

MATERIAL SAFETY DATA SHEET

SODIUM BOROHYDRIDE

(For Synthesis)

MSDS CAS: - 16940-66-2

Section 1: Chemical Product and Company Identification

Section 1: Chemical Product

Product Name: SODIUM BOROHYDRIDE

CAS#: - 16940-66-2

C.I. No.: Not available.

Synonym: Sodium tetrahydroborate

Chemical Name: Not available.

Chemical Formula: NaBH₄

Brand: OXFORD

Details Of The Supplier Of The Safety Data Sheet:

Company identification: OXFORD LAB FINE CHEM LLP
Unit. No. 12, 1st Floor, Neminath Industrial Estate No. 6,
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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium borohydride	16940-66-2	100

Section 3: Hazards Identification

Potential Acute Health Effects:

Extremely hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Very hazardous in case of skin contact (corrosive). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastrointestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

Extremely hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Very hazardous in case of skin contact (corrosive). **CARCINOGENIC EFFECTS:** Not available. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:

If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Section 4: First Aid Measures (Continued)

Ingestion:

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

Flammable solid. **SMALL FIRE:** Use DRY chemical powder. **LARGE FIRE:** Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:

Corrosive solid. Flammable solid that, in contact with water, emits flammable gases. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Cover with dry earth, sand or other non-combustible material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

Section 7: Handling and Storage

Precautions:

Keep locked up Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

Storage:

Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. Keep container dry. Keep in a cool place.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:

Splash goggles. Lab coat. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance

: Solid.

Odor

: Not available.

Taste

: Not available.

Molecular Weight

: 37.84 g/mole

Color

: White crystals.

pH (1% soln/water)

: Not available.

Boiling Point

: 400°C

Section 9: Physical and Chemical Properties (Continued)

Melting Point	: 400°C
Critical Temperature	: Not available.
Specific Gravity	: 1.074 (Water = 1)
Vapor Pressure	: Not applicable.
Vapor Density	: 1.3 (Air = 1)
Density	: 1.074 g/cm ³
Explosive limit	: ≥ 0.0302 vol %
Water/Oil Dist. Coeff.	: Not available.
Ionicity (in Water)	: Not available.
Dispersion Properties	: See solubility in water.
Solubility	: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances:

Extremely reactive or incompatible with oxidizing agents, acids, alkalis, moisture. The product reacts violently with water to emit flammable but non toxic gases.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 2000 mg/kg [Rat].

Chronic Effects on Humans: CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.

MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: lungs, skin.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Section 11: Toxicological Information (Continued)

Special Remarks on Chronic Effects on Humans:

May affect genetic material (mutagenic). May cause cancer based on animal test data. No human data found.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes skin irritation. Eyes: Causes eye irritation. Inhalation: Can cause respiratory tract irritation with cough, wheezing, and shortness of breath. It can produce anaphylaxis or other hypersensitivity reactions in some sensitized individuals. Ingestion: May be harmful if swallowed. It may cause nausea, vomiting, diarrhea, abdominal pain, gastric hemorrhage. Extremely large amounts may affect behavior/central nervous system and may produce central nervous system stimulation, irritation, seizures and may also cause, cyanosis, respiratory depression, apnea, circulatory disturbances, hypotension and cardiovascular collapse. May cause asthmatic reaction in sensitized individuals. **Chronic Potential Health Effects:** Inhalation: Prolonged or repeated inhalation may cause bronchitis to develop with cough, phlegm, and/or shortness of breath. It can cause an asthma-like allergy or other hypersensitivity reactions such as anaphylaxis, angioedema, bronchoconstriction, flushing, diaphoresis, urticaria, tachycardia, and hypotension in sensitized individuals. Futures exposures may cause shortness of breath, wheezing, cough, and/or chest tightness. Skin: Prolonged or repeated skin contact can cause dermatitis. Ingestion: Prolonged or repeated ingestion may affect the liver, and blood

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

Land transport (ADR-RID)

Proper shipping name	: Sodium Borohydride
UN N°	: 1426
H.I. nr	: --
Labelling - Transport	: 4.3
ADR - Group	: I

Sea transport (IMDG) [English only]

Proper shipping name	: Sodium Borohydride
UN N°	: 1426
IMO-IMDG - Class or division	: 4.3
IMO-IMDG - Packing group	: I

Air transport (ICAO-IATA) [English only]

Proper shipping name	: Sodium Borohydride
UN N°	: 1426
IATA - Class or division	: 4.3
IATA - Packing group	: I

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Sodium bisulfite Illinois toxic substances disclosure to employee act: Sodium bisulfite Illinois chemical safety act: Sodium bisulfite New York release reporting list: Sodium bisulfite Pennsylvania RTK: Sodium bisulfite Minnesota: Sodium bisulfite Massachusetts RTK: Sodium bisulfite Massachusetts spill list: Sodium bisulfite New Jersey: Sodium bisulfite New Jersey spill list: Sodium bisulfite Louisiana spill reporting: Sodium bisulfite California Director's List of Hazardous Substances: Sodium bisulfite TSCA 8(b) inventory: Sodium bisulfite TSCA 8(a) PAIR: Sodium bisulfite TSCA 8(d) H and S data reporting: Sodium bisulfite: Effective date: 1/26/94; Sunset date: 6/30/98 CERCLA: Hazardous substances.: Sodium bisulfite: 5000 lbs. (2268 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2B: Material causing other toxic effects (TOXIC).

Section 15: Other Regulatory Information (Continued)

DSCL (EEC):

R22- Harmful if swallowed. R31- Contact with acids liberates toxic gas. S25- Avoid contact with eyes. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16 - Additional Information

References: Not available.

Other Special Considerations: Not available.

Disclaimer:

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