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## MATERIAL SAFETY DATA SHEET (MSDS)

### SODIUM BOROHYDRIDE (FOR SYNTHESIS)

#### 1. Product Identification

**Synonyms:** Sodium tetrahydroborate  
**CAS No.:** 16940-66-2

Product Coad: S0186400100

**Molecular Weight:** 37.83  
**Chemical Formula:** NaBH<sub>4</sub>

#### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Borohydride	16940-66-2	98 - 100%	Yes

#### 3. Hazards Identification

**Emergency Overview** DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. FLAMMABLE SOLID. DANGEROUS WHEN WET.

**Potential Health Effects** Information on the human health effects from exposure to this substance is limited. **Inhalation:** Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and labored breathing. May cause lung edema, a medical emergency.

**Ingestion:** Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea.

**Skin Contact:** Severe irritation or skin burns can result from contact with wet material or contact by moist skin. **Eye Contact:** Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns.

**Chronic Exposure:** No information found.

**Aggravation of Pre-existing Conditions:** No information found.

#### 4. First Aid Measures

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:** If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:** Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

#### 5. Fire Fighting Measures

**Fire:** Supports combustion. Flammable solid. Can ignite in air from an open flame, continuing to burn as hydrogen is evolved. It reacts with water or steam to produce flammable hydrogen.

**Explosion:** An explosion can occur by spontaneous ignition of the gases released from a saturated solution of sodium borohydride in dimethylformamide at 17°C.

**Fire Extinguishing Media:** Dry chemical or pulverized dolomite. DO NOT USE WATER, CARBON DIOXIDE, HALOCARBON or Wet Chemical Extinguishers.

**Special Information:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

#### 6. Accidental Release Measures

Notify safety personnel of spills. Remove sources of heat or ignition. Provide explosion-proof ventilation. Clean up personnel need protection against contact with or inhalation of sodium borohydride. Collect solid for recovery or disposal, avoiding dust generation and using non-sparking tools. Liquid spills should be absorbed with sand or dolomite and picked up for disposal. Do not flush powder or solutions to sewer or watercourse. Disposal: Sodium borohydride can be decomposed by carefully adding diluted acetic acid or acetone to a water dispersion of the scrap. (Provide venting for hydrogen emission.) The residues are borates.

#### 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. PROTECT FROM MOISTURE. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and



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precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

#### 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:** None established.

**Ventilation System:** A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):** For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:** Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

#### 9. Physical and Chemical Properties

**Appearance:** White to gray-white microcrystalline powder or lumps.

**Odor:** Odorless.

**Solubility:** Reacts with hot water; soluble in water **Specific Gravity:** 1.074

**pH:** No information found.

**% Volatiles by volume @ 21C (70F):** 0

**Boiling Point:** 400C (752F) Decomposes slowly

**Melting Point:** 36C (97F)

**Vapor Density (Air=1):** 1.3

**Vapor Pressure (mm Hg):** No information found.

**Evaporation Rate (BuAc=1):** No information found.

#### 10. Stability and Reactivity

**Stability:** Hygroscopic. Stable in dry air to 300C; decomposes slowly in moist air or in vacuum at 400C.

**Hazardous Decomposition Products:** Sodium oxide and hydrogen gas.

**Hazardous Polymerization:** Will not occur.

**Incompatibilities:** Reacts with water to evolve hydrogen and sodium hydroxide. Heat decomposes it to release hydrogen gas. May react slowly or vigorously with acids or certain transition metal catalysts to liberate hydrogen. Incompatible with oxidizing agents, sulfuric acid, ruthenium salt, metal salts and palladium.

**Conditions to Avoid:** Moisture, heat, flame, ignition sources, air and incompatibles.

#### 11. Toxicological Information

Oral rat LD50: 162 mg/kg. Skin rabbit LD50: 230mg/kg. Inhalation rat LD50: 36 mg/m3.

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Sodium Borohydride (16940-66-2)	No	No	None

#### 12. Ecological Information



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**Environmental Fate:** No information found.

**Environmental Toxicity:** No information found.

#### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

#### 14. Transport Information

**Proper Shipping Name:** SODIUM BOROHYDRIDE

**Hazard Class:** 4.3

**UN/NA:** UN1426

**Packing Group:** I

#### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Sodium Borohydride (16940-66-2)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

--Canada--

Ingredient	Korea	DSL	NDSL	Phil.
Sodium Borohydride (16940-66-2)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

-SARA 302- -----SARA 313-----

Ingredient	RQ	TPQ	List	Chemical Catg.
Sodium Borohydride (16940-66-2)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

-RCRA- -TSCA-

Ingredient	CERCLA	261.33	8(d)
Sodium Borohydride (16940-66-2)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No



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**MATERIAL SAFETY DATA SHEET (MSDS)****SODIUM BOROHYDRIDE (FOR SYNTHESIS)**

Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 2R

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. Other Information**

**NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 2 Other: **Water reactive**

**Label Hazard Warning:** DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. FLAMMABLE SOLID. DANGEROUS WHEN WET.

**Label Precautions:**

Keep away from heat, sparks, flame and moisture.

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases get medical attention immediately.

**Product Use:** Laboratory Reagent.

In accordance with REACH Regulation (CE) N° 1907/2006 and with CLP Regulation (CE) N° 1272/2008

**DISCLAIMER:**

- **SUVCHEM** Products are to be used as Lab Chemicals for R&D only. Not for drug, medicinal, household or other uses.
- **SUVCHEM** shall not be responsible for any damage resulting from handling or from contact with the above product.
- **SUVCHEM** provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

**End of document**