



Safety Data Sheet

Sodium borohydride

Section 1: Chemical Product and Company Identification

Product Name: Sodium borohydride

Catalog Codes: 504

CAS#: 16940-66-2

RTECS: ED3325000

Synonym: Sodium tetrahydridoborate

Chemical Name: Sodium borohydride

Chemical Formula: NaBH₄

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium borohydride	16940-66-2	100

Toxicological Data on Ingredients: LD50 Oral - Rat - female - 56,57 mg/kg. LD50 Dermal - Rabbit - male - 4.000 - 8.000 mg/kg

Section 3: Hazards Identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Substances and mixtures which in contact with water emit flammable gases (Category 1), H260

Acute toxicity, Oral (Category 3), H301

Skin corrosion (Sub-category 1B), H314

Serious eye damage (Category 1), H318

Reproductive toxicity (Category 1B), H360FD

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

Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal Word Danger

Hazard statement(s)

H260 In contact with water releases flammable gases which may ignite spontaneously.

H301 Toxic if swallowed.

H314 Causes severe skin burns and eye damage.

H360FD May damage fertility. May damage the unborn child.

Precautionary statement(s)

P231 + P232 Handle and store contents under inert gas. Protect from moisture.

P260 Do not breathe dust.

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 rinsing.

Supplemental Hazard information (EU)

EUH014 Reacts violently with water.

Reduced Labeling (<= 125 ml)

Pictogram



Signal Word Danger

Hazard statement(s)

H301 Toxic if swallowed.

H314 Causes severe skin burns and eye damage.

H360FD May damage fertility. May damage the unborn child.

Precautionary statement(s)

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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.

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.

Section 4: First Aid Measures

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

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 3) and/or in section 11

Indication of any immediate medical attention and special treatment needed

No data available

Section 5: Fire and Explosion Data

Extinguishing media

Suitable extinguishing media

Sand Dry powder Cement

Unsuitable extinguishing media

Water Carbon dioxide (CO₂) Foam

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.

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.

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.

Section 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

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. Dispose of properly. Clean up affected area. Avoid generation of dusts.

Reference to other sections

For disposal see section 13.

Section 7: Handling and Storage

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. 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 3.

Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Keep away from heat and sources of ignition. 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.

Air and moisture sensitive. Store under inert gas.

Storage class

Storage class (TRGS 510): 4.3: Hazardous materials, which set free flammable gases upon contact with water

Section 8: Exposure Controls/Personal Protection

parameters

Ingredients with workplace control parameters

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

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested:KCL 741 Dermatril® L

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Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested:KCL 741 Dermatril® L

Body Protection

protective clothing

Respiratory protection

required when dusts 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 P3

The entrepreneur 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.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

Section 9: Physical and Chemical Properties

Information on basic physical and chemical properties

a) Physical state	solid
b) Color	white
c) Odor	odorless
d) Melting point/freezing point	Melting point/range: >360 °C (slow decomposition)
e) Initial boiling point and boiling range	500 °C (decomposition)
f) Flammability (solid, gas)	No data available
g) Upper/lower flammability or explosive limits	Lower explosion limit: 3,02 %(V)

h) Flash point	Not applicable
i) Autoignition	> 400 °C temperature at 1.013 hPa - Relative self-ignition temperature for solids
j) Decomposition temperature	No data available
k) pH	11 (H ₂ O, 20 °C)
l) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
m) Water solubility	Decomposes in contact with water., Risk of violent reaction.
n) Partition coefficient: n-octanol/water	- Not applicable for inorganic substances
o) Vapor pressure	< 1 hPa at 25 °C - OECD Test Guideline 104
p) Density relative density	1,07 g/cm ³ at 20 °C No data available
q) Relative vapor density	No data available
r) Particle characteristics	No data available
s) Explosive properties	No data available
t) Oxidizing properties	none
Other safety information	
Relative vapor Density	1,3

Section 10: Stability and Reactivity Data

Reactivity

Reacts violently with water.

Chemical stability

sensitive to moisture

Possibility of hazardous reactions

Risk of explosion with:

Water

Alcohols

(generation of hydrogen)

Copper

Nickel

in finely distributed form.

aluminium chloride

metallic salts

phenol

Strong oxidizing agents

polymerisable substances

hydrogen peroxide

Powdered metals

acids

Risk of ignition or formation of inflammable gases or vapours with:

carbon/soot

Exothermic reaction with:

phosphoric acid

conc. sulfuric acid

Dimethylformamide

Conditions to avoid

Moisture.

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

In the event of fire: see section 5

Section 11: Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity estimate Oral - 162 mg/kg

(Calculation method)

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.

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

Acute toxicity estimate Dermal - 230 mg/kg

investigated.

Decomposition of the substance with tissue moisture.

After absorption:

CNS disorders
Headache

Other information

The following applies to boron compounds in general: resorption is followed by nausea and vomiting, agitation, spasms, CNS disorders, cardiovascular disorders.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Section 12: Ecological Information

Toxicity

Toxicity to fish LC50 - Danio rerio (zebra fish) - > 100 mg/l - 96 h

Remarks: (External MSDS)

Toxicity to bacteria

Persistence and degradability

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

Bioaccumulative potential

No data available

Mobility in soil

No data available

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.

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.

Other adverse effects

Forms toxic mixtures in water, dilution measures notwithstanding.
Discharge into the environment must be avoided.

Section 13: Disposal Considerations**Waste treatment methods****Product**

Waste material must be disposed of in accordance with the national and local regulations.
Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself

Section 14: Transport Information**UN number**

ADR/RID: 1426

IMDG: 1426

IATA: 1426

UN proper shipping name

ADR/RID: SODIUM BOROHYDRIDE

IMDG: SODIUM BOROHYDRIDE

IATA: Sodium borohydride

Passenger Aircraft: Not permitted for transport

Transport hazard class(es)

ADR/RID: 4.3

IMDG: 4.3

IATA: 4.3

Packaging group

ADR/RID: I

IMDG: I

IATA: I

Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

Special precautions for user

No data available

Section 15: Other Regulatory Information

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 European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : ACUTE TOXIC

: OTHER HAZARDS

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.

Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

Section 16: Other Information

References: Not available

Other Special Considerations: Not available

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