

## Safety Data Sheet

## Sodium Borodeuteride

Classification acc. to 29 CFR 1910.1200

Version number: GHS 4.0  
Replaces version of: 03.02.2023 (GHS 3)

Revision: 10.06.2025

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

#### 1.1 Product identifier

Identification of the substance

**Sodium Borodeuteride**

CAS number

15681-89-7

Alternative name(s)

sodium [2H4]tetrahydroborate(1-)

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

Relevant identified uses

laboratory and analytical use  
product and process oriented research and development  
scientific research and development  
the product is intended for research, analysis and scientific education  
laboratory chemical

#### 1.3 Details of the supplier of the safety data sheet

Zeochem AG  
Joweid 5, CH-8630 Rüti  
Switzerland

Telephone: +41 44 922 93 93  
e-Mail: [info@zeochem.com](mailto:info@zeochem.com)  
Website: <https://www.zeochem.com>

#### 1.4 Emergency telephone number

Poison centre		
Country	Name	Telephone
Switzerland	Toxzentrum Zürich / Tox. Info Suisse	+41 44 251 51 51 / CH: 145 - 24h/7d
United States	CHEMTREC USA	+1 800 424 9300 - 24h/7d

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

Classification acc. to GHS

Section	Hazard class	Category	Hazard class and category	Hazard statement
2.12	substance and mixture which, in contact with water, emits flammable gas	1	Water-react. 1	H260
3.10	acute toxicity (oral)	3	Acute Tox. 3	H301
3.1D	acute toxicity (dermal)	5	Acute Tox. 5	H313
3.1I	acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.2	skin corrosion/irritation	1C	Skin Corr. 1C	H314
3.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
3.7	reproductive toxicity	1B	Repr. 1B	H360F

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Section	Hazard class	Category	Hazard class and category	Hazard statement
4.1A	hazardous to the aquatic environment - acute hazard	3	Aquatic Acute 3	H402
4.1C	hazardous to the aquatic environment - chronic hazard	3	Aquatic Chronic 3	H412

For full text of abbreviations: see SECTION 16.

### The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis. In contact with water releases flammable gases which may ignite spontaneously. Spillage and fire water can cause pollution of watercourses.

## 2.2 Label elements

### Labelling

- Signal word      danger

### 2.2.1.2 Pictograms

GHS02, GHS05, GHS06, GHS08	
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Hazard statements	
H260	in contact with water releases flammable gases which may ignite spontaneously
H301	toxic if swallowed
H313	may be harmful in contact with skin
H314	causes severe skin burns and eye damage
H332	harmful if inhaled
H360F	may damage fertility
H412	harmful to aquatic life with long lasting effects

Precautionary statements	
P201	obtain special instructions before use
P223	do not allow contact with water
P231+P232	handle and store contents under inert gas. Protect from moisture
P260	do not breathe dust/fume/gas/mist/vapours/spray
P270	do not eat, drink or smoke when using this product
P271	use only outdoors or in a well-ventilated area
P273	avoid release to the environment
P280	wear protective gloves/protective clothing/eye protection/face protection
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

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Precautionary statements	
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P321	specific treatment (see on this label)
P335+P334	brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
P363	wash contaminated clothing before reuse
P370+P378	in case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish
P402+P404	store in a dry place. Store in a closed container
P405	store locked up
P501	dispose of contents/container in accordance with local/regional/national/international regulations

### 2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of  $\geq 0,1\%$ .

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Name of substance	Sodium Borodeuteride
Identifiers	
CAS No	15681-89-7
Purity	>98 %
Molecular formula	NaBD <sub>4</sub>
Molar mass	41.9 g/mol

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Rinse skin with water/shower.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

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Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

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

Symptoms and effects are not known to date.

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media

D-Powder, Dry sand

Unsuitable extinguishing media

Water jet

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

Product may release hydrogen gas. Increased storage temperatures will accelerate this process. Water-reactive (in contact with water releases flammable gases).

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

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

Advice on how to contain a spill

Covering of drains, Take up mechanically

Advice on how to clean up a spill

Take up mechanically.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

##### Recommendations

Store in a dry place.

##### - Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

##### Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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

##### Managing of associated risks

##### - Explosive atmospheres

Removal of dust deposits.

##### - Incompatible substances or mixtures

Do not allow contact with water.

##### - Evaporative conditions

Keep container tightly closed and in a well-ventilated place.

##### - Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation.

##### - Packaging compatibilities

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

#### 7.3 Specific end use(s)

See section 16 for a general overview.

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)											
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
CN	particulates not otherwise classified		OEL		8					dust	GBZ 2.1

##### Notation

Ceiling-C ceiling value is a limit value above which exposure should not occur

dust as dust

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours  
time-weighted average (unless otherwise specified)

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### Environmental values

Relevant PNECs and other threshold levels				
Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	1.75 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	1.75 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	54.8 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	2.55 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.255 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	4.8 mg/kg	terrestrial organisms	soil	short-term (single instance)

### 8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

In the case of wanting to use the gloves again, clean them before taking off and air them well.

- Type of material

Nitrile

IIR: isobutene-isoprene (butyl) rubber

- Breakthrough times of the glove material

>30 minutes (permeation: level 2)

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

Particulate filter device (EN 143).

Environmental exposure controls

Use appropriate container to avoid environmental contamination. 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
Colour	white - off-white to light grey
Particle size	175 µm

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Odour	odourless
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### Other safety parameters

pH (value)	not applicable
Melting point/freezing point	>360 °C
Initial boiling point and boiling range	>400 °C at 103 kPa
Flash point	not applicable
Evaporation rate	not determined
Flammability (solid, gas)	substance which, in contact with water, emits flammable gases (in accordance with GHS criteria)
Explosion limits of dust clouds	not determined
Vapour pressure	<0 Pa at 25 °C
Density	1,080 kg/m <sup>3</sup> at 20.5 °C
Vapour density	this information is not available
Solubility(ies)	not determined

### Partition coefficient

- n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	>400 °C at 101 kPa (ECHA)
Viscosity	not relevant (solid matter)
Explosive properties	none
Oxidising properties	none

9.2	<b>Other information</b>	there is no additional information
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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". It's a reactive substance. The mixture contains reactive substance(s). Reactivity with water.

### 10.2 Chemical stability

See below "Conditions to avoid".

### 10.3 Possibility of hazardous reactions

Material reacts vigorously with water emitting flammable gases.

### 10.4 Conditions to avoid

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There are no specific conditions known which have to be avoided.

### 10.5 Incompatible materials

Water

Release of flammable materials with:

Water

### 10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Classification acc. to GHS

##### Acute toxicity

Toxic if swallowed. May be harmful in contact with skin. Harmful if inhaled.

##### - Acute toxicity estimate (ATE)

Oral	56.6 mg/kg
Dermal	≥4,000 mg/kg
Inhalation: dust/mist	>1.3 mg/l/4h

##### Skin corrosion/irritation

Causes severe skin burns and eye damage.

##### Serious eye damage/eye irritation

Causes serious eye damage.

##### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

##### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

##### Carcinogenicity

Shall not be classified as carcinogenic.

##### Reproductive toxicity

May damage fertility.

##### 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.

## SECTION 12: Ecological information

### 12.1 Toxicity

Harmful to aquatic life with long lasting effects.



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Aquatic toxicity (acute)			
Endpoint	Value	Species	Exposure time
LC50	74 mg/l	fish	96 h

### 12.2 Persistence and degradability

Data are not available.

### 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

According to the results of its assessment, this substance is not a PBT or a vPvB.

### 12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of  $\geq 0,1\%$ .

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Waste treatment-relevant information

Recycling/reclamation of other inorganic materials.

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/packages

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

#### Remarks

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

## SECTION 14: Transport information

### 14.1 UN number

UN RTDG	UN 1426
IMDG-Code	UN 1426
ICAO-TI	UN 1426

### 14.2 UN proper shipping name

UN RTDG	SODIUM BOROHYDRIDE
IMDG-Code	SODIUM BOROHYDRIDE
ICAO-TI	Sodium borohydride

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### 14.3 Transport hazard class(es)

UN RTDG	4.3
IMDG-Code	4.3
ICAO-TI	4.3

### 14.4 Packing group

UN RTDG	I
IMDG-Code	I
ICAO-TI	I

### 14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

### 14.6 Special precautions for user

There is no additional information.

### 14.7 Transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

### Information for each of the UN Model Regulations

#### Transport information - National regulations - Additional information (UN RTDG)

UN number	1426
Class	4.3
Packing group	I
Danger label(s)	4.3



Special provisions (SP)	- (UN RTDG)
Excepted quantities (EQ)	E0 (UN RTDG)
Limited quantities (LQ)	0 (UN RTDG)

#### International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	-
Danger label(s)	4.3



Special provisions (SP)	-
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
EmS	F-G, S-O
Stowage category	E

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### International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Danger label(s) 4.3



Excepted quantities (EQ) E0

### SECTION 15: Regulatory information

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

There is no additional information.

#### National inventories

Country	Inventory	Status
EU	REACH Reg.	substance is listed
US	TSCA	substance is listed (ACTIVE)

#### Legend

REACH Reg. REACH registered substances

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

#### Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.3	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland  Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com / info@zeochem.ch Website: https://www.zeochem.com	Details of the supplier of the safety data sheet: Zeochem AG Joweid 5, CH-8630 Rüti Switzerland  Telephone: +41 44 922 93 93 e-Mail: info@zeochem.com Website: https://www.zeochem.com	yes
1.4		Poison centre: change in the listing (table)	yes
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$ .	yes
7.1	- Measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas. Ground/bond container and receiving equipment.	- Measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Use only in well-ventilated areas.	yes
7.1	Specific notes/details:		yes

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Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
	Dust deposits may accumulate on all deposition surfaces in a technical room.		
9.1	Colour: white - grey	Colour: white - off-white to light grey	yes
12.5	Results of PBT and vPvB assessment: Data are not available.	Results of PBT and vPvB assessment: According to the results of its assessment, this substance is not a PBT or a vPvB.	yes
12.6	Endocrine disrupting properties: Not listed.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$ .	yes
15.1		National inventories: change in the listing (table)	yes

### Key literature references and sources for data

General Rule for Classification and Hazard Communication of Chemicals (National Standard GB 13690). National Standard: Safety Data Sheet for Chemical Products - Content and Order of Sections. GB/T 16483. National Standard: Guidance on Compilation of Safety Data Sheet for Chemical Products. GB/T 17519.  
UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

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

Code	Text
H260	In contact with water releases flammable gases which may ignite spontaneously.
H301	Toxic if swallowed.
H313	May be harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H360F	May damage fertility.
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.