

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Trade name

Calcium hypochlorite

Stock number:

42548

CAS Number:

7778-54-3

EC number:

231-908-7

Index number:

017-012-00-7

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

Identified use:

SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com

Informing department:

Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008



GHS03 flame over circle

Ox. Sol. 2 H272 May intensify fire; oxidiser.



GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

C; Corrosive

R34: Causes burns.

Xn; Harmful

R22: Harmful if swallowed.

O; Oxidising

R8: Contact with combustible material may cause fire.

N; Dangerous for the environment

R50: Very toxic to aquatic organisms.

R31: Contact with acids liberates toxic gas.

Information concerning particular hazards

Not applicable

Other hazards that do not result in**classification**

No information known.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

Hazard pictograms

Signal word

Hazard statements

The substance is classified and labelled according to the CLP regulation.

GHS03, GHS05, GHS07, GHS09

Danger

H272 May intensify fire; oxidiser.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H400 Very toxic to aquatic life.

P221 Take any precaution to avoid mixing with combustibles.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

EUH031 Contact with acids liberates toxic gas.

2.3 Other hazards**Results of PBT and vPvB assessment**

PBT:

Not applicable.

vPvB:

Not applicable.

SECTION 3: Composition/information on ingredients**3.1 Substances**

CAS# Designation:

7778-54-3 Calcium hypochlorite

Identification number(s):

EC number:

231-908-7

Index number:

017-012-00-7

SECTION 4: First aid measures**4.1 Description of first aid measures**

General information

Instantly remove any clothing soiled by the product.

Trade name Calcium hypochlorite

(Contd. of page 1)

After inhalation	Supply fresh air or oxygen; call for doctor. In case of unconsciousness bring patient into stable side position for transport. Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
After skin contact	Seek immediate medical advice. Instantly wash with water and soap and rinse thoroughly.
After eye contact	Seek immediate medical advice. Rinse opened eye for several minutes under running water. Then consult doctor.
After swallowing	Drink lots of water or milk. Do not initiate vomiting. Call a doctor immediately.
4.2 Most important symptoms and effects, both acute and delayed	No further relevant information available.
4.3 Indication of any immediate medical attention and special treatment needed	If swallowed, gastric irrigation with added, activated carbon.

SECTION 5: Firefighting measures

5.1 Extinguishing media	Use fire fighting measures that suit the environment.
Suitable extinguishing agents	
5.2 Special hazards arising from the substance or mixture	Promotes fire. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. If this product is involved in a fire, the following can be released: Calcium oxide Hydrogen chloride (HCl)
5.3 Advice for firefighters	
Protective equipment:	Wear self-contained breathing apparatus. Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures	Put on breathing apparatus. Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation
6.2 Environmental precautions:	Do not allow to enter drainage system, surface or ground water. Do not allow material to be released to the environment without proper governmental permits. Do not allow product to reach sewage system or water bodies. Do not allow to enter the ground/soil.
6.3 Methods and material for containment and cleaning up:	Prevent formation of dust. Use neutralizing agent. Dispose of contaminated material as waste according to item 13. Ensure adequate ventilation.
Prevention of secondary hazards:	Acts as an oxidizing agent on organic materials such as wood, paper and fats Keep away from combustible material.
6.4 Reference to other sections	See Section 7 for information on safe handling See section 8 for information on personal protection equipment. See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling	Thoroughly remove all dust particles. Keep containers tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation/exhaustion at the workplace.
Information about protection against explosions and fires:	Keep breathing equipment ready. Substance/product can reduce the ignition temperature of flammable substances. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.
7.2 Conditions for safe storage, including any incompatibilities	
Storage	
Requirements to be met by storerooms and containers:	Provide alkali-resistant floor.
Information about storage in one common storage facility:	Do not store together with acids. Store away from flammable substances. Store away from reducing agents. Do not store with organic materials. Store away from metal powders.
Further information about storage conditions:	Store container in a well ventilated position. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Store in a locked cabinet or with access restricted to technical experts or their assistants. No further relevant information available.
7.3 Specific end use(s)	

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:	Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
8.1 Control parameters	
Components with critical values that require monitoring at the workplace:	The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace. The lists which were valid during compilation were used as basis. No data
Additional information:	
8.2 Exposure controls	
Personal protective equipment	
General protective and hygienic measures	The usual precautionary measures should be adhered to in handling the chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at the end of the work. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment.

(Contd. on page 3)
DE/E

Trade name Calcium hypochlorite

(Contd. of page 2)

Breathing equipment:	Use breathing protection with high concentrations. In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.
Recommended filter device for short term use:	Combination filter B-P2
Protection of hands:	Neoprene gloves Check protective gloves prior to each use for their proper condition. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Material of gloves	Impervious gloves
Penetration time of glove material	Not determined
Eye protection:	Gauze goggles Tightly sealed safety glasses. Full face protection
Body protection:	Acid resistant protective clothing Protective work clothing.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****General Information****Appearance:**

Form:	Powder
Colour:	White
Smell:	Like chlorine
Odour threshold:	Not determined.

pH-value (10 g/l) at 25 °C:	11,5
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Change in condition

Melting point/Melting range:	None
Boiling point/Boiling range:	None
Sublimation temperature / start:	Not determined

Flash point:	Not applicable
Inflammability (solid, gaseous)	Contact with combustible material may cause fire. Contact with combustible material may cause fire.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Self-inflammability:	Not determined.
Critical values for explosion:	
Lower:	Not determined
Upper:	Not determined
Steam pressure:	Not applicable.
Density at 20 °C	2,35 g/cm ³
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water at 20 °C:	217 g/l
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.
9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity	May intensify fire; oxidiser. Contact with acids liberates toxic gas.
10.2 Chemical stability	Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided:	Decomposes before melting. To avoid thermal decomposition do not overheat.
10.3 Possibility of hazardous reactions	Acts as an oxidizing agent on organic materials such as wood, paper and fats Reacts with alcohols Reacts with amines Reacts with reducing agents Reacts with flammable substances
10.5 Incompatible materials:	Reducing agents Flammable substances Acids Organic materials
10.6 Hazardous decomposition products:	Metal powders Chlorine Oxygen Calcium oxide

SECTION 11: Toxicological information**11.1 Information on toxicological effects**

Acute toxicity:	Harmful if swallowed. Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach. The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.
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LD/LC50 values that are relevant for classification:

Oral LD50 850 mg/kg (rat)

Skin irritation or corrosion:	Causes severe skin burns.
Eye irritation or corrosion:	Causes serious eye damage.
Sensitization:	No sensitizing effect known.
Germ cell mutagenicity:	The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.
Carcinogenicity:	IARC-3: Not classifiable as to carcinogenicity to humans.
Reproductive toxicity:	No effects known.
Specific target organ system toxicity - repeated exposure:	No effects known.
Specific target organ system toxicity - single exposure:	No effects known.

(Contd. on page 4)
DE/E

Safety data sheet
according to 1907/2006/EC, Article 31

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Trade name Calcium hypochlorite

Aspiration hazard:	No effects known.	(Contd. of page 3)
Other information (about experimental toxicology):	Mutagenic effects have been observed on tests with laboratory animals. Mutagenic effects have been observed on tests with bacteria.	
Additional toxicological information:	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.	



SECTION 12: Ecological information

12.1 Toxicity	No further relevant information available.
Aquatic toxicity:	No further relevant information available.
12.2 Persistence and degradability	No further relevant information available.
12.3 Bioaccumulative potential	No further relevant information available.
12.4 Mobility in soil	No further relevant information available.
Ecotoxicological effects:	
Remark:	Very toxic for fish
Additional ecological information:	
General notes:	The product has not yet been evaluated by the commission for the evaluation of materials hazardous to water. Until the commission has reached its verdict, the product is evaluated as hazardous to water (WKG 2) in accordance with the recommendations of the VCI (self-evaluation concept). Do not allow product to reach ground water, water bodies or sewage system. Do not allow material to be released to the environment without proper governmental permits. Water hazard class 2 (Self-assessment): hazardous for water. Danger to drinking water if even small quantities leak into soil. Also poisonous for fish and plankton in water bodies. Avoid transfer into the environment. Very toxic for aquatic organisms Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
12.5 Results of PBT and vPvB assessment	
PBT:	Not applicable.
vPvB:	Not applicable.
12.6 Other adverse effects	No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods	
Recommendation	Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.
Waste disposal key number according to the European Waste Catalogue:	Contaminated salts and their solutions: 06 03 99 Wastes n. o. s.
Uncleaned packagings:	
Recommendation:	Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number	UN1748
ADR, IMDG, IATA	
14.2 UN proper shipping name	1748 CALCIUM HYPOCHLORITE MIXTURE, DRY
ADR	CALCIUM HYPOCHLORITE, DRY
14.3 Transport hazard class(es)	
ADR	
	
Class	5.1 (O2) Oxidising substances.
Label	5.1
IMDG, IATA	
	
Class	5.1 Oxidising substances.
Label	5.1
Packing group	II
ADR, IMDG, IATA	
14.5 Environmental hazards:	Environmentally hazardous substance, solid
14.6 Special precautions for user	Warning: Oxidising substances.
Kemler Number:	50
EMS Number:	F-H,S-Q
Segregation groups	Hypochlorites
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
ADR	
Excepted quantities (EQ):	E2
Limited quantities (LQ)	1 kg
Transport category	2
Tunnel restriction code	E
UN "Model Regulation":	UN1748, CALCIUM HYPOCHLORITE MIXTURE, DRY, 5.1, II

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Australian Inventory of Chemical Substances	Substance is listed.
Standard for the Uniform Scheduling of Drugs and Poisons	Substance is not listed.

(Contd. on page 5)
DE/E

Trade name **Calcium hypochlorite**

(Contd. of page 4)

National regulations	
Information about limitation of use:	Employment restrictions concerning young persons must be observed. For use only by technically qualified individuals.
Water hazard class:	Water hazard class 2 (Self-assessment): hazardous for water.
Other regulations, limitations and prohibitive regulations	
ELINCS (European List of Notified Chemical Substances)	Substance is not listed.
Substances of very high concern (SVHC) according to REACH, Article 57	Substance is not listed.
REACH - Pre-registered substances	Substance is listed.
15.2 Chemical safety assessment:	A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing data specification sheet: Health, Safety and Environmental Department.

Reference Sources:

CRC Handbook of Chemistry and Physics
CRC Press

Hawley's Condensed Chemical Dictionary
Van Nostrand Reinhold, New York

National Institute for Occupational Safety and Health
Registry of Toxic Effects of Chemical Substances
U. S. Government Printing Office, Washington D. C.

Richard J. Lewis, Sr.
Sax's Dangerous Properties of Industrial Materials
Van Nostrand Reinhold, New York

The Merck Index
Merck & Co., Inc., Rahway N. J.

L. Bretherick
Handbook of Chemical Hazards
Butterworths

L. Roth, U. Weller
Gefährliche chemische Reaktionen
ecomed verlag, Landsberg

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
VCI: Verband der chemischen Industrie, Deutschland (German chemical industry association)
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent