

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 7.1 Revision Date 12.11.2024 Print Date 03.05.2025

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

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

1.1 Product identifiers

Product name : Sodium borohydride solution

Product Number : 452904 Brand : Aldrich

UFI : 9J64-D6EX-S99J-AK57

REACH No. : This product is a mixture. REACH Registration Number see

section 3.

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

Identified uses : Laboratory chemicals, Manufacture of substances Uses advised against : This product is not intended for consumer use.

1.3

CHEMIKART

# 1.4 Emergency telephone

Emergency Phone # : 000 800 1007 141 (CHEMTREC)

# **SECTION 2: Hazards identification**

# 2.1 Classification of the substance or mixture

Corrosive to Metals, (Category 1) H290: May be corrosive to metals.

Acute toxicity, (Category 4) H302: Harmful if swallowed.

Skin corrosion, (Sub-category H314: Causes severe skin burns and eye

A) damage.

Serious eye damage, (Category

1)

H318: Causes serious eye damage.

Reproductive toxicity, (Category H360FD: May damage fertility. May

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#### 2.2 Label elements

# Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal Word Danger

Hazard Statements

H290 May be corrosive to metals. H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H360FD May damage fertility. May damage the unborn child.

**Precautionary Statements** 

P202 Do not handle until all safety precautions have been read and

understood.

P280 Wear protective gloves/ protective clothing/ eye protection/ face

protection.

P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel

unwell.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated

clothing. Rinse skin with water.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable

for breathing. Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue

rinsing.

Supplemental Hazard information (EU)

EUH014 Reacts violently with water.

#### Reduced Labeling (<= 125 ml)

Pictogram

Signal Word Danger

Hazard Statements

H314 Causes severe skin burns and eye damage.

H360FD May damage fertility. May damage the unborn child.

Precautionary Statements

P202 Do not handle until all safety precautions have been read and

understood.

P280 Wear protective gloves/ protective clothing/ eye protection/ face

protection.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated

clothing. Rinse skin with water.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable

for breathing. Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue

rinsina.

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Supplemental Hazard information (EU)

EUH014 Reacts violently with water.

#### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

# **SECTION 3: Composition/information on ingredients**

#### 3.2 Mixtures

Formula :  $H_4BNa$ Molecular weight : 37,83 g/mol

Component		Classification	Concentration	
sodium hydroxide				
CAS-No. EC-No. Index-No. Registration number	1310-73-2 215-185-5 011-002-00-6 01-2119457892-27- XXXX	Met. Corr. 1; Skin Corr. 1A; Eye Dam. 1; H290, H314, H318 Concentration limits: >= 5 %: Skin Corr. 1A, H314; 2 - < 5 %: Skin Corr. 1B, H314; 0,5 - < 2 %: Skin Irrit. 2, H315; 0,5 - < 2 %: Eye Irrit. 2, H319; >= 0,4 %: Met. Corr. 1, H290;	>= 50 - < 70 %	
sodium borohydride				
CAS-No. EC-No.	16940-66-2 241-004-4 *	Water-react 1; Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; Repr. 1B; H260, H301, H314, H318, H360FD Concentration limits: >= 3,4 %: Repr. 1B, H360F;	>= 10 - < 20 %	

<sup>\*</sup>A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, or the annual tonnage does not require a registration.

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

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#### **SECTION 4: First aid measures**

# 4.1 Description of first-aid measures

#### **General advice**

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

# In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

# 4.3 Indication of any immediate medical attention and special treatment needed No data available

# SECTION 5: Firefighting measures

# 5.1 Extinguishing media

# Suitable extinguishing media

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

#### Unsuitable extinguishing media

Water Foam

#### 5.2 Special hazards arising from the substance or mixture

Borane/boron oxides

Sodium oxides

Not combustible.

May not get in touch with: Water

Ambient fire may liberate hazardous vapours.

#### **5.3** Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

#### 5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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#### SECTION 6: Accidental release measures

# 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

# **6.2 Environmental precautions**

Do not let product enter drains.

#### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

#### 6.4 Reference to other sections

For disposal see section 13.

# **SECTION 7: Handling and storage**

# 7.1 Precautions for safe handling

#### Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. Keep workplace dry. Do not allow product to come into contact with water.

#### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

# 7.2 Conditions for safe storage, including any incompatibilities

#### Storage conditions

No metal containers.

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Never allow product to get in contact with water during storage.

#### Storage class

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

#### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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#### **SECTION 8: Exposure controls/personal protection**

# 8.1 Control parameters

Ingredients with workplace control parameters

# 8.2 Exposure controls

# Personal protective equipment

# Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail

sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

# **Body Protection**

protective clothing

#### **Respiratory protection**

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type ABEK

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

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#### Control of environmental exposure

Do not let product enter drains.

# **SECTION 9: Physical and chemical properties**

# 9.1 Information on basic physical and chemical properties

a) Physical state viscousb) Color colorless

c) Odor
 d) Melting No data available point/freezing point

e) Initial boiling point and boiling range

132,2 °C at 1.013 hPa

f) Flammability (solid, f gas)

No data available

g) Upper/lower flammability or explosive limits No data available

h) Flash point Not applicablei) Autoignition Not applicable temperature

j) Decomposition temperature

No data available

k) pH No data available

I) Viscosity Viscosity, kinematic: No data available Viscosity, dynamic: No data available

m) Water solubilityNo data availablen) Partition coefficient: No data available

n-octanol/water

o) Vapor pressure

No data available

p) Density 1,375 g/cm3

q) Relative density No data available
No data available

density

r) Particle characteristics

No data available

s) Explosive properties Not classified as explosive.

t) Oxidizing properties none

# 9.2 Other safety information

No data available

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# **SECTION 10: Stability and reactivity**

#### 10.1 Reactivity

No data available

#### 10.2 Chemical stability

sensitive to moisture

# 10.3 Possibility of hazardous reactions

No data available

#### 10.4 Conditions to avoid

Moisture.

# 10.5 Incompatible materials

Oxidizing agents, Strong oxidizing agents, Strong acids, Organic materials, acids, Chemically active metalsMetals

# 10.6 Hazardous decomposition products

In the event of fire: see section 5

# **SECTION 11: Toxicological information**

# 11.1 Information on toxicological effects

#### **Mixture**

#### **Acute toxicity**

Oral: No data available

Acute toxicity estimate Oral - 471,42 mg/kg

(Calculation method)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of

respiratory tract

Dermal: No data available

Skin corrosion/irritation

Remarks: Mixture causes severe burns.

#### Serious eye damage/eye irritation

Remarks: Mixture causes serious eye damage.

Risk of blindness!

#### Respiratory or skin sensitization

No data available

#### Germ cell mutagenicity

No data available

# Carcinogenicity

No data available

# Reproductive toxicity

May harm the unborn child.

May impair fertility.

# Specific target organ toxicity - single exposure

No data available

# Specific target organ toxicity - repeated exposure

No data available

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#### Aspiration hazard

No data available

#### 11.2 Additional Information

# **Endocrine disrupting properties**

#### **Product:**

Assessment The substance/mixture does not contain

components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU)

2018/605 at levels of 0.1% or higher.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

# Components

# sodium hydroxide

#### **Acute toxicity**

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger

of perforation of the esophagus and the stomach.

Symptoms: burns of mucous membranes, Cough, Shortness of breath, Possible

damages:, damage of respiratory tract

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns.

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

(OECD Test Guideline 405)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Remarks: Causes serious eye damage.

#### Respiratory or skin sensitization

Patch test: - In vitro study

Result: negative Remarks: (ECHA)

## Germ cell mutagenicity

No data available

# Carcinogenicity

No data available

# Reproductive toxicity

No data available

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#### Specific target organ toxicity - single exposure

Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity - burns of mucous membranes, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

# Specific target organ toxicity - repeated exposure

No data available

# **Aspiration hazard**

No data available

## sodium borohydride

# **Acute toxicity**

LD50 Oral - Rat - female - 56,57 mg/kg

(OECD Test Guideline 425)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute toxicity estimate Oral - 56,57 mg/kg (ATE value derived from LD50/LC50 value)

LC50 Inhalation - Rat - male - 4 h - > 1,3 mg/l - dust/mist

Remarks: (highest concentration to be prepared)

(ECHA)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:,

damage of respiratory tract

LD50 Dermal - Rabbit - male - 4.000 - 8.000 mg/kg

Remarks: (ECHA)

#### Skin corrosion/irritation

Skin - Rabbit

Result: Corrosive - 4 h (OECD Test Guideline 404)

Remarks: (ECHA)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage. - 24 h

Remarks: (ECHA)

Remarks: Causes serious eye damage.

Risk of corneal clouding.

#### Respiratory or skin sensitization

- Guinea pig Result: negative Remarks: (ECHA)

# Germ cell mutagenicity

Test Type: Ames test

Test system: Escherichia coli/Salmonella typhimurium

Result: negative

Remarks: The value is given in analogy to the following substances: boric acid

Test Type: sister chromatid exchange assay Test system: Chinese hamster ovary cells

Result: negative Remarks: (ECHA)

The value is given in analogy to the following substances: boric acid

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Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: negative

Remarks: The value is given in analogy to the following substances: boric acid

Method: OECD Test Guideline 474 Species: Mouse - male and female

Result: negative

Remarks: The value is given in analogy to the following substances: boric acid

# Carcinogenicity

No data available

# **Reproductive toxicity**

May damage the unborn child.

May damage fertility.

# Specific target organ toxicity - single exposure

Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

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

No data available

## **Aspiration hazard**

No data available

# **SECTION 12: Ecological information**

#### 12.1 Toxicity

#### Mixture

No data available

# 12.2 Persistence and degradability

No data available

# 12.3 Bioaccumulative potential

No data available

#### 12.4 Mobility in soil

No data available

#### 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### 12.6 Endocrine disrupting properties

# Product:

Assessment : The substance/mixture does not contain components

considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### 12.7 Other adverse effects

No data available

**Components** 

sodium hydroxide

Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 125 mg/l - 96 h

Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic

invertebrates

EC50 - Ceriodaphnia (water flea) - 40,4 mg/l - 48 h

Remarks: (ECHA)

Toxicity to bacteria EC50 - Photobacterium phosphoreum - 22 mg/l - 15 min

Remarks: (External MSDS)

sodium borohydride

Toxicity to fish flow-through test LC50 - Limanda limanda - 74 mg/l - 96 h

Remarks: (ECHA)

The value is given in analogy to the following substances:

disodium tetraborate

Toxicity to daphnia and other aquatic invertebrates

static test LC50 - Daphnia magna (Water flea) - 133 mg/l - 48

h

Remarks: (ECHA)

The value is given in analogy to the following substances: boric

acid

# CHEMIKART

# **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods

No data available

# **SECTION 14: Transport information**

14.1 UN number

ADR/RID: 3320 IMDG: 3320 IATA: 3320

14.2 UN proper shipping name

ADR/RID: SODIUM BOROHYDRIDE AND SODIUM HYDROXIDE SOLUTION IMDG: SODIUM BOROHYDRIDE AND SODIUM HYDROXIDE SOLUTION

IATA: Sodium borohydride and sodium hydroxide solution

14.3 Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA: 8

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

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#### 14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

# 14.6 Special precautions for user

Tunnel restriction code : (E)

Further information : No data available

# **SECTION 15: Regulatory information**

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

# **National legislation**

Seveso III: Directive 2012/18/EU of the O1 OTHER HAZARDS European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

# Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

# 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

#### **SECTION 16: Other information**

#### **Full text of H-Statements**

H260	In contact with water releases flammable gases which may ignite spontaneously.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360F	May damage fertility.
EUH014	Reacts violently with water.

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#### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM -American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. -Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS -Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Classification of the	ne mixture	Classification procedure:	
Met. Corr.1	H290	Calculation method	
Acute Tox.4	H302	Calculation method	
Skin Corr.1A	H314	Calculation method	
Eye Dam.1	H318	Calculation method	
Repr.1B	H360FD	Calculation method	

#### **Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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