

## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 12.06.2019

Version 8.3

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

Catalogue No.	106371
Product name	Sodium borohydride for analysis
REACH Registration Number	01-2119485016-39-xxxx
CAS-No.	16940-66-2

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

Identified uses	Reagent for analysis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merckgroup.com">www.merckgroup.com</a> ).
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**1.3 Details of the supplier of the safety data sheet**

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0
Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

**1.4 Emergency telephone number** **Please contact the regional company representation in your country.****SECTION 2. Hazards identification****2.1 Classification of the substance or mixture**  
**Classification (REGULATION (EC) No 1272/2008)**

Substances, which in contact with water, emit flammable gases, Category 1, H260  
Acute toxicity, Category 3, Oral, H301  
Skin corrosion, Category 1B, H314  
Reproductive toxicity, Category 1B, H360FD  
For the full text of the H-Statements mentioned in this Section, see Section 16.

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## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### Hazard pictograms



Signal word  
Danger

#### Hazard statements

H360FD May damage fertility. May damage the unborn child.  
H260 In contact with water releases flammable gases which may ignite spontaneously.  
H301 Toxic if swallowed.  
H314 Causes severe skin burns and eye damage.  
EUH014 Reacts violently with water.

#### Precautionary statements

##### Prevention

P201 Obtain special instructions before use.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

##### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.  
Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/  
physician.

##### Storage

P402 + P404 Store in a dry place. Store in a closed container.

Restricted to professional users.

### Reduced labelling (≤125 ml)

#### Hazard pictograms



Signal word  
Danger

#### Hazard statements

H360FD May damage fertility. May damage the unborn child.  
H301 Toxic if swallowed.  
H314 Causes severe skin burns and eye damage.  
EUH014 Reacts violently with water.

#### Precautionary statements

P201 Obtain special instructions before use.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact  
lenses, if present and easy to do. Continue rinsing.

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P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Contains: sodium borohydride  
CAS-No. 16940-66-2

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	NaBH <sub>4</sub>	H <sub>4</sub> BNa (Hill)
EC-No.	241-004-4	
Molar mass	37,83 g/mol	

### Hazardous components (REGULATION (EC) No 1272/2008)

*Chemical name (Concentration)*

CAS-No.	Registration number	Classification
16940-66-2	01-2119485016-39-xxxx	Substances, which in contact with water, emit flammable gases, Category 1, H260 Acute toxicity, Category 3, H301 Skin corrosion, Category 1B, H314 Reproductive toxicity, Category 1B, H360FD

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

### 3.2 Mixture

Not applicable

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

*General advice*

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

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

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

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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.

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

Vomiting, Headache, CNS disorders

Risk of corneal clouding.

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

Irritation and corrosion, Cough, Shortness of breath

Risk of blindness!

#### 4.3 Indication of any immediate medical attention and special treatment needed

No information available.

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

Dry powder, Sand, Cement

*Unsuitable extinguishing media*

Water, Foam, Carbon dioxide (CO<sub>2</sub>)

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

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

May not get in touch with:

Water

Caution! in contact with water product releases:

Hydrogen

### 5.3 Advice for firefighters

*Special protective equipment 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*

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapours/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: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

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Advice for emergency responders:

Protective equipment see section 8.

## 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

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

## 6.4 Reference to other sections

Indications about waste treatment see section 13.

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## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

#### *Advice on safe handling*

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Keep workplace dry. Do not allow product to come into contact with water.

#### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### *Hygiene measures*

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

### 7.2 Conditions for safe storage, including any incompatibilities

#### *Storage conditions*

Dry.

Tightly closed. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorised persons.

Recommended storage temperature see product label.

### 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

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## Derived No Effect Level (DNEL)

Worker DNEL, longterm Local effects inhalation 1,7 mg/m<sup>3</sup>

## Predicted No Effect Concentration (PNEC)

PNEC Soil	4,8 mg/kg
PNEC Sewage treatment plant	54,77 mg/l
PNEC Marine sediment	5,6 mg/kg
PNEC Marine water	1,75 mg/l
PNEC Fresh water sediment	5,6 mg/kg
PNEC Fresh water	1,75 mg/l

## 8.2 Exposure controls

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Tightly fitting safety goggles

#### *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

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](http://www.kcl.de)).

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### *Other protective equipment*

Flame retardant antistatic protective clothing.

### *Respiratory protection*

required when dusts are generated.

Recommended Filter type: Filter P 3 (acc. to DIN 3181) for solid and liquid particles of toxic and very toxic substances

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.

### **Environmental exposure controls**

Do not let product enter drains.

Risk of explosion.

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

### **9.1 Information on basic physical and chemical properties**

Form	solid
Colour	white
Odour	amine-like
Odour Threshold	No information available.
pH	No information available.
Melting point	> 360 °C at ca.1.013 hPa Method: OECD Test Guideline 102
Boiling point/boiling range	> 400 °C at ca. 1.013 hPa Method: OECD Test Guideline 103
Flash point	69 °C at 1.013 hPa  Method: closed cup
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.

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Vapour pressure	< 1 hPa at 25 °C Method: OECD Test Guideline 104
Relative vapour density	1,3
Density	1,07 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	Decomposes in contact with water., Risk of violent reaction.
Partition coefficient: n-octanol/water	Not applicable for inorganic substances
Auto-ignition temperature	> 400 °C at 1.013 hPa Method: Relative self-ignition temperature for solids
Decomposition temperature	No information available.
Viscosity, dynamic	Not applicable
Explosive properties	Not classified as explosive.
Oxidizing properties	none
<b>9.2 Other data</b>	
Ignition temperature	ca. 220 °C
Bulk density	ca.350 - 500 kg/m <sup>3</sup>

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Forms explosive mixtures with air on intense heating.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.  
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

### 10.2 Chemical stability

sensitive to moisture

### 10.3 Possibility of hazardous reactions

Risk of explosion with:  
Water, Alcohols  
(generation of hydrogen)

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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

## 10.4 Conditions to avoid

Strong heating.  
Moisture.

## 10.5 Incompatible materials

no information available

## 10.6 Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

*Acute oral toxicity*

LD50 Rat: 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 oesophagus and the stomach.

*Acute inhalation toxicity*

LC50 Rat: > 1,3 mg/l; 4 h ; dust/mist  
(highest concentration to be prepared) (ECHA)

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

*Acute dermal toxicity*

LD50 Rabbit: 4.000 - 8.000 mg/kg  
(External MSDS)

*Skin irritation*

Causes burns.

*Eye irritation*

Causes serious eye damage. Risk of corneal clouding.

Risk of blindness!

*Sensitisation*

Sensitisation test: Guinea pig

Result: negative

(External MSDS)

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### *Germ cell mutagenicity*

This information is not available.

### *Carcinogenicity*

This information is not available.

### *Reproductive toxicity*

This information is not available.

### *Teratogenicity*

This information is not available.

### *CMR effects*

Teratogenicity:

May damage the unborn child.

Reproductive toxicity:

May damage fertility.

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

This information is not available.

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

This information is not available.

### *Aspiration hazard*

This information is not available.

## **11.2 Further information**

Decomposition of the substance with tissue moisture.

After absorption:

CNS disorders, Headache

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.

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## **SECTION 12. Ecological information**

### **12.1 Toxicity**

#### *Toxicity to fish*

LC50 Danio rerio (zebra fish): > 100 mg/l; 96 h  
(External MSDS)

#### *Toxicity to bacteria*

EC50 activated sludge: > 100 mg/l  
OECD Test Guideline 209

### **12.2 Persistence and degradability**

#### *Biodegradability*

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

### **12.3 Bioaccumulative potential**

#### *Partition coefficient: n-octanol/water*

Not applicable for inorganic substances

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## 12.4 Mobility in soil

No information available.

## 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

## 12.6 Other adverse effects

*Additional ecological information*

Forms toxic mixtures in water, dilution measures notwithstanding.

Discharge into the environment must be avoided.

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## SECTION 13. Disposal considerations

*Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14. Transport information

### Land transport (ADR/RID)

<b>14.1 UN number</b>	UN 1426
<b>14.2 Proper shipping name</b>	SODIUM BOROHYDRIDE
<b>14.3 Class</b>	4.3
<b>14.4 Packing group</b>	I
<b>14.5 Environmentally hazardous</b>	--
<b>14.6 Special precautions for user</b>	yes
Tunnel restriction code	E

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

<b>14.1 UN number</b>	UN 1426
<b>14.2 Proper shipping name</b>	SODIUM BOROHYDRIDE
<b>14.3 Class</b>	4.3
<b>14.4 Packing group</b>	I
<b>14.5 Environmentally hazardous</b>	--
<b>14.6 Special precautions for user</b>	yes
<b>IATA (Passenger)</b>	<b>Not permitted for transport</b>

### Sea transport (IMDG)

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**14.1 UN number** UN 1426  
**14.2 Proper shipping name** SODIUM BOROHYDRIDE  
**14.3 Class** 4.3  
**14.4 Packing group** I  
**14.5 Environmentally hazardous** --  
**14.6 Special precautions for user** yes  
EmS F-G S-O  
**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**  
Not relevant

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## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard Legislation SEVESO III  
ACUTE TOXIC  
H2  
Quantity 1: 50 t  
Quantity 2: 200 t

SEVESO III  
OTHER HAZARDS  
O1  
Quantity 1: 100 t  
Quantity 2: 500 t

SEVESO III  
OTHER HAZARDS  
O2  
Quantity 1: 100 t  
Quantity 2: 500 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

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Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1\%$  (w/w).

*National legislation*  
Storage class 4.3

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

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.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*  
Danger

### *Hazard statements*

H260 In contact with water releases flammable gases which may ignite spontaneously.  
H301 Toxic if swallowed.  
H314 Causes severe skin burns and eye damage.  
H360 May damage fertility or the unborn child.  
EUH014 Reacts violently with water.

### *Precautionary statements*

Prevention

P201 Obtain special instructions before use.

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

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

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Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/physician.

Storage

P402 + P404 Store in a dry place. Store in a closed container.

Further information

Restricted to professional users.

Contains: sodium borohydride

### **Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

### **Regional representation**

This information is given on the authorised Safety Data Sheet for your country.

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*

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