent contact with eyes, skin and clothing by using protective clothing and personal eye protection (see Section 8).

6.1.2. For emergency responders

Avoid inhalation of dust - ensure adequate ventilation or personal respiratory protection for persons in the danger zone (see section 8). Keep the dust level to a minimum. Disallow persons unequipped with personal protection from staying in the danger zone. Prevent contact with eyes, skin and clothing by using protective clothing and personal eye protection (see Section 8).

6.2. Environmental precautions

Minimize spillage. If possible, keep the material dry, it is best to cover spillage to avoid hazard of dusting. Avoid unintentional release to surface water and groundwater (pH increase). In case of high contamination of watercourses please notify relevant Environmental Protection Inspectorate.

6.3. Methods and materials for containment and cleaning up

Collect the dispensed product carefully (not raising the dust cloud) into a lockable container or dustproof bag with industrial vacuum cleaners or hand tools (see section 13). Avoid contact of the substance with water.

6.4. Reference to other sections

For more detailed information, refer to sections 8 and 13 as well as the annex to this Material Safety Data Sheet.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

7.1.1. Protective measures

Keep the dust level to a minimum. Work in rooms equipped with general or local ventilation system (dusting agents in loading points). The transport routes of the product should be enclosed to minimise dust emissions. The usual precautions should be taken during the handling of packaging in connection with the risk described in the Announcement of the Minister of Labour, Family and Social Affairs of 11 May 2018 on the consolidated text of the Regulation of the Minister of Labour and Social Policy on safety and hygiene of work during manual transport work and other physical activity works (Journal of Laws 18.1139). Observe the rules of personal hygiene, use personal protective equipment (see section 8). Do not wear contact lenses while working with the product. It is also advised to equip the workers with devices for rinsing eyes or bottles with saline solution.

7.1.2. General occupational health and safety recommendations

When using the substance do not eat, drink, avoid direct contact of the substance with eyes and skin, do not wear contact lenses, avoid dust inhalation. Maintain cleanliness, for example by regularly cleaning clothing and the workplace. After work take a shower and change clothes. Do not wear contaminated clothing at home.

7.2. Conditions for safe storage, including incompatibilities

Keep out of the reach of children. Store in spaces or containers providing protection against moisture, marked in accordance with the Regulation of the Minister of Health of 25 August 2015 on marking places, pipelines, containers and tanks used for storage or containing hazardous substances or mixtures (Journal of Laws 15.1368). Secure against possibility of contamination especially with acids, substantial amounts of paper, straw and nitro compounds. Do not transport or store in aluminium tanks, especially if there is a risk of the substance coming into contact with water. Each container in which the substance is stored shall be equipped with a dust collector of sufficient efficiency and the room with a general or local ventilation system.

Where justified, risks should be managed in terms of:

i) explosive atmosphere

ii) conditions conducive to corrosion (e.g. storage in aluminium tanks)
iii) risks of flammability
iv) mutually incompatible substances or mixtures (including acids)

and control the impact of:

i) weather conditions
ii) humidity

and also determine the recommendations regarding:

i) ventilation requirements
ii) permissible quantities to be stored under the given conditions
iii) compatibility with packaging

7.3. Specific end use(s)

The identified uses given in Table 1 of the annex to this Material Safety Data Sheet should be verified. More detailed information can be found in relevant exposure scenarios: point 2.1 – Control of workers exposure.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

8.1.1. According to the Regulation of the Minister of Labour, Family and Social Affairs of 12 June 2018 on the maximum permissible concentrations and intensities of agents harmful to health in the working environment (Journal of Laws 18.1286) for calcium oxide, the maximum permissible concentrations for the inhalable fraction are as follows:

NDS - 2 mg/m3
NDSCh - 6 mg/m3

and for the respirable fraction:

NDS - 1 mg/m3
NDSCh - 4 mg/m3

Inhalable fraction – aerosol fraction permeating through the nose and mouth, which poses threat to health when inhaled into the respiratory tract.

Respirable fraction - an aerosol fraction entering the respiratory tract which poses a health hazard when deposited in a gas exchange area.

DSB Biological Limit Values:
Not found

8.1.2. It is recommended to mark the maximum permissible concentration of the substance in the air at work stations.

Recommended monitoring procedures:

- Regulation of the Minister of Health of 2 February 2011 on tests and measurements of harmful factors in work environment (Journal No. 33 of 2011, item 166).

- Tests and measurements of factors harmful to health are carried out with methods specified in the Polish Standards and, in the absence of such standards, methods recommended by research and development units in the field of occupational medicine.

8.1.3. No air pollutants have been found to be generated during proper use.
8.1.4. DNEL Values:

	Employees			
Route of exposure	**Acute local effects of exposure**	**Acute systemic effects of exposure**	**Chronic local effects of exposure**	**Chronic systemic effects of exposure**
Oral	Not required			
Inhalation	4 mg / m³ (For respirable dust)	No hazards have been identified	1 mg / m³ (For respirable dust)	No hazards have been identified
Dermal	Hazard has been identified, but DNEL values were not determined.	No hazards have been identified	Hazard has been identified, but DNEL values were not determined.	No hazards have been identified

	Consumers			
Route of exposure	**Acute local effects of exposure**	**Acute systemic effects of exposure**	**Chronic local effects of exposure**	**Chronic systemic effects of exposure**
Oral	No exposure is expected	No hazards have been identified	No exposure is expected	No hazards have been identified
Inhalation	4 mg / m³ (For respirable dust)	No hazards have been identified	1 mg / m³ (For respirable dust)	No hazards have been identified
Dermal	Hazard has been identified, but DNEL values were not determined.	No hazards have been identified	Hazard has been identified, but DNEL values were not determined.	No hazards have been identified

PNEC Values:

Environment	**PNEC**	**Notes**
Fresh water	0.49 mg/L	
Freshwater deposits	No data	Lack of sufficient amount of data
Seawater	0.32 mg/L	
Seawater deposits	No data	Lack of sufficient amount of data
Food products (bioaccumulation)	No hazards have been identified	No bioaccumulation potential
Microorganisms involved in wastewater treatment	3 mg/L	

Soil (agriculture)	1080 mg/kg of soil	
Air	No hazards have been identified	

8.1.5. Risk management is not required if used correctly.

8.2. Exposure control

Avoid dust emissions. Required local or general ventilation of the room or application of dedusting sealed devices. In other cases, use appropriate personal protective equipment (see relevant exposure scenario in the annex to this Material Safety Data Sheet).

If exposure cannot be prevented by other means, use personal protective equipment.

8.2.1. Appropriate engineering controls

Should dust be formed as a result of use, for the production of autoclaved aerated concrete, silicate brick, mortars, in the chemical industry as a catalyst, neutraliser, pH-regulating agent, in the steel industry as a flux for pig iron desulphurization, in the pulp and paper industry, soda industry, environmental protection, agriculture as a fertilizer, for water treatment, sewage sludge hygienization and soil stabilization, process barriers, local exhaust ventilation or other technical protection must be used to keep the level of dust in the air within the recommended limits.

8.2.2. Individual protection measures, such as personal protective equipment

8.2.2.1. When working with the substance, keep dust levels to a minimum. Work in rooms equipped with a general or local ventilation system. When using the substance do not eat, drink or avoid direct contact of the substance with eyes and skin. Wear safety glasses, chemical-resistant gloves and protective work clothing.

If justified, see section 5 for specific advice on individual fire-fighting or chemical protection equipment.

8.2.2.2.

a) eye or face protection
   Do not wear contact lenses In case of powders, wear goggles, in dusty environment use tightly fitting goggles with side covers or full goggles with wide field of vision. Provide an eye rinse station for high daily exposure or equip the workers with devices for rinsing eyes or bottles with saline solution.

b) skin protection
   i) hand protection
      Wear protective gloves (in case of long-term exposure - chemically resistant as per EN ISO 374: nitrile, nylon, vinyl, neoprene, natural rubber and in case of short-term exposure - made of cotton).
   ii) other
      Use protective gloves, protective working clothing (with cotton) fully covering the skin (long trousers, long sleeves with tight fastenings), footwear resistant to caustic materials and preventing dust penetration. In the event of high daily exposure, workers should be able to take a shower and, if necessary, use a protective cream to protect exposed skin, especially the neck, face and wrists.

c) respiratory equipment
   In is recommended to use local or general ventilation system of the room or application of dedusting sealed devices. Depending on the level of exposure, wear a filtering half-mask with a built-in inhalation valve and in case of short contact a disposable mask.

d) thermal hazards

The substance does not present a thermal hazard and therefore no special attention is required.

8.2.3. Environmental exposure control

Select and install effective filtering devices to prevent exposure of the environment to the substance. Minimize spillage. In case of high contamination of watercourses please notify relevant Environmental Protection Inspectorate. For more detailed information, refer to the suitable exposure scenario in the annex to this Material Safety Data Sheet.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) State of aggregation:	Solid (lumps or fine powder)
b) Colour:	White or whitish/beige
c) Odour:	odourless
Odour threshold:	n/a
d) Melting point:	> 450 °C (results of the EU test A.1)
e) Boiling point:	not applicable (a solid with a melting point> 450°C)
f) Flammability:	non-flammable (result obtained via the EU A.10 method)
g) Explosivity limits:	not applicable (solid)
h) Ignition temperature:	not applicable (solid)
i) Auto-ignition temperature:	not applicable (solid)
j) Decomposition temperature:	not applicable
k) pH:	12.3 (saturated solution at 20 °C)
l) Kinetic viscosity:	not applicable (solid)
m) Solubility:	soluble in water - 1337,6 mg/dm^3 at 20 ^{o}C (result obtained via the EU A.6 method) soluble in ammonium salts, acids and glycerine
n) Distribution coefficient n-octanol/ water (log ratio value):	not applicable (inorganic substance)
o) Vapour pressure:	not applicable (solid)
p) Respective density:	3,31 g/cm^3 at 20 ^{o}C (result obtained via the EU A.3 method)
q) Relative vapour density:	not applicable (solid)
r) Particle characteristics:	from 90 mm to 0,5 mm

9.2. Other information

9.2.1. Information on physical risk classes

a) Explosives
N/a

b) Flammable gases
N/a

c) Aerosols
N/a

d) Oxidising gases
N/a

e) Gases under pressure
N/a

f) Flammable fluids
N/a

g) Flammable solids
N/a

h) Self-reactive substances and mixtures
N/a

i) Pyrophoric liquids
N/a

j) Pyrophoric solids
N/a

k) Self-heating substances and mixtures
N/a

l) Substances and mixtures which in contact with water emit flammable gases
N/a

m) Oxidising liquids
N/a

n) Oxidising solids
N/a

o) Organic peroxides
N/a

p) Substances corrosive to metals
Calcium oxide causes corrosion of aluminium

q) Desensitised explosives
N/a

9.2.2. Other safety characteristics

a) Mechanical sensitivity
N/a

b) Self-accelerating polymerisation temperature
N/a

c) Formation of explosive dust/air mixture
N/a

d) Acid/alkaline reserve
N/a

e) Evaporation rate
N/a

f) Miscibility

N/a

g) Conductivity
N/a

h) Corrosive action
Calcium oxide causes corrosion of aluminium
N/a

i) Reduction potential
N/a

j) Radical formation potential
N/a

k) Photocatalytic properties
N/a

SECTION 10 STABILITY AND REACTIVITY

10.1. Reactivity

10.1.1. Calcium oxide reacts exothermically with water to form calcium dihydroxide:

$$CaO + H2O \rightarrow Ca(OH)2 + 1155\ kJ/kg$$

Calcium oxide reacts exothermically with acids to form calcium salts

10.1.2. During transport, storage and use the mixture must not be kept in aluminium or brass containers.

Avoid any contamination of the material that may affect reactivity.

10.2. Chemical stability

Under normal conditions of use and storage, calcium oxide is stable.

10.3. Possibility of hazardous reactions

Calcium oxide reacts exothermically with water and acids. This may pose a risk to flammable materials.

10.4. Conditions to avoid

Limit exposure to air and moisture.

Manage the risks of excessive air and moisture ingress.

10.5. Incompatible materials

Calcium oxide reacts with aluminium in the presence of moisture to form hydrogen:

$$CaO + 2\ Al + 7\ H2O \quad Ca(Al(OH)4)2 + 3\ H2$$

Dangerously reacts with fluorine, hydrogen fluoride, chlorine trifluoride, bromine penthofluoride and phosphorus pentaxide.

Manage the risk of moisture ingress.

10.6. Hazardous decomposition products

None

Other information: Calcium oxide absorbs moisture and carbon dioxide from the air to form calcium carbonate, a product common in nature.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No. 1272/2008

Substance not included in the Ministry of Health's lists of toxic and carcinogenic substances. Calcium oxide is classified as skin and respiratory tract irritant and may cause serious eye damage. The maximum concentration, preventing local sensory irritation and drop in pulmonary functionality, expressed as a critical effect amounts to OEL (8 h) = 1 mg / m³ of respirable dust.

a. Acute toxicity

Oral LD_{50} > 2000 mg/kg of body weight (OECD 425 method, rat)
Dermal LD_{50} > 2500 mg/kg of body weight (OECD 402, rabbit for calcium dihydroxide. Mentioned results are also applicable for calcium oxide as it forms calcium carbon dihydroxide in contact with moisture.)
Inhalation - no data

Calcium oxide does not cause acute toxicity.
The classification of acute toxicity is not justified.

b. Skin corrosion/irritation effect

Calcium oxide has an irritating effect on skin (in vivo, rabbit).
Based on experimental results, it was found that calcium oxide requires classification as skin irritant (Skin Irrit 2: H315: Causes skin irritation).

c. Serious eye damage/irritation

Calcium oxide can cause serious eye damage (eye tests (in vivo, rabbit).
Based on experimental results, it has been found that calcium oxide requires classification as eye irritant causing damage (Eye Dam. 1: H318 - Causes serious eye damage

d. Respiratory or skin sensitisation

No data available. Calcium oxide is not considered to be a skin sensitiser, especially considering the type of effect (change of pH) and the essential need for calcium in human nutrition.

The classification of sensitisation is not justified.

e. Germ cell mutagenicity

Bacterial reverse mutation test (Ames test, OECD 471): negative.
Mammal chromosomal aberration test: negative.
Due to the omnipresence and necessity of Ca for life, calcium oxide is free of all genotoxicity. The classification for mutagenicity is not justified.

f Carcinogenicity

Calcium (administered as Ca-lactate) is not carcinogenic (test results, rats).
There is no carcinogenic risk if the pH of calcium oxide changes.
Epidemiological data indicate no carcinogenic risk.

The classification for carcinogenic is not justified.

g. Reproductive toxicity

Calcium (Ca - administered as carbonate) is not toxic for reproduction (experimental results, mouse).
The pH changes do not give rise to reproductive risks.
Epidemiological data indicate no risk of reproductive toxicity.
In both animal tests and clinical trials on humans with administering calcium salts, no reproductive or developmental defects have been detected. See also Scientific Committee on Food (Art. 16.6). Thus, calcium oxide is not toxic for reproduction and/or development.

Classification in scope of toxicity for reproduction according to Regulation (EC) No. 1272/2008 is not required.

h. Specific target organ toxicity – single exposure

Medical data showed that calcium oxide has an irritating effect on the respiratory tract.

As summarised and evaluated in the SCOEL Recommendation (Anonymous, 2008), based on medical data, calcium oxide is classified as respiratory irritant (STOT SE 3: H335 - May cause respiratory irritation).

i. Specific target organ toxicity – repeated exposure

The toxicity of calcium supplied orally (upper levels of consumption (UL) by adults) determined by the Scientific Committee on Food (SCF) is expressed as UL = 2500 mg/d, which corresponds to 36 mg/kg of body weight/d (70 kg person) calcium.
Dermal toxicity of $Ca(OH)_2$ is not considered as significant in the light of expected insignificant dermal absorption and due to local irritation as a major health effect (change of pH).
The inhalation toxicity of $Ca(OH)_2$ (local effect - mucous membrane irritation) is determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) at 8 h TWA as 1 mg/m³ of respirable dust (see section 8.1).

Therefore, no long-term exposure classification of $Ca(OH)_2$ is required.

j. Aspiration hazard

No data are known that would substantiate the possibility of risk. The classification of this hazard is not justified.

11.1.1.

The substance is classified as skin and respiratory tract irritant and may cause serious eye damage.

H315:	causes skin irritation
H318:	causes serious eye damage
H335:	may cause respiratory irritation

11.1.2.

Does not cause acute toxicity.
Oral LD_{50} > 2000 mg/kg of body weight (OECD 425 method, rat)
Dermal LD_{50} > 2500 mg/kg of body weight (OECD 402, rabbit)
Inhalation - no data

11.1.3.

Based on experimental results, it has been found that the substance requires classification as skin irritant and eye irritant causing damage. Medical data has shown that the substance has an irritating effect on the respiratory tract.

11.1.4.

The classification of acute toxicity is not justified. It is not considered a skin sensitiser. The classification for mutagenicity is not justified. The classification for carcinogenic is not justified. The substance is not toxic for reproduction and/or development. Classification for long-term exposure toxicity is not required. Aspiration hazard classification is not justified.

11.1.5. Information on likely routes of exposure

The substance is not highly toxic in contact with people through the ingestion, skin or respiratory tracts. It is classified as irritating to the skin and respiratory tracts and carries a risk of serious damage to the eye.

11.1.6. Symptoms related to the physical, chemical and toxicological properties

Small doses can cause irritation progressing to burns; large doses can lead to death.

11.1.7. Delayed, immediate and chronic effects from short- and long-term exposure

Based on the available data, the delayed effects on the organism are not known.

11.1.8. Interaction effects

N/a

11.1.9. No detailed data available

Based on the available data, there are no grounds for classification of acute toxicity by inhalation.
Based on the available data, there are no grounds for determining respiratory sensitisation.

11.1.10. Mixtures

N/a

11/01/2011. Mixture versus substance information

N/a

11.2. Information on other hazards

11.2.1. Endocrine-disrupting properties

Based on the available data, no endocrine disrupting properties have been found.

11.2.2. Other information

Based on the available data, no other relevant information on adverse health effects have been found.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/chronic toxicity to fish:

LC_{50} (96h) for freshwater fish: 50.6 mg / l (calcium dioxide)
LC_{50} (96h) for seawater fish: 457 mg/l (calcium dioxide)

12.1.2 Acute/chronic toxicity to aquatic invertebrates:

EC_{50} (48h) for freshwater invertebrates: 49.1 mg/l (calcium dioxide)

LC_{50} (96h) for seawater invertebrates: 158 mg/l (calcium dioxide)

12.1.3 Acute/chronic toxicity to water plants:

EC_{50} (72h) for freshwater algae: 184.57 mg/l (calcium dioxide)
NOEC (72h) for freshwater algae: 48 mg/l (calcium dioxide)

12.1.4 Toxicity to microorganisms, such as bacteria:

At high concentrations, due to temperature and pH increase, calcium oxide is used for post sewage sludge hygienization.

12.1.5 Chronic aquatic toxicity:

NOEC (14d) for seawater invertebrates: 32 mg/l (calcium dioxide)

12.1.6 Toxicity to organisms living in the earth:

EC_{10}/LC_{10} or NOEC for soil macro-organisms: 2000 mg / kg of dry weight soil (calcium dioxide)
EC_{10}/LC_{10} or NOEC for soil microorganisms: 12000 mg/kg of dry soil (calcium dioxide)

12.1.7 Toxicity to terrestrial plants:

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

12.1.8 Overall impact

Acute pH change. Although the product can be used to improve the acidity of water, the proportion exceeding

1 g/l may be harmful to aquatic life. The pH value > 12 will drop quickly as a result of dilution and carbonisation

12.1.9. Other information

The above-mentioned results are also applicable for calcium oxide as it forms calcium carbon dihydroxide in contact with moisture.

12.2 Persistence and degradability

Not applicable for inorganic substances

12.3 Bioaccumulative abilities

Not applicable for inorganic substances

12.4 Mobility in soil

Calcium oxide reacts with water and/or carbon dioxide to form calcium dihydroxide and/or calcium carbonate, respectively, which are difficult to dissolve and therefore have low mobility in most soils.

12.5 Results of PBT and vPvB assessment

According to the results of the assessment, the substance is neither PBT nor vPvB.

12.6 Endocrine-disrupting properties

Based on the available data, no endocrine disrupting properties have been found.

12.7 Other adverse effects

Based on the available data, no other adverse effects have been identified.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Calcium oxide wastes were classified on the basis of the Regulation of the Minister of Climate of 2 January 2020 on the catalogue of wastes (Journal of Laws 20.10) to the group: "Waste from production of mineral adhesives (including cement, lime and plaster) and their products" (code 10 13) and subgroup: "Waste from production of burnt lime and hydrated lime" (code 10 13 04).

Detailed regulations for handling the waste are provided in the Announcement of the Speaker of the Polish Parliament of 7 July 2023 on the consolidated text of the law on waste (Journal of Laws 23.1587). Waste that could not be recycled should be neutralized in the location in which they are produced. Small amounts of hydrated lime may be carefully collected into containers in dry condition. Large amounts may be used in farming as agricultural limestone. Container used for packaging should be used only for packing this product and it may not be reused for other purposes. Contaminated packaging should be submitted for recycling. Processing, use or contamination of this product may modify the waste management options.

SECTION 14 TRANSPORT INFORMATION

Calcium oxide is not classified as hazardous for transport [ADR (road transport), RID (rail transport), ADN (inland water transport), IMDG (maritime transport)]. However, calcium oxide is classified as hazardous for air transport (ICAO/IATA).

14.1.UN number or ID number

UN 1910

14.2. UN proper shipping name

Calcium oxide

14.3. Transport hazard class(es)

Class 8 (air transport - ICAO / IATA)

14.4. Packing group

Group III (air transport - ICAO / IATA)

14.5. Environmental hazards

The substance is not hazardous to the environment in line with the criteria of the UN Model Regulations (as reflected in ADR, RID and ADN) and does not cause marine pollution in line with the IMDG Code and emergency response procedures for ships carrying dangerous goods.

14.6. Special precautions for users

Emissions of dust during transport should be avoided by using leakproof product tanks and the manufacturer's packaging.

14.7. Bulk maritime transport according to IMO instruments

The substance is not considered to be harmful to the marine environment according to MARPOL Annex V.

SECTION 15 REGULATORY INFORMATION

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

EU legislation:

- Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (consolidated version 2020.08.24, as amended)
- Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (consolidated version 2020.11.14, as amended)
- Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- Directive 2014/27/EU of the European Parliament and of the Council amending Directives 92/58/EEC, 92/85/EEC, 94/33/EC, 98/24/EC and 2004/37/EC in order to adapt them to Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures
- Regulation (EU) 2019/1009 of the European Parliament and of the Council laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003 (consolidated version 2023.03.16)
- Council Directive 90/269/EEC on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (consolidated version 2019.07.26)

National legislation:

- Announcement of the Speaker of the Polish Parliament of 7 July 2023 on the consolidated text of the law on waste (Journal of Laws 23.1587) – see section 13

- Regulation of the Minister of Health of 25 August 2015 on marking places, pipelines, containers and tanks used for storage or containing hazardous substances or mixtures (Journal of Laws 15.1368) – see Section 7
- Regulation of the Minister of Labour, Family and Social Affairs of 12 June 2018 on the maximum permissible concentrations and intensities of agents harmful to health in the working environment (Journal of Laws 18.1286) - see section 8
- Regulation of the Minister of Health of 2 February 2011 on tests and measurements of harmful factors in work environment (Journal (Journal of Laws 11.33.166) - see section 8
- Regulation of the Minister of Climate of 2 January 2020 on waste catalogue (Journal of Laws 20.10) - see section 13
- Announcement of the Minister of Labour, Family and Social Affairs of 11 May 2018 on the consolidated text of the Regulation of the Minister of Labour and Social Policy on safety and hygiene of work during manual transport work and other physical activity works (Journal of Laws 18.1139) – see section 7

Other related provisions:

Not required

Restrictions on use:

None

Other EU provisions related to authorisations and restrictions:

The components of the mixture are not SEVESO substances, are not ozone depleting substances or persistent organic pollutants.

15.2.Chemical safety assessment

For calcium oxide, a chemical safety assessment has been carried out in relation to the production tonnage.

SECTION 16 OTHER INFORMATION

The data is based on our latest knowledge, but it does not guarantee any specific product features and does not constitute a basis for legally valid agreements.

16.1. Significant changes against the previous edition

Change in point 1.3

16.2. Abbreviations

ADN: European Agreement concerning the international carriage of dangerous goods by inland waterways
ADR: European Agreement concerning the International carriage of dangerous goods by road
DNEL: determined dose/concentration not inducing harmful effects
DSB: allowable concentration in biological material
EC_{50}: median effective concentration
ICAO/IATA: Technical instructions for the safe transport of dangerous goods by air
ID: identification number
IMDG: United Nations International Maritime Dangerous Goods Code
IMO: International Maritime Organisation
LC_{50}: median lethal concentration
LD_{50}: median lethal dose

NDS: maximum permissible concentration
NDSCh: short-term exposure limit
NOEC: no observed effect concentration
OECD: Organisation for Economic Cooperation and Development
OEL: occupational exposure limit value
PBT: persistent, bioaccumulative, toxic substances
PNEC: Predicted No-Effect Concentration
RID: European Agreement concerning the International carriage of dangerous goods by rail
SCF: EU Scientific Committee for Food
SCOEL: EU Scientific Committee on Occupational Exposure Limits
STEL: short term exposure limit value
TWA: time weighted average
UL: upper intake levels
UN: shipping name
vPvB: very persistent and very bioaccumulative substances

16.3. Key data sources

- Chemical Safety Report
- 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

16.4. 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

P261: avoid breathing dust

P280: wear protective gloves/protective clothing/eye protection/face protection

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

P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing

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/doctor

P501: remove the content/container to a closable container or a dust-tight waste bag according to local/regional/national/international regulations.

16.5. Training recommendations

It is recommended that all workers handling the substance receive appropriate safety training when using it, to ensure protection of human health and the environment.

Disclaimer

The content of this Material Safety Data Sheet provides guidance for appropriate precautions when handling the material. Recipients of this Material Safety Data Sheet shall ensure that all persons who may use, handle, dispose of or otherwise come into contact with the product, read and understand the information contained therein. The information and instructions contained in this Material Safety Data Sheet are based on current scientific and technical knowledge according to the date of issue of the Material Safety Data Sheet, but do not guarantee specific product characteristics and do not constitute grounds for legally valid agreements.

This sheet supplements and does not replace the technical instructions for use. This sheet does not exempt the user of the product from complying with all legal, administrative and health and safety regulations. If the product is used for purposes other than those for which it is intended, the user should be aware of any risks that may arise. For details of its chemical composition, please contact the issuing body:

NORDKALKA Wapno Sp. z o.o., Sitkówka 24, 26-052 Nowiny

Sitkówka Plant, Sitkówka 24, 26-052 Nowiny

phone: 41 346 93 00

The user should be familiar with and use all texts of the Material Safety Data Sheet related to their business. The user will be responsible for taking all precautions when using the product.

This version of the Material Safety Data Sheet replaces all previous versions.

ANNEX

Annex 1 Exposure scenarios for CaO: 9.1 – 9.16

End of Material Safety Data Sheet