

Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU



Potassium chlorate ≥ 99%, p.a., ACS

article number: **HN27**
Version: **2.0 en**
Replaces version of: 07.10.2016
Version: (1)

date of compilation: 07.10.2016
Revision: 09.01.2019

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

1.1 Product identifier

Identification of the substance	Potassium chlorate
Article number	HN27
Registration number (REACH)	01-2119494917-18-xxxx
Index No	017-004-00-3
EC number	223-289-7
CAS number	3811-04-9

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

Identified uses: laboratory chemical

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0

Telefax: +49 (0) 721 - 56 06 149

e-mail: sicherheit@carlroth.de

Website: www.carlroth.de

Competent person responsible for the safety data sheet : Department Health, Safety and Environment

e-mail (competent person) : sicherheit@carlroth.de

1.4 Emergency telephone number

Emergency information service **Poison Centre Munich: +49/(0)89 19240**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Classification acc. to GHS			
Section	Hazard class	Hazard class and category	Hazard statement
2.14	oxidising solid	(Ox. Sol. 1)	H271
3.10	acute toxicity (oral)	(Acute Tox. 4)	H302
3.11	acute toxicity (inhal.)	(Acute Tox. 4)	H332
4.1C	hazardous to the aquatic environment - chronic hazard	(Aquatic Chronic 2)	H411

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2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word

Danger

Pictograms

GHS03, GHS07,
GHS09



Hazard statements

H271	May cause fire or explosion; strong oxidiser
H302+H332	Harmful if swallowed or if inhaled
H411	Toxic to aquatic life with long lasting effects

Precautionary statements

Precautionary statements - prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep/store away from combustible materials.
P261	Avoid breathing dust.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Labelling of packages where the contents do not exceed 125 ml

Signal word: **Danger**

Symbol(s)



H271	May cause fire or explosion; strong oxidiser.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep/store away from combustible materials.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

2.3 Other hazards

There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Potassium chlorate
Index No	017-004-00-3
Registration number (REACH)	01-2119494917-18-xxxx
EC number	223-289-7
CAS number	3811-04-9
Molecular formula	ClKO ₃
Molar mass	122,6 g/mol

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SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off contaminated clothing.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

Rinse skin with water/shower. In all cases of doubt, or when symptoms persist, seek medical advice.

Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Rinse mouth with water (only if the person is conscious). Call a doctor.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects, Cough, Localised redness, Gastrointestinal complaints, Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, dry extinguishing powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Explosive when mixed with combustible material. Oxidising property. Non-combustible.

Hazardous combustion products

In case of fire may be liberated: hydrogen chloride (HCl)

5.3 Advice for firefighters

Do not allow firefighting water to enter drains or water courses. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Do not breathe dust. Avoid contact with skin, eyes and clothes.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Take up mechanically. Control of dust.

Other information relating to spills and releases

Place in appropriate containers for disposal.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

No special measures are necessary.

• Measures to prevent fire as well as aerosol and dust generation

Removal of dust deposits. Take any precaution to avoid mixing with combustibles.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

• Ventilation requirements

Use local and general ventilation.

• Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C.

7.3 Specific end use(s)

No information available.

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Data are not available.

Relevant DNELs/DMELs/PNECs and other threshold levels

• human health values

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	5,76 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	3,5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

• environmental values

Endpoint	Threshold level	Environmental compartment	Exposure time
PNEC	1,15 mg/l	freshwater	short-term (single instance)
PNEC	1,15 mg/l	marine water	short-term (single instance)
PNEC	115 mg/l	sewage treatment plant (STP)	short-term (single instance)
PNEC	3,83 mg/kg	soil	short-term (single instance)

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection.

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

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• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P2 (filters at least 94 % of airborne particles, colour code: White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state solid (powder, crystalline)

Colour white

Odour odourless

Odour threshold No data available

Other physical and chemical parameters

pH (value) 5,6 (water: 73 g/l, 20 °C)

Melting point/freezing point 356 °C

Initial boiling point and boiling range 400 °C

Flash point not applicable

Evaporation rate no data available

Flammability (solid, gas) These information are not available

Explosive limits

• lower explosion limit (LEL) this information is not available

• upper explosion limit (UEL) this information is not available

Explosion limits of dust clouds these information are not available

Vapour pressure This information is not available.

Density 2,34 g/cm³ at 23 °C

Vapour density This information is not available.

Bulk density 1.200 – 1.400 kg/m³

Relative density Information on this property is not available.

Solubility(ies)

Water solubility 69,9 g/l at 20 °C

Partition coefficient

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n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	Information on this property is not available.
Decomposition temperature	>400 °C
Viscosity	not relevant (solid matter)
Explosive properties	Shall not be classified as explosive
Oxidising properties	strong oxidiser

9.2 Other information

There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

Oxidising property.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: Alkali metals, Alcohols, Ammonium compounds, Combustible materials, Ethanol, Hydrocarbons, Metal powder, Nitrate, Organic substances, Phosphorus, Reducing agents, Nitric acid, Sulphur, Sulphuric acid

10.4 Conditions to avoid

Keep away from heat. Decomposition takes place from temperatures above: >400 °C. Risk of explosion by shock, friction, fire or other sources of ignition.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Exposure route	Endpoint	Value	Species	Source
oral	LD50	>5.000 mg/kg	rat	ECHA
inhalation: dust/mist	LC50	>5,1 mg/l/4h	rat	ECHA
dermal	LD50	>2.000 mg/kg	rat	ECHA

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

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Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

- **Specific target organ toxicity - single exposure**

Shall not be classified as a specific target organ toxicant (single exposure).

- **Specific target organ toxicity - repeated exposure**

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

- **If swallowed**

abdominal pain, nausea

- **If in eyes**

slightly irritant but not relevant for classification

- **If inhaled**

cough, pain, choking, and breathing difficulties

- **If on skin**

data are not available

Other information

None

SECTION 12: Ecological information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute)

Endpoint	Value	Species	Source	Exposure time
LC50	$>1.000 \text{ mg/l}$	fish	ECHA	96 h
EC50	$>1.000 \text{ mg/l}$	aquatic invertebrates	ECHA	48 h
ErC50	$1,9 \text{ mg/l}$	algae	ECHA	72 h

Aquatic toxicity (chronic)

May cause long-term adverse effects in the aquatic environment.

Endpoint	Value	Species	Source	Exposure time
EC50	$>1.000 \text{ mg/l}$	microorganisms	ECHA	3 h
NOEC	$\geq 500 \text{ mg/l}$	fish	ECHA	36 d

12.2 Process of degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

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12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.


13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1	UN number	1485
14.2	UN proper shipping name	POTASSIUM CHLORATE
	Hazardous ingredients	Potassium chlorate
14.3	Transport hazard class(es)	
	Class	5.1 (oxidizing substances)
14.4	Packing group	II (substance presenting medium danger)

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14.5 Environmental hazards hazardous to the aquatic environment

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

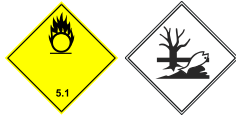
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	1485
Proper shipping name	POTASSIUM CHLORATE
Particulars in the transport document	UN1485, POTASSIUM CHLORATE, 5.1, II, (E), environmentally hazardous
Class	5.1
Classification code	O2
Packing group	II
Danger label(s)	5.1 + "fish and tree"



Environmental hazards	yes (hazardous to the aquatic environment)
Excepted quantities (EQ)	E2
Limited quantities (LQ)	1 kg
Transport category (TC)	2
Tunnel restriction code (TRC)	E
Hazard identification No	50

• International Maritime Dangerous Goods Code (IMDG)

UN number	1485
Proper shipping name	POTASSIUM CHLORATE
Particulars in the shipper's declaration	UN1485, POTASSIUM CHLORATE, 5.1, II, MARINE POLLUTANT
Class	5.1
Marine pollutant	yes (P) (hazardous to the aquatic environment)
Packing group	II
Danger label(s)	5.1 + "fish and tree"



Special provisions (SP)	-
Excepted quantities (EQ)	E2


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Limited quantities (LQ)	1 kg
EmS	F-H, S-Q
Stowage category	A
Segregation group	4 - Chlorates
• International Civil Aviation Organization (ICAO-IATA/DGR)	
UN number	1485
Proper shipping name	Potassium chlorate
Particulars in the shipper's declaration	UN1485, Potassium chlorate, 5.1, II
Class	5.1
Environmental hazards	yes (hazardous to the aquatic environment)
Packing group	II
Danger label(s)	5.1
	
Excepted quantities (EQ)	E2
Limited quantities (LQ)	2,5 kg

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

• Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)

Name acc. to inventory	Type of registration	Remarks	Category / subcategory	Use limitation	CN Code	HS code	HS code - mixtures containing substance
chlorate (chlorates)	Annex I - part 1		p(1)	b			

Legend

Annex I - part 1	List of chemicals subject to export notification procedure
B	Use limitation: ban (for the sub-category or sub-categories concerned) according to Union legislation
P(1)	Sub-category: p(1) - pesticide in the group of plant protection products

• Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)

Not listed.

• Regulation 850/2004/EC on persistent organic pollutants (POP)

Not listed.

• Restrictions according to REACH, Annex XVII

not listed

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• Restrictions according to REACH, Title VIII

None.

• List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list

not listed

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

not listed

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

not listed

Regulation 98/2013/EU on the marketing and use of explosives precursors

Explosives precursors which are subject to restrictions						
Name of substance	CAS No	Type of registration	CN Code 1	CN Code 2	Re- marks	Limit value
Potassium chlorate	3811-04-9	Annex I	2829 19 00	3824 90 97		40 % w/w

Legend

- Annex I Substances which shall not be made available to members of the general public on their own, or in mixtures or substances including them, except if the concentration is equal to or lower than the limit values set out below
- CN Code 1 Combined Nomenclature (CN) code for a separate chemically defined compound meeting the requirements of Note 1 to Chapter 28 or 29 of the CN, respectively
- CN Code 2 Combined Nomenclature (CN) code for a mixture without constituents (e.g. mercury, precious or rare-earth metals or radioactive substances) which would determine classification under another CN code

Regulation 111/2005/EC laying down rules for the monitoring of trade between the Community and third countries in drug precursors

not listed

National inventories

Substance is listed in the following national inventories:

Country	National inventories	Status
AU	AICS	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed

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Country	National inventories	Status
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

Legend

AICS	Australian Inventory of Chemical Substances
CICR	Chemical Inventory and Control Regulation
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
INSQ	National Inventory of Chemical Substances
KECI	Korea Existing Chemicals Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

16.1 Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.1	Registration number (REACH): This information is not available.	Registration number (REACH): 01-2119494917-18-xxxx	yes
2.1	Remarks: For full text of Hazard- and EU Hazard-statements: see SECTION 16.		yes
2.2		Pictograms: change in the listing (table)	yes
2.2		Precautionary statements - prevention: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
8.1	Occupational exposure limit values (Workplace Exposure Limits)	Occupational exposure limit values (Workplace Exposure Limits): Data are not available.	yes
8.1		Relevant DNELs/DMELs/PNECs and other threshold levels	yes
8.1		• human health values	yes
8.1		• human health values: change in the listing (table)	yes
8.1		• environmental values	yes
8.1		• environmental values: change in the listing (table)	yes
14.3	Transport hazard class(es)	Transport hazard class(es): class 5.1 hazard - oxidizing substances	yes
14.8	Marine pollutant: yes (hazardous to the aquatic environment)	Marine pollutant: yes (P) (hazardous to the aquatic environment)	yes

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Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
14.8		• International Civil Aviation Organization (ICAO-IATA/DGR)	yes
14.8		UN number: 1485	yes
14.8		Proper shipping name: Potassium chlorate	yes
14.8		Particulars in the shipper's declaration: UN1485, Potassium chlorate, 5.1, II	yes
14.8		Class: 5.1	yes
14.8		Environmental hazards: yes (hazardous to the aquatic environment)	yes
14.8		Packing group: II	yes
14.8		Danger label(s): 5.1	yes
14.8		Danger label(s): change in the listing (table)	yes
14.8		Excepted quantities (EQ): E2	yes
14.8		Limited quantities (LQ): 2,5 kg	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
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
CN Code	Combined Nomenclature
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HS	Harmonized Commodity Description and Coding System (Harmonized System, drawn up by the World Customs Organisation)
IATA	International Air Transport Association

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Abbr.	Descriptions of used abbreviations
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
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
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)
SVHC	Substance of Very High Concern
vPvB	very Persistent and very Bioaccumulative

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H271	may cause fire or explosion; strong oxidiser
H302	harmful if swallowed
H332	harmful if inhaled
H411	toxic to aquatic life with long lasting effects

Disclaimer

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.