



**LEONID CHEMICALS PVT. LTD.,
BANGALORE**

An ISO-9001:2008 Certified Company

Quality Assurance Department

(CODE) DOCUMENT : WI

(CODE) SECTION : WI/SM

(DATE) : 17.06.2013



Issue : 02

Rev.: 00

Title: MATERIAL SAFETY DATA SHEET (MSDS): SODIUM BOROHYDRIDE

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SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Sodium borohydride

Catalog Numbers: S146

Synonyms: SBH, Sodium tetrahydroborate

CAS-No. : 16940-66-2

Company Information:

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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Substances, which in contact with water, emit flammable gases (Category 1)
Acute toxicity, Dermal (Category 3)
Acute toxicity, Oral (Category 3)
Skin corrosion (Category 1B)
Classification according to EU Directives 67/548/EEC or 1999/45/EC
Contact with water liberates extremely flammable gases. Toxic in contact with skin and if swallowed.
Causes burns.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Signal word Danger

Hazard statement(s)

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.

Precautionary statement(s)



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- P223 Keep away from any possible contact with water, because of violent reaction and possible flash fire.
- P231 + P232 Handle under inert gas. Protect from moisture.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P422 Store contents under inert gas.

**Supplemental Hazard
Statements**

none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrases(s)

- R15 Contact with water liberates extremely flammable gases.
- R24/25 Toxic in contact with skin and if swallowed.
- R34 Causes burns.

S-phrases(s)

- S22 Do not breathe dust.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S43 In case of fire, use sand.
- S45 In case of accident or if you feel unwell, seek medical advice immediately(show the label where possible).

2.3 Other hazards - none

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : H_4BNa

Molecular Weight : 37,83 g/mol

Component	Concentration
Sodium borohydride	
CAS-No. 16940-66-2	-
EC-No. 241-004-4	



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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Dry powder Carbon dioxide (CO₂)

Unsuitable extinguishing media

Water

5.2 Special hazards arising from the substance or mixture

Nature of decomposition products not known.

5.3 Advice for firefighters



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Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

no data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Air and moisture sensitive. Store under inert gas.

7.3 Specific end uses

no data available

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls



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Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.

Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: > 480 min

Material tested:Dermatril

Splash protection

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: > 30 min

Material tested:Dermatril

test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame retardant protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and



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components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	: Solid
Appearance	: White
odor	: rotten-egg like
pH approx.	: 11 10 g/l aq.solution
Vapor Pressure	: negligible
Vapor Density	: 1.3
Boiling Point/Range	: No information available.
Melting Point/Range	: 400°C / 752°F
Decomposition temperature	: > 220°C
Flash Point	: No information available.
Autoignition Temperature	: 220°C / 428°F
Explosion Limits	
Lower	: 3.02 vol%
Evaporation Rate	: negligible
Water Solubility	: Water reactive
Molecular Formula	: H4 B Na
Molecular Weight	: 37.83

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity
no data available
- 10.2 Chemical stability
no data available
- 10.3 Possibility of hazardous reactions
Reacts violently with water.
- 10.4 Conditions to avoid
Exposure to moisture.
- 10.5 Incompatible materials
Oxidizing agents, Chemically active metals, acids, Reacts violently with water.
- 10.6 Hazardous decomposition products
Other decomposition products - no data available

SECTION 11: TOXICOLOGICAL INFORMATION



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11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - rat - 162 mg/kg

LD50 Dermal - rabbit - 230 mg/kg

Skin corrosion/irritation

Skin - Human - Corrosive

Serious eye damage/eye irritation

Eyes - Human - Corrosive to eyes

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

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

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion Toxic if swallowed. Causes burns.

Skin Toxic if absorbed through skin. Causes skin burns.

Eyes Causes eye burns.

Signs and Symptoms of Exposure

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information



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RTECS: ED3325000

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish mortality LC50 - Gambusia affinis (Mosquito fish) - 5.600 mg/l - 96 h

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

no data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR/RID: 1426 IMDG: 1426 IATA: 1426

14.2 UN proper shipping name

ADR/RID : SODIUM BOROHYDRIDE

IMDG : SODIUM BOROHYDRIDE

IATA : Sodium borohydride

Passenger Aircraft : Not permitted for transport



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14.3 Transport hazard class(es)

ADR/RID: 4.3

IMDG: 4.3

IATA: 4.3

14.4 Packaging group

ADR/RID: I

IMDG: I

IATA: I

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

14.6 Special precautions for user

no data available

SECTION 15: REGULATORY INFORMATION

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

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture


no data available

15.2 Chemical Safety Assessment

no data available

SECTION 16 : ADDITIONAL INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Leonid Chemicals Pvt. Ltd. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Leonid Chemicals Pvt. Ltd. has been advised of the possibility of such damages.

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		Title: SPECIFICATION MANUAL - SODIUM BOROHYDRIDE	

Specification manual - Sodium Borohydride

NaBH₄

MW: 37.83

Product : Sodium Borohydride LR
Description : White powder
Cat No : S146
Cas No : 16940-66-2
Prepared Date : 10.12.2008
Approved Date : 10.12.2008

REVISION HISTORY				
Issue/Rev	Description of Change		Author	Effective Date
01/00	Initial Release		S. Paul Joshua	10.12.2008
02/00	Reviewed no changes		S. Paul Joshua	01.04.2011
02/01	Included "Description" in the Tests		S. Paul Joshua	17.06.2013
Next Review Due :		02.04.2015		
To be reviewed by :		Head-QC/QA		

Sl. No.	Tests	Specification	Protocol
		LR	
1	Description	White powder	LCPL
2	Assay	Min 98%	LCPL

Approved By: S.Paul Joshua, Head Quality Control and Quality Assurance

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