1. Identification

Product Name  Sodium borohydride  
Cat No. :  S678-10; S678-25  
CAS-No  16940-66-2  
Synonyms  SBH; Sodium tetrahydroborate (Powder) 
Recommended Use  Laboratory chemicals. 
Uses advised against  Not for food, drug, pesticide or biocidal product use 

Details of the supplier of the safety data sheet 

Company  Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100  

Emergency Telephone Number  
CHEMTREC®, Inside the USA: 800-424-9300  
CHEMTREC®, Outside the USA: 001-703-527-3887  

2. Hazard(s) identification

Classification 
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)  

<table>
<thead>
<tr>
<th>Substances/mixtures which, in contact with water, emit flammable gases</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>Category 3</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>Category 1 C</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Specific target organ toxicity - (repeated exposure)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Target Organs - Lungs.</td>
<td></td>
</tr>
</tbody>
</table>

Label Elements  

Signal Word  Danger  

Hazard Statements  
In contact with water releases flammable gases which may ignite spontaneously  
Toxic if swallowed  
Causes severe skin burns and eye damage  
May damage fertility. May damage the unborn child
Precautionary Statements

Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture

Response
Immediately call a POISON CENTER or doctor/physician

Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages

Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Ingestion
Rinse mouth
Do NOT induce vomiting

Fire
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in a dry place. Store in a closed container

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Reacts violently with water

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium borohydride</td>
<td>16940-66-2</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

4. First-aid measures

General Advice
Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
attention is required.

**Inhalation**
Move to fresh air. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. If not breathing, give artificial respiration.

**Ingestion**
Do not induce vomiting. Call a physician or Poison Control Center immediately.

**Most important symptoms and effects**
Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated.

**Notes to Physician**
Treat symptomatically

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### 5. Fire-fighting measures

**Suitable Extinguishing Media**
\( \text{CO}_2, \) dry chemical, dry sand, alcohol-resistant foam.

**Unsuitable Extinguishing Media**
DO NOT USE WATER

**Flash Point**
No information available

**Method**
No information available

**Autoignition Temperature**
220 °C / 428 °F

**Explosion Limits**

- **Upper**
  No data available

- **Lower**
  3.02 vol %

**Oxidizing Properties**
Not oxidising

**Sensitivity to Mechanical Impact**
No information available

**Sensitivity to Static Discharge**
No information available

**Specific Hazards Arising from the Chemical**
Corrosive Material. Reacts violently with water. Contact with water liberates extremely flammable gases. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

**Hazardous Combustion Products**
Oxides of boron Sodium oxides Hydrogen

**Protective Equipment and Precautions for Firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA**

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>W</td>
</tr>
</tbody>
</table>

---

### 6. Accidental release measures

**Personal Precautions**
Use personal protective equipment. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing.

**Environmental Precautions**
Avoid release to the environment. See Section 12 for additional ecological information.

**Methods for Containment and Clean Up**
Do not expose spill to water. Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

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### 7. Handling and storage

**Handling**
Use only under a chemical fume hood. Wear personal protective equipment. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Do not ingest. Do not breathe vapors/dust. Do not allow contact with water.
Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Keep away from water. Do not store in aluminum containers.

8. Exposure controls / personal protection

Exposure Guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Solid Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>approx 11 10 g/l aq.solution</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>360 °C / 680 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>No information available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid,gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability or explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

| Upper | 3.02 vol % |
| Lower | 3.02 vol % |
| Vapor Pressure | negligible |
| Vapor Density  | Not applicable |
| Density        | 1.074 |
| Specific Gravity | No information available |
| Bulk Density   | powder: 400 kg/m³ granules: 510 kg/m³ |
| Solubility     | Reacts violently with water |
| Partition coefficient; n-octanol/water | No data available |
| Autoignition Temperature | 220 °C / 428 °F |
| Decomposition Temperature | 400 °C |
| Viscosity      | Not applicable |
| Molecular Formula | H4 B Na |
| Molecular Weight | 37.83 |

10. Stability and reactivity

Reactive Hazard
Yes
Stability
Water reactive. Hygroscopic.

Conditions to Avoid
Incompatible products. Excess heat. Exposure to moist air or water. Exposure to moisture. Temperatures above 60°C.

Incompatible Materials
Strong oxidizing agents, Aldehydes, Ketones, Acids, Aluminium

Hazardous Decomposition Products
Oxides of boron, Sodium oxides, Hydrogen, Thermal decomposition can lead to release of irritating gases and vapors

Hazardous Polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Contact with water liberates extremely flammable gases.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium borohydride</td>
<td>57 mg/kg (Rat)</td>
<td>&gt;2000 mg/kg (Rabbit)</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Toxicologically Synergistic Products
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation
Causes burns by all exposure routes

Sensitization
No information available

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium borohydride</td>
<td>16940-66-2</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

STOT - single exposure
None known

STOT - repeated exposure
Lungs

Aspiration hazard
No information available

Symptoms / effects, both acute and delayed
Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

Endocrine Disruptor Information
No information available

Other Adverse Effects
The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains. Reacts with water so no ecotoxicity data for the substance is available.

Persistence and Degradability
Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation

No information available.

Mobility

Is not likely mobile in the environment.

### 13. Disposal considerations

**Waste Disposal Methods**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

**DOT**

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1426</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>SODIUM BOROHYDRIDE</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>4.3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>I</td>
</tr>
</tbody>
</table>

**TDG**

<table>
<thead>
<tr>
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<th>UN1426</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4.3</td>
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<tr>
<td>Packing Group</td>
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</table>

**IATA**

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1426</th>
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<tbody>
<tr>
<td>Proper Shipping Name</td>
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</table>

**IMDG/IMO**

<table>
<thead>
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<th>UN1426</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>SODIUM BOROHYDRIDE</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>4.3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>I</td>
</tr>
</tbody>
</table>

### 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

#### International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium borohydride</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>241-004-4</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

#### U.S. Federal Regulations

- TSCA 12(b) Not applicable
- SARA 313 Not applicable
Sodium borohydride

SARA 311/312 Hazard Categories
See section 2 for more information

CWA (Clean Water Act) Not applicable
Clean Air Act Not applicable
OSHA Occupational Safety and Health Administration Not applicable
CERCLA Not applicable
California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium borohydride</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations
Mexico - Grade Moderate risk, Grade 2

16. Other information
Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 29-Jan-2010
Revision Date 17-Jan-2018
Print Date 17-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of SDS