

Material Safety Data Sheet

Sodium borohydride

ACC# 95397

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium borohydride**Catalog Numbers:** AC189300000, AC189300050, AC189300100, AC200050000, AC200050250, AC200055000, AC201480000, AC201481000, AC201485000, AC419470000, 18930-1000, 18930-5000, 20005-1000, 41947-1000, S678-10, S678-25**Synonyms:** Sodium tetrahydroborate; SBH; reducing agent for the conversion of aldehydes and ketones to alcohols.**Company Identification:**Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
16940-66-2	Sodium borohydride	>98	241-004-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Danger! Water, acid, or high temperatures can liberate flammable hydrogen gas. Strong reducing agent. Fire and explosion risk in contact with oxidizing agents. Causes eye and skin burns. Causes digestive and respiratory tract burns. Harmful if swallowed, inhaled, or absorbed through the skin. Hygroscopic (absorbs moisture from the air).**Target Organs:** Eyes, skin, mucous membranes.**Potential Health Effects****Eye:** Causes eye burns.**Skin:** Harmful if absorbed through the skin. May cause severe skin irritation with possible burns, especially if skin is wet or moist. Not expected to cause an allergic skin reaction.**Ingestion:** Harmful if swallowed. Causes gastrointestinal tract burns.**Inhalation:** Harmful if inhaled. Causes chemical burns to the respiratory tract.

Chronic: May cause lung damage.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin: In case of contact, immediately wipe away excess material with a dry cloth while removing contaminated clothing and shoes. Under safety shower, wash affected areas thoroughly with large amounts of water, and soap if available, for at least 15 minutes.

Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion. Reacts with water to form explosive hydrogen gas. Powerful reducing agent.

Extinguishing Media: Do NOT use water, CO₂, or halogenated extinguishers. Use dry chemical extinguishing agents, dry sand or dry ground dolomite.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 2; Instability: 2; Special Hazard: -W-

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Isolate area and deny entry. Provide ventilation. Do not expose spill to water. Do not get water inside containers. Use only non-sparking tools and equipment. Remove ignition sources since flammable hydrogen gas may be generated by reaction with water.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not allow water to get into the container because of violent reaction.

Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Do not allow contact with water. Keep from contact with moist air and steam. Note: An explosion can occur by spontaneous ignition of the gases released from a saturated solution of sodium borohydride in dimethylformamide at 17°C. (Hawley's Condensed Chemical Dictionary, 13th edition, 1997.) For sampling and testing purposes, utilize polyethylene bottles. Do not store in glass containers, as pressure buildup could result in rupture and severe injury.

Storage: Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Keep away from acids. Do not store in aluminum containers. Store protected from moisture. Sometimes packaged under dry nitrogen.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium borohydride	none listed	none listed	none listed

OSHA Vacated PELs: Sodium borohydride: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: 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.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: amine-like

pH: alkaline in sol.

Vapor Pressure: Negligible.

Vapor Density: 1.3

Evaporation Rate: negligible

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: decomposes

Decomposition Temperature: > 305 deg C

Solubility: 35%

Specific Gravity/Density: 1.07

Molecular Formula: H₄BNa

Molecular Weight: 37.82

Section 10 - Stability and Reactivity

Chemical Stability: Stable. However, may decompose if heated. Water contact produces hydrogen gas.
Conditions to Avoid: Moisture, temperatures above 200°C.
Incompatibilities with Other Materials: Water, metals, strong oxidizing agents, acids.
Hazardous Decomposition Products: Oxides of boron, borane, hydrogen gas.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 16940-66-2: ED3325000

LD50/LC50:

CAS# 16940-66-2:

Inhalation, rat: LC50 = 36 mg/m³;
Oral, mouse: LD50 = 50 mg/kg;
Oral, rabbit: LD50 = 50 mg/kg;
Oral, rat: LD50 = 162 mg/kg;
Skin, rabbit: LD50 = 230 mg/kg;

Carcinogenicity:

CAS# 16940-66-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	SODIUM BOROHYDRIDE	SODIUM BOROHYDRIDE
Hazard Class:	4.3	4.3
UN Number:	UN1426	UN1426
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 16940-66-2 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 16940-66-2: immediate, fire, reactive.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 16940-66-2 can be found on the following state right to know lists: New Jersey.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T F C

Risk Phrases:

- R 15 Contact with water liberates extremely flammable gases.
- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 34 Causes burns.

Safety Phrases:

- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 7/8 Keep container tightly closed and dry.
- S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 16940-66-2: 2

Canada - DSL/NDSL

CAS# 16940-66-2 is listed on Canada's DSL List.

Canada - WHMIS

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
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MSDS Creation Date: 2/23/1999

Revision #6 Date: 7/30/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.