Safety data sheet Sodium Borohydride

Sodium borohydride ≥26 %,
article number: **4051**

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Identification of the substance	**Sodium borohydride** ≥26% ,
Article number	4051
EC number	241-004-4
CAS number	16940-66-2

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

Relevant identified uses:	Laboratory chemical Laboratory and analytical use
Uses advised against:	Do not use for products which come into direct contact with the skin. Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household). Food, drink and animal feedingstuffs.

1.3 Details of the supplier of the safety data sheet

CASPIAN CHEMISTRY CO

Telephone:+98 912 40 45 100

e-mail:INFO@CASPIANCHEMISTRY.COM

Website: WWW.CASPIANCHEMISTRY.COM

Competent person responsible for the safety data sheet:	Department Health, Safety and Environment
e-mail (competent person):	INFO@CASPIANCHEMISTRY.COM

1.4 Emergency telephone number

98 912 40 45 100

SECTION 2: Hazards identification

Section	Hazard class	Cat-egory	Hazard class and category	Hazard statement
2.12	Substance and mixture which, in contact with water, emits flammable gas	1	Water-react. 1	H260
3.1O	Acute toxicity (oral)	3	Acute Tox. 3	H301
3.2	Skin corrosion/irritation	1C	Skin Corr. 1C	H314
3.3	Serious eye damage/eye irritation	1	Eye Dam. 1	H318
3.7	Reproductive toxicity	1B	Repr. 1B	H360FD

Supplemental hazard information

Code	Supplemental hazard information
EUH014	reacts violently with water

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis. In contact with water releases flammable gases which may ignite spontaneously.

2.2 Label elements

Labelling

Signal word **Danger**

Pictograms

GHS02, GHS05, GHS06, GHS08

Hazard statements

H260	In contact with water releases flammable gases which may ignite spontaneously
H301	Toxic if swallowed
H314	Causes severe skin burns and eye damage
H360FD	May damage fertility. May damage the unborn child

Precautionary statements

Precautionary statements - prevention

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

Precautionary statements - response

P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P302+P352	IF ON SKIN: Wash with plenty of 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
P310	Immediately call a POISON CENTER/doctor

For professional users only

Supplemental hazard information

EUH014 Reacts violently with water.

2.3 Other hazards

This material is combustible, but will not ignite readily.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Sodium borohydride
Molecular formula	$NaBH_4$
Molar mass	37,83 $^{g}/_{mol}$
CAS No	16940-66-2
EC No	241-004-4

Substance, Specific Conc. Limits, M-factors, ATE

Specific Conc. Limits	M-Factors	ATE	Exposure route
-	-	56,57 $^{mg}/_{kg}$	oral

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Take off immediately all contaminated clothing. Self-protection of the first aider.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

After contact with skin, wash immediately with plenty of water. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

Following eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye.

Following ingestion

Rinse mouth immediately and drink plenty of water. If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects). In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

4.2 Most important symptoms and effects, both acute and delayed

Corrosion, Risk of blindness, Gastric perforation, Risk of serious damage to eyes

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings!
dry extinguishing powder, D-powder, dry sand

Unsuitable extinguishing media

water

5.2 Special hazards arising from the substance or mixture

Product may release hydrogen gas. Increased storage temperatures will accelerate this process. Water-reactive (in contact with water releases flammable gases).

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe dust.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains. Take up mechanically.

Advice on how to clean up a spill

Take up mechanically. Control of dust. Take up carefully when dry.

Other information relating to spills and releases

Place in appropriate containers for disposal.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation. Handle and open container with care. Avoid exposure. Avoid dust formation. Clear contaminated areas thoroughly.

Measures to prevent fire as well as aerosol and dust generation


Keep away from sources of ignition - No smoking.

Advice on general occupational hygiene

When using do not eat or drink. Thorough skin-cleansing after handling the product. When using do not smoke.

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place. Keep container tightly closed. Hygroscopic solid.

Incompatible substances or mixtures

Observe hints for combined storage. Do not allow contact with water.

Evaporative conditions

Keep container tightly closed and in a well-ventilated place.

Protect against external exposure, such as

humidity

Consideration of other advice:

Store locked up.

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

This information is not available.

Environmental values

Relevant PNECs and other threshold levels				
End-point	**Threshold level**	**Organism**	**Environmental compartment**	**Exposure time**
PNEC	1,75 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
PNEC	1,75 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
PNEC	54,77 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	2,55 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0,255 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
PNEC	4,8 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection. Wear face protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

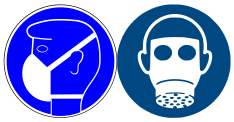
• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P3 (filters at least 99,95 % of airborne particles, colour code: White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid
Form	crystals
Colour	white
Odour	odourless
Melting point/freezing point	>360 °C (ECHA)
Boiling point or initial boiling point and boiling range	>400 °C at 102,7 kPa (ECHA)
Flammability	substance which, in contact with water, emits flammable gases (in accordance with GHS criteria)
Lower and upper explosion limit	not determined
Flash point	69 °C
Auto-ignition temperature	>400 °C at 101,3 kPa (ECHA)
Decomposition temperature	>360 °C
pH (value)	not applicable
Kinematic viscosity	not relevant
Solubility(ies)	
Water solubility	(spontaneous decomposition)
Solubility in dimethylformamide	180 $^{g}/_{l}$ at 20 °C
Partition coefficient	
Partition coefficient n-octanol/water (log value):	not relevant (inorganic)
Vapour pressure	<0 Pa at 25 °C
Density and/or relative density	
Density	1,07 $^{g}/_{cm^3}$ at 20 °C
Relative vapour density	Information on this property is not available.

Bulk density	350 – 500 $^{kg}/_{m^3}$
Particle characteristics	No data available.
Other safety parameters	
Oxidising properties	none

9.2 Other information

Information with regard to physical hazard classes:	There is no additional information.
Other safety characteristics:	There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

It's a reactive substance. Reactivity with water.

10.2 Chemical stability

Moisture-sensitive. Hygroscopic solid.

10.3 Possibility of hazardous reactions

Material reacts vigorously with water emitting flammable gases,
Violent reaction with: strong oxidiser, Alcohols, Metal powder, Phenol, Acids, Sulphuric acid, Hydrogen peroxide,
=> Explosive properties

10.4 Conditions to avoid

Keep away from heat. Decompostion takes place from temperatures above: >360 °C. Protect from moisture.

10.5 Incompatible materials

There is no additional information.

Release of flammable materials with

Water

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Toxic if swallowed.
GHS of the United Nations, annex 4. May be harmful in contact with skin.

Acute toxicity					
Exposure route	**Endpoint**	**Value**	**Species**	**Method**	**Source**
oral	LD50	56,57 $^{mg}/_{kg}$	rat		ECHA
dermal	LD50	≥4.000 – ≤8.000 $^{mg}/_{kg}$	rabbit		ECHA

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

May damage the unborn child. May damage fertility.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed

If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects)

• If in eyes

causes burns, Causes serious eye damage, risk of blindness

• If inhaled

cough, irritant effects, Dyspnoea

• If on skin

causes severe burns, causes poorly healing wounds

• Other information

Other adverse effects: Cardiovascular system, Cardiac arrhythmias

11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)				
Endpoint	**Value**	**Species**	**Source**	**Exposure time**
LC50	74 $^{mg}/_{l}$	fish	ECHA	96 h

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

Properties of waste which render it hazardous

HP 3 flammable
HP 4 irritant - skin irritation and eye damage
HP 6 acute toxicity
HP 8 corrosive
HP 10 toxic for reproduction

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number or ID number

ADRRID	UN 1426
IMDG-Code	UN 1426
ICAO-TI	UN 1426

14.2 UN proper shipping name

ADRRID	SODIUM BOROHYDRIDE
IMDG-Code	SODIUM BOROHYDRIDE
ICAO-TI	Sodium borohydride

14.3 Transport hazard class(es)

ADRRID	4.3
IMDG-Code	4.3
ICAO-TI	4.3

14.4 Packing group

ADRRID	I
IMDG-Code	I
ICAO-TI	I

14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)Additional information

Proper shipping name	SODIUM BOROHYDRIDE
Particulars in the transport document	UN1426, SODIUM BOROHYDRIDE, 4.3, I, (E)
Classification code	W2
Danger label(s)	4.3

Excepted quantities (EQ)	E0

Limited quantities (LQ)	0
Transport category (TC)	1
Tunnel restriction code (TRC)	E
Emergency Action Code	4W

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)Additional information

Classification code	W2
Danger label(s)	4.3

Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
Transport category (TC)	1
Hazard identification No	X423

International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name	SODIUM BOROHYDRIDE
Particulars in the shipper's declaration	UN1426, SODIUM BOROHYDRIDE, 4.3, I
Marine pollutant	-
Danger label(s)	4.3

Special provisions (SP)	-
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
EmS	F-G, S-O
Stowage category	E

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name	Sodium borohydride
Particulars in the shipper's declaration	UN1426, Sodium borohydride, 4.3, I
Danger label(s)	4.3

Excepted quantities (EQ)	E0

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)				
No	**Dangerous substance/hazard categories**	**Qualifying quantity (tonnes) for the application of lower and upper-tier requirements**		**Notes**
O1	other hazards (EUH014)	100	500	58)
O2	other hazards (Water-react., cat. 1)	100	500	59)

Notation
58) Substances or mixtures with hazard statement EUH014
59) Substances and mixtures which in contact with water emit flammable gases, category 1

Deco-Paint Directive

VOC content	0 %
VOC content	0 $^{g}/_{l}$

Industrial Emissions Directive (IED)

VOC content	0 %
VOC content	0 $^{g}/_{l}$

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Water Framework Directive (WFD)

List of pollutants (WFD)				
Name of substance	**Name acc. to inventory**	**CAS No**	**Listed in**	**Remarks**
Sodium borohydride	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		a)	
Sodium borohydride	Metals and their compounds		a)	