



MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 09/28/2012

Version 1.2

SECTION 1. Identification

Product identifier

Product number	106371
Product name	Sodium borohydride for analysis

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America SDS Phone Support: +1-978-715-1335 General Inquiries: +1-978-751-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) e-mail: mm_sds@merckgroup.com
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Substances which in contact with water emit flammable gases, Category 1, H260
Acute toxicity, Category 3, Dermal, H311
Acute toxicity, Category 3, Oral, H301
Skin corrosion, Category 1A, H314

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H260 In contact with water releases flammable gases which may ignite spontaneously.

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H301 + H311 Toxic if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

Precautionary Statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P309 + P310 IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

P402 + P404 Store in a dry place. Store in a closed container.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	NaBH ₄	H ₄ BNa (Hill)
CAS-No.	16940-66-2	
Molar mass	37.83 g/mol	

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

sodium borohydride (>= 90 % - <= 100 %)

16940-66-2

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Risk of perforation!

Never give anything by mouth to an unconscious person.

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Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Cough, Shortness of breath, Vomiting, Headache, CNS disorders

Risk of corneal clouding.

The following applies to boron compounds in general: resorption is followed by nausea and vomiting, agitation(>,<) spasms, CNS disorders, cardiovascular disorders.

Risk of blindness!

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

powder, Sand, Cement, Dry powder

Unsuitable extinguishing media

Foam, Water, Carbon dioxide (CO₂)

Special hazards arising from the substance or mixture

Combustible material

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

May not get in touch with:

Water

Caution! in contact with water product releases:

Hydrogen

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Avoid inhalation of dusts.

Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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SECTION 7. Handling and storage

Precautions for safe handling

Keep workplace dry. Do not allow product to come into contact with water.

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage temperature: no restrictions.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>sodium borohydride 16940-66-2</i>			
ACGIH	Time Weighted Average (TWA):	2 mg/m ³	Form of exposure: Inhalable fraction.
	Short Term Exposure Limit (STEL):	6 mg/m ³	Form of exposure: Inhalable fraction.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Recommended:

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	> 480 min

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Other protective equipment:
protective clothing

Respiratory protection

required when dusts are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	solid
Color	white
Odor	odorless
Odor Threshold	No information available.
pH	ca. 11 at 10 g/l 68 °F (20 °C)
Melting point	ca. 752 °F (400 °C) (slow decomposition)
Boiling point/boiling range	ca. 932 °F (500 °C) (decomposition)
Flash point	156 °F (69 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	3.02 %(V)
Upper explosion limit	not applicable
Vapor pressure	not applicable
Relative vapor density	1.3
Relative density	1.07 g/cm ³ at 68 °F (20 °C)
Water solubility	550 g/l at 77 °F (25 °C) (slow decomposition)

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Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	> 428 °F (> 220 °C)
Viscosity, dynamic	not applicable
Ignition temperature	ca. 428 °F (220 °C)
Bulk density	ca. 350 - 500 kg/m ³

SECTION 10. Stability and reactivity

Reactivity

Vapor/air-mixtures are explosive at intense warming.

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

Chemical stability

sensitive to moisture

Possibility of hazardous reactions

Risk of explosion with:

Water, Alcohols

(generation of hydrogen)

Copper, Nickel, in finely distributed form.

aluminum chloride, metallic salts, phenol, Strong oxidizing agents, polymerizable substances, hydrogen peroxide, Powdered metals, acids

Risk of ignition or formation of inflammable gases or vapors with:

carbon/soot

Exothermic reaction with:

phosphoric acid, conc. sulfuric acid, Dimethylformamide

Conditions to avoid

Heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

no information available

Hazardous decomposition products

no information available

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SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact, Ingestion

Acute oral toxicity

LD50 rat: 160 mg/kg (IUCLID)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach., Vomiting
absorption

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Corrosive to respiratory system

Acute dermal toxicity

LD50 rabbit: 230 mg/kg
(RTECS)

absorption

Skin irritation

Causes severe burns.

Eye irritation

Causes serious eye damage. Risk of corneal clouding.
Risk of blindness!

Genotoxicity in vitro

Ames test

Result: negative
(External MSDS)

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Decomposition of the substance with tissue moisture.

After absorption:

CNS disorders, Headache

Other information

The following applies to boron compounds in general: resorption is followed by nausea and vomiting, agitation(>,<) spasms, CNS disorders, cardiovascular disorders.

Further data:

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 Danio rerio (zebra fish): > 100 mg/l; 96 h (External MSDS)

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Other adverse effects

Additional ecological information

Biological effects:

Forms toxic mixtures in water, dilution measures notwithstanding.

Further information on ecology

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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SECTION 14. Transport information

Land transport (DOT)

UN number UN 1426
Proper shipping name SODIUM BOROHYDRIDE
Class 4.3
Packing group I
Environmentally hazardous --

Air transport (IATA)

UN number UN 1426
Proper shipping name SODIUM BOROHYDRIDE
Class 4.3
Packing group I
Environmentally hazardous --
Special precautions for user yes
IATA (Passenger) Not permitted for transport

Sea transport (IMDG)

UN number UN 1426
Proper shipping name SODIUM BOROHYDRIDE
Class 4.3
Packing group I
Environmentally hazardous --
Special precautions for user yes
EmS F-G S-O

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SECTION 15. Regulatory information

United States of America

OSHA Hazards

Water Reactive
Toxic by ingestion
Toxic by skin absorption
Corrosive to skin
Corrosive to eyes
Corrosive by inhalation.

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

TSCA list

Not relevant

SARA 311/312 Hazards

Reactivity Hazard
Acute Health Hazard

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

Massachusetts Right To Know

Remarks

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

Ingredients

sodium borohydride

New Jersey Right To Know

Ingredients

sodium borohydride

California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

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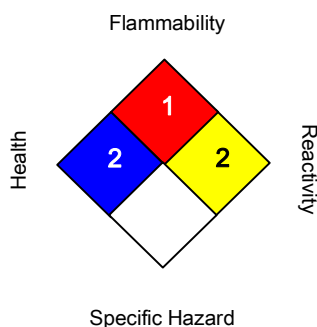
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TSCA: On TSCA Inventory
DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information

National Fire Protection Association (U.S.A)



Hazardous Materials Information System (U.S.A)

HEALTH	
FLAMMABILITY	
PHYSICAL	

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H260 In contact with water releases flammable gases which may ignite spontaneously.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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