

MATERIAL SAFETY DATA SHEET**Product Name:** Sodium borohydride**CAS No.:** 16940-66-2**Version:** 0**1. Identification**

Product Code : 90543, 90278
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2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
SODIUM BOROHYDRIDE	16940-66-2	95-100 %

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.

Saf-T-Data

Health Rating : 3 - Severe
Flammability Rating : 3 - Severe (Flammable)
Reactivity Rating : 3 - Severe (Water Reactive)
Contact Rating : 3 - Severe

Potential Health Effects

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.

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- General information** : Get medical advice/attention if you feel unwell. If medical advice is needed, have product container or label at hand. Show this safety data sheet to the doctor in attendance.
- Inhalation** : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- 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** : 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. **DO NOT APPLY GREASES OR OINTMENTS**
- 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 17C.
- 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

- Personal precautions, protective equipment and emergency procedures** : Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Methods and material for containment and cleaning up** : Sweep up and place in a clearly labeled container for chemical waste.

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- Notification Procedures** : Clean surface thoroughly to remove residual contamination.
: Prevent entry into waterways, sewer, basements or confined areas.
Inform authorities if large amounts are involved.
- Environmental precautions** : Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage

- Precautions for safe handling** : 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 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..
- Conditions for safe storage, including any incompatibilities** : Keep containers tightly closed. Store in cool, dry place. Store in a well-ventilated place.

8. Exposure Controls Personal Protection

- Control parameters**
- Occupational 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,

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- Eye Protection:** : apron or coveralls, as appropriate, to prevent skin contact.
: 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.
- Other** : Clothing contaminated with this material may be an increased fire hazard. Wash contaminated clothing as soon as possible.
- Respiratory protection** : In case of inadequate ventilation use suitable respirator.
- Hygiene measures** : Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and Chemical Properties

- Appearance : White to gray-white microcrystalline powder or lumps.
Odor : Odorless.
pH : No information found.
Melting point/freezing point : 36°C (97F)
Initial boiling point and boiling range : 400°C (752F) Decomposes slowly
Flash Point : No information found.
Vapor pressure : No information found.
Vapor density : 1.3 (Air=1)
Relative density : 1.074
Solubility in water : Reacts with hot water; soluble in water
Solubility (other) : No data available.
Formula : NaBH₄
Molecular Weight : 37.83 g/mol

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** : This substance does not polymerize.
- 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**Toxicological Data:**

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

Cancer Lists

Ingredient	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans DIOXANE	US. National Toxicology Program (NTP) Report on Carcinogens DIOXANE	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Sodium Borohydride (16940-66-2)	No	No	None

12. Ecological Information

Ecotoxicity

Acute hazards to the aquatic environment :

Fish Product : No data available.

Aquatic invertebrates Product : No data available.

Chronic hazards to the aquatic environment :

Fish Product : No data available.

Aquatic invertebrates Product : No data available.

Toxicity to Aquatic Plants Product: : No data available.

Persistence and degradability

Biodegradation Product : No data available.

BOD/COD ratio Product : No data available.

Bioaccumulative potential

Bioconcentration factor (BCF) Product : No data available on bioaccumulation.

Product

Partition coefficient n-octanol / water (log Kow) Product : No data available.

Mobility in soil

Mobility in soil : No data available.

Other adverse effects : No data available.

13. Disposal consideration

Disposal instructions : Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated packaging : Since emptied containers retain product residue, follow label warnings even after container is emptied.

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14. Transport Information

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
DOT	UN1426	SODIUM BOROHYDRIDE	4.3	I	No
IMDG	UN1426	SODIUM BOROHYDRIDE	4.3	I	No
IATA	UN1426	SODIUM BOROHYDRIDE	4.3	I	No

15. Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture
No Data Available.

16. Other Information

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