Material Safety Data Sheet
Sodium borohydride, powder

ACC# 21040

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium borohydride, powder
Catalog Numbers: S678-10, S678-25
Synonyms: Sodium tetrahydroborate; SBH.
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

Hazard Symbols: T F
Risk Phrases: 15 25 34

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystals. **Danger!** May cause severe eye and skin irritation with possible burns. May cause severe respiratory and digestive tract irritation with possible burns. May cause lung damage. Contact with water or steam may cause a fire/explosion hazard. Liberates flammable hydrogen gas. Water-reactive. May ignite or explode on contact with moist air. Reacts violently and/or explosively with water, steam or moisture. Hygroscopic (absorbs moisture from the air).
Target Organs: None known.

Potential Health Effects

Eye: May cause irreversible eye injury. When substance becomes wet or comes in contact with moisture of the mucous membranes, it will cause burns.
Skin: May be absorbed through the skin. May cause severe skin irritation with possible burns, especially if skin is wet or moist.
Ingestion: May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.
Inhalation: Irritation may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. May cause lung damage.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. May cause lung damage.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
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. Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Water Reactive. Material will react with water and may release a flammable and/or toxic gas. Use water spray to keep fire-exposed containers cool. May ignite or explode on contact with steam or moist air. Containers may explode when heated.
Extinguishing Media: DO NOT USE WATER! Do NOT get water inside containers. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out. For small fires, use dry chemical, soda ash, lime or sand. For large fires, use dry sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.
Flash Point: 250 deg C (482.00 deg F)
Autoignition Temperature: 400C (Dec)
Explosion Limits, Lower: Not available.
Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 2; Special Hazard: -W-

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation. Do not expose spill to water. Do not get water inside containers.

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. Keep container tightly closed. Do not get on skin or in eyes. Do not ingest or inhale. Do not allow contact with water. Keep from contact with moist air and steam.
Storage: Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water. Store protected from moisture.

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 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: 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. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Crystals
Appearance: white
Odor: none reported
pH: alkaline in sol.
Vapor Pressure: Negligible.
Vapor Density: 1.3
Evaporation Rate:negligible
Viscosity: Not available.
Boiling Point: 400 deg C
Freezing/Melting Point:37 deg C
Decomposition Temperature:> 400 deg C
Solubility: soluble & reactive in water
Specific Gravity/Density:1.074
Molecular Formula:H4BNa
Molecular Weight:37.8278

Section 10 - Stability and Reactivity

Chemical Stability: Stable. However, may decompose if heated. May decompose on exposure to moist air or water. Combines vigorously or explosively with water.
Conditions to Avoid: Incompatible materials, moisture, contact with water, temperatures above 200°C, exposure to moist air or water.
Incompatibilities with Other Materials: Acids (mineral, non-oxidizing, e.g. hydrochloric acid, hydrofluoric acid, muriatic acid, phosphoric acid), acids (mineral, oxidizing, e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), acids (organic, e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl hydrazine, hydrazine, methyl hydrazine), carbamates (e.g. carbanolate, carbofuran), caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), cyanides (e.g. potassium cyanide, sodium cyanide), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), ethers.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, oxides of boron, borane, hydrogen gas.
Hazardous Polymerization: Has not been reported.

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, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: No information available.
Other Studies: See actual entry in RTECS for complete information.

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	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	No information available.				No information available.
Hazard Class:					
UN Number:					
Packing Group:					

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.
SARA

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: acute, flammable, 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 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

Risk Phrases:

R 15 Contact with water liberates extremely flammable gases.
R 25 Toxic if swallowed.
R 34 Causes burns.

Safety Phrases:

S 18 Handle and open container with care.
S 22 Do not breathe dust.

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

This product has a WHMIS classification of B4, D2B.

Canadian Ingredient Disclosure List

Exposure Limits

Section 16 - Additional Information

MSDS Creation Date: 2/23/1999
Revision #5 Date: 12/03/2001