



Sodium borodeuteride-D₄ (D, 99%) CP 95%

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 12/29/2010 Revision date: 3/14/2024 Supersedes: 8/23/2022 Version: 6.0

SECTION 1: Identification

1.1. Identification

Product form : Substance
Substance name : Sodium borodeuteride-D₄ (D, 99%) CP 95%
CAS-No. : 16940-66-2
Product code : DLM-226
Formula : BH₄.Na
Synonyms : Sodium tetradeuteroborate

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Cambridge Isotope Laboratories, Inc.
50 Frontage Rd
01810
ANDOVER, MA, 01810
USA
T 1-800-322-1174
cilsales@isotope.com - www.isotope.com

1.4. Emergency telephone number

Emergency number : 1-703-741-5970
Chemtrec 1-800-424-9300 24 hours

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Substances and mixtures which in contact with water emit flammable gases Category 1	H260	In contact with water releases flammable gases which may ignite spontaneously
Acute toxicity (oral) Category 3	H301	Toxic if swallowed
Acute toxicity (dermal) Category 3	H311	Toxic in contact with skin
Acute toxicity (inhalation) Category 1	H330	Fatal if inhaled
Skin corrosion/irritation Category 1A	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) :

Danger

Hazard statements (GHS US) :

H260 - In contact with water releases flammable gases which may ignite spontaneously
H301+H311 - Toxic if swallowed or in contact with skin
H314 - Causes severe skin burns and eye damage

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Precautionary statements (GHS US)	: H318 - Causes serious eye damage H330 - Fatal if inhaled P223 - Do not allow contact with water. P231+P232 - Handle under inert gas. Protect from moisture. P260 - Do not breathe dust, fume, gas, mist, spray, vapors. P264 - Wash Both hands thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P271 - Use only outdoors or in a well-ventilated area. P280 - Wear protective clothing, protective gloves. P284 - [In case of inadequate ventilation] wear respiratory protection. P301+P310 - If swallowed: Immediately call a poison center or doctor. P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting. P302+P352 - If on skin: Wash with plenty of water. P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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. P310 - Immediately call a poison center or doctor. P312 - Call a poison center or doctor if you feel unwell. P320 - Specific treatment is urgent (see Hazard pictograms (CLP) on this label). P321 - Specific treatment (see Hazard pictograms (CLP) on this label). P330 - Rinse mouth. P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. P361 - Take off immediately all contaminated clothing. P363 - Wash contaminated clothing before reuse. P370+P378 - In case of fire: Use Alcohol resistant foam, Carbon dioxide, Dry chemical, Water spray to extinguish. P402+P404 - Store in a dry place. Store in a closed container. P403+P233 - Store in a well-ventilated place. Keep container tightly closed. P405 - Store locked up. P501 - Dispose of contents/container to Comply with applicable regulations.
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2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS US classification
Sodium borodeuteride-D ₄ (D, 99%) CP 95% (Main constituent)	CAS-No.: 16940-66-2	100	Water-react. 1, H260 Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 1 (Inhalation), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

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SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area.
First-aid measures after inhalation	: When symptoms occur: go into open air and ventilate suspected area. If not breathing give artificial respiration. Get medical advice/attention.
First-aid measures after skin contact	: Wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes.
First-aid measures after ingestion	: Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms	: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. 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. Vomiting.
Symptoms/effects after inhalation	: Fatal if inhaled.
Symptoms/effects after skin contact	: Toxic in contact with skin. Causes severe skin burns.
Symptoms/effects after eye contact	: Causes severe eye damage.
Symptoms/effects after ingestion	: Toxic if swallowed.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide (CO ₂) Dry powder. DO NOT use water.
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5.2. Specific hazards arising from the chemical

Fire hazard	: In contact with water releases flammable gases which may ignite spontaneously.
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5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Fight fire with normal precautions from a reasonable distance. Wear a self contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection. Wear recommended personal protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid dust formation.
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6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not allow to enter drains or water courses. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal.
Methods for cleaning up : This material and its container must be disposed of in a safe way, and as per local legislation.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. Keep away from combustible material.
Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Keep container tightly closed in a dry and well-ventilated place.
Storage conditions : Store at room temperature away from light and moisture.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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USA - ACGIH - Occupational Exposure Limits

ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
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8.2. Appropriate engineering controls

Appropriate engineering controls : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.

Materials for protective clothing:

Wear suitable protective clothing and gloves

Hand protection:

Wear suitable protective clothing and gloves

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Eye protection:

Wear eye protection. Chemical goggles or face shield with safety glasses

Skin and body protection:

Wear suitable protective clothing, gloves and eye/face protection

Respiratory protection:

In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Powder.
Color	: White
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Melting point	: > 300 °C (> 572 °F)-dec.
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Molecular mass	: 41.86 g/mol (Labeled)
Solubility	: Water: 55 g/l
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Lower explosion limit: 3.02 %(V)
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

Additional information : Bulk density 1,074 kg/m³ at 20 °C (68 °F)

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

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10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

Reacts violently with water.

10.4. Conditions to avoid

Moisture.

10.5. Incompatible materials

Oxidizing agents, Chemically active metals, acids, reacts violently with water.

10.6. Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Borane/boron oxides, Sodium oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Toxic if swallowed.
Acute toxicity (dermal) : Toxic in contact with skin.
Acute toxicity (inhalation) : Fatal if inhaled.

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LD50 oral rat	56.57 mg/kg - (OECD Test Guideline 425)
LD50 dermal rabbit	4000 – 8000 mg/kg
LC50 Inhalation - Rat	> 1.3 mg/l/4h - Remarks: (highest concentration to be prepared) (ECHA)
ATE US (oral)	162 mg/kg body weight
ATE US (dermal)	300 mg/kg body weight
ATE US (gases)	10 ppmV/4h
ATE US (vapors)	0.05 mg/l/4h
ATE US (dust, mist)	0.005 mg/l/4h

Skin corrosion/irritation : Causes severe skin burns.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : No data available
Potential Adverse human health effects and symptoms : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. 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. Vomiting.
Symptoms/effects after inhalation : Fatal if inhaled.

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Symptoms/effects after skin contact : Toxic in contact with skin. Causes severe skin burns.
Symptoms/effects after eye contact : Causes severe eye damage.
Symptoms/effects after ingestion : Toxic if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

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LC50 - Fish [1]	> 100 mg/l Danio rerio (zebra fish) - 96 h
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12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

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

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.
Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Ecology - waste materials : Dispose of as unused product.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : UN1426
UN-No. (TDG) : UN1426
UN-No. (IMDG) : 1426
UN-No. (IATA) : 1426

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Sodium borohydride
Proper Shipping Name (TDG) : SODIUM BOROHYDRIDE
Proper Shipping Name (IMDG) : SODIUM BOROHYDRIDE
Proper Shipping Name (IATA) : Sodium borohydride

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14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 4.3
Hazard labels (DOT) : 4.3



TDG

Transport hazard class(es) (TDG) : 4.3
Hazard labels (TDG) : 4.3



IMDG

Transport hazard class(es) (IMDG) : 4.3
Hazard labels (IMDG) : 4.3



IATA

Transport hazard class(es) (IATA) : 4.3
Hazard labels (IATA) : 4.3



14.4. Packing group

Packing group (DOT) : I
Packing group (TDG) : I
Packing group (IMDG) : I
Packing group (IATA) : I

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT
UN-No.(DOT) : UN1426
DOT Special Provisions (49 CFR 172.102) : N40 - This material is not authorized in the following packaging: a. A combination packaging consisting of a 4G fiberboard box with inner receptacles of glass or earthenware; b. A single packaging of a 4C2 sift-proof, natural wood box; or c. A composite packaging 6PG2 (glass, porcelain or stoneware receptacles within a fiberboard box).
W31 - Non-bulk packagings must be hermetically sealed.
DOT Packaging Non Bulk (49 CFR 173.xxx) : 211
DOT Packaging Bulk (49 CFR 173.xxx) : 242

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DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 15 kg
DOT Vessel Stowage Location	: E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other	: 13 - Keep as dry as reasonably practicable, 52 - Stow "separated from" acids, 148 - In addition: from flammable gases and flammable liquids when stowed on deck of a containership a minimum distance of two container spaces athwartship shall be maintained, when stowed on ro-ro ships a distance of 6 m athwartship shall be maintained.

TDG

UN-No. (TDG)	: UN1426
TDG Special Provisions	: 38 - A person must not handle, offer for transport or transport these dangerous goods in a large means of containment if they are in direct contact with the large means of containment.
ERAP Index	: 1000
Explosive Limit and Limited Quantity Index	: 0
Excepted quantities (TDG)	: E0
Passenger Carrying Ship Index	: Forbidden
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: Forbidden
Emergency Response Guide (ERG) Number	: 138

IMDG

Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P403
Packing provisions (IMDG)	: PP31
EmS-No. (Fire)	: F-G - FIRE SCHEDULE Golf - WATER-REACTIVE SUBSTANCES
EmS-No. (Spillage)	: S-O - SPILLAGE SCHEDULE Oscar - SUBSTANCES DANGEROUS WHEN WET (NON-COLLECTABLE ARTICLES)
Stowage category (IMDG)	: E
Stowage and handling (IMDG)	: H1
Segregation (IMDG)	: SG26, SG35
Flash point (IMDG)	: '
Properties and observations (IMDG)	: Crystalline powder. In contact with water, acids or moisture, evolves hydrogen, which may be ignited by the heat of the reaction.
MFAG-No	: 138

IATA

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: Forbidden
PCA max net quantity (IATA)	: Forbidden
CAO packing instructions (IATA)	: 487
CAO max net quantity (IATA)	: 15kg
ERG code (IATA)	: 4W

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

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SECTION 15: Regulatory information

15.1. US Federal regulations

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SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Reactive hazard Immediate (acute) health hazard Delayed (chronic) health hazard

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
Sodium borodeuteride-D ₄ (D, 99%) CP 95%	16940-66-2	Not present	-	

15.2. International regulations

CANADA

Sodium borodeuteride-D₄ (D, 99%) CP 95% (16940-66-2)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Sodium borodeuteride-D₄ (D, 99%) CP 95% (16940-66-2)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

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State or local regulations U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

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: 03/14/2024

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of H-phrases

H260	In contact with water releases flammable gases which may ignite spontaneously
H301	Toxic if swallowed
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

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Full text of H-phrases	
H330	Fatal if inhaled

NFPA specific hazard : W - Materials that react violently or explosively with water.

Safety Data Sheet (SDS), USA

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