SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Sodium borohydride a.r.

Substance name:	sodium tetrahydroborate
REACH Registration Number:	01-2119485016-39-XXXX
CAS No:	16940-66-2
EC No:	241-004-4

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

Use of the substance/mixture

Reagents and laboratory chemicals
Only for laboratory and analysis purposes.

Uses advised against

Do not use for private purposes (household).

1.3. Details of the supplier of the safety data sheet

Details of the supplier of the safety data sheet

Company name:	AnalytiChem Services, Unipessoal, Lda
Street:	Rua de Júlio Dinis 676 7º
Place:	N-4050-320 Porto
Telephone:	+351 226002917
E-mail:	info@analytichem.com
Contact person:	SDS service department
E-mail:	SDS@analytichem.com
Internet:	www.analytichem.com
Responsible Department:	SDS service department

Supplier or manufacturer details

Company name:	AnalytiChem Belgium NV
Street:	Industriezone "De Arend" 2
Place:	B-8210 Zedelgem
Telephone:	+32 50 28 83 20
E-mail:	info.be@analytichem.com
Contact person:	SDS service department
E-mail:	SDS@analytichem.com
Responsible Department:	AnalytiChem: EU-Belgium: AnalytiChem Belgium, Industriezone "De Arend" 2, 8210 Zedelgem, Belgium, +32 50 28 83 20 EU-Germany: AnalytiChem Germany, Stempelstrasse 6, 47167 Duisburg, Germany, +49 203 51 94 – 200 EU-Netherlands: AnalytiChem Netherlands, Communicatieweg 7, 3641 SG Mijdrecht, The Netherlands, +31 297 286848 UK: AnalytiChem UK, Unit 7 Launton Business Center, Murdock Road, Bicester, OX26 4XB, England, +44 1869 355 500 USA: AnalytiChem USA, 227 China Road, Winslow, Maine, 04901, United States, +1 800-244-8378 Canada: AnalytiChem Canada, 21800 Clark Graham Avenue, Baie d'Urfe, H9X 4B6, Canada, +1 514-457-0701 Australia: ORE Research & Exploration Pty Ltd, 37A Hosie Street, Bayswater North, 3153, Australia, +61 3 9729 0333

1.4. Emergency telephone number: +44 20 3807 3798 (CHEMTREC)

Further Information

There are no data available on the mixture itself.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Water-react. 1; H260
Repr. 1B; H360
Acute Tox. 3; H301
Skin Corr. 1C; H314

Full text of hazard statements: see SECTION 16.

2.2. Label elements

Regulation (EC) No 1272/2008

Hazard components for labelling

sodium tetrahydroborate

Signal word: Danger

Pictograms:

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.
H360F	May damage fertility.
EUH014	Reacts violently with water.

Precautionary statements

P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308	IF exposed or concerned:
P310	Immediately call a POISON CENTER/doctor.
P402+P404	Store in a dry place. Store in a closed container.

Special labelling

Restricted to professional users.

SECTION 3: Composition/information on ingredients

3.1. Substances

Relevant ingredients

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
16940-66-2	sodium tetrahydroborate			100 %
	241-004-4		01-2119485016-39-XXXX	
	Water-react. 1, Repr. 1B, Acute Tox. 3, Skin Corr. 1C; H260 H360 H301 H314			

Full text of H and EUH statements: see section 16.

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
16940-66-2	241-004-4	sodium tetrahydroborate	100 %
	inhalation: LC50 = > 5,18 mg/l (dusts or mists); dermal: LD50 = > 2000 mg/kg; oral: LD50 = 56,57 mg/kg		

Further Information

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of = 0.1 % (w/w).

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

Self-protection of the first aider

After inhalation

Provide fresh air.
Call a physician immediately.

After contact with skin

Take off immediately all contaminated clothing and wash it before reuse.
Wash immediately with: Water
Call a physician immediately.

After contact with eyes

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.
Remove contact lenses, if present and easy to do. Continue rinsing.
Protect uninjured eye.

After ingestion

Rinse mouth immediately and drink plenty of water.
Do not allow a neutralisation agent to be drunk.
Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Irritant — skin irritation and eye damage
Causes burns.
Cough
Dyspnoea
Risk of serious damage to eyes.
Corneal opacity.
Headache
Agitation
Spasms

Circulatory collapse
Gastrointestinal complaints
Vomiting

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

Cement
Extinguishing powder
Sand

Unsuitable extinguishing media

Water
Foam
Carbon dioxide (CO2)

5.2. Special hazards arising from the substance or mixture

Combustible solids
Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Hazardous combustion products
Do not allow contact with water.
After contact with water: Formation of: Hydrogen

5.3. Advice for firefighters

Do not inhale explosion and combustion gases.
Avoid contact with skin, eyes and clothes.
In case of fire: Wear self-contained breathing apparatus.

Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Provide adequate ventilation.
Use personal protection equipment.
Avoid contact with skin, eyes and clothes.
Remove persons to safety.
Emergency procedures
Consult an expert
Do not breathe dust/fume/gas/mist/vapours/spray.

For emergency responders

Precautionary statements For emergency responders : Personal protection equipment: see section 8

6.2. Environmental precautions

Do not empty into drains.
Danger of explosion

6.3. Methods and material for containment and cleaning up

For containment

Cover drains.
Prevent spread over a wide area (e.g. by containment or oil barriers).

Collect in closed and suitable containers for disposal.
Take up carefully when dry. Take up dust-free and set down dust-free.

For cleaning up

Clean contaminated articles and floor according to the environmental legislation.

Other information

Provide adequate ventilation.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wear breathing apparatus if exposed to vapours/dusts/aerosols.

6.4. Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Read label before use.
Use extractor hood (laboratory).
Do not breathe dust.
Do not allow contact with water.
After contact with water: Formation of: Hydrogen
Handle and open container with care.
When using do not eat, drink, smoke, sniff.
Keep container tightly closed.
Use personal protection equipment.
Provide adequate ventilation.
Avoid contact with skin, eyes and clothes.

Advice on protection against fire and explosion

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharges.

Advice on general occupational hygiene

Keep away from food, drink and animal feedingstuffs. Make available sufficient washing facilities
Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

Further information on handling

Draw up and observe skin protection programme.
Wash hands and face before breaks and after work and take a shower if necessary.
Take off immediately all contaminated clothing and wash it before reuse.
If handled uncovered, arrangements with local exhaust ventilation have to be used.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed and dry. Store in a dry place.

Hints on joint storage

Take national regulations into account.

Further information on storage conditions

Keep away from sources of ignition - No smoking. Store in a place accessible by authorized persons only.

7.3. Specific end use(s)

Laboratory chemicals

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL/DMEL values

CAS No	Substance			
DNEL type		Exposure route	Effect	Value
16940-66-2	sodium tetrahydroborate			
Worker DNEL, long-term		inhalation	systemic	5,1 mg/m³
Worker DNEL, long-term		dermal	systemic	240 mg/kg bw/day
Consumer DNEL, long-term		oral	systemic	0,17 mg/kg bw/day

PNEC values

CAS No	Substance	
Environmental compartment		Value
16940-66-2	sodium tetrahydroborate	
Freshwater		1,75 mg/l
Freshwater (intermittent releases)		1,75 mg/l
Marine water		1,75 mg/l
Freshwater sediment		2,55 mg/kg
Marine sediment		0,255 mg/kg
Micro-organisms in sewage treatment plants (STP)		54,77 mg/l
Soil		4,8 mg/kg

8.2. Exposure controls

Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment.
If handled uncovered, arrangements with local exhaust ventilation have to be used.
Do not breathe dust.

Individual protection measures, such as personal protective equipment

Eye/face protection

goggles
Wear eye protection/face protection.

Hand protection

Suitable examples are gloves of KCL GmbH, D-36124 Eichenzell, e-mail: vertrieb@kcl.de with the following specification (test according to EN 374):

By long-term hand contact
Recommended glove articles: KCL 741 Dermatril® L
Recommended material: NBR (Nitrile rubber) 0,11mm
Wearing time with permanent contact: >480min

By short-term hand contact
Recommended glove articles: KCL 741 Dermatril® L
Recommended material: NBR (Nitrile rubber) 0,11mm
Wearing time with occasional contact (splashes): >480min

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types. This recommendation applies only to the product stated in the safety data sheet supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Skin protection

Wear suitable protective clothing.
Take off immediately all contaminated clothing.
Wash hands before breaks and after work.
The choice of body protection depends on the concentration and quantity of hazardous substances. The chemical resistance of protective agents must be clarified with their suppliers.

Respiratory protection

Respiratory protection necessary at: dust formation
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

Do not empty into drains.
Danger of explosion

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state:	solid
Colour:	white
Odour:	like: Amines
Odour threshold:	No data available
Melting point/freezing point:	>360 °C
Boiling point or initial boiling point and boiling range:	>400 °C
Flammability:	No data available
Lower explosion limits:	No data available
Upper explosion limits:	No data available
Flash point:	69 °C
Auto-ignition temperature:	220 °C
Decomposition temperature:	No data available
pH-Value:	No data available
Viscosity / kinematic:	No data available
Water solubility:	Decomposes in contact with water.

Solubility in other solvents
No data available

Partition coefficient n-octanol/water:	No data available
Vapour pressure: (at 25 °C)	<1 hPa
Vapour pressure:	No data available
Density (at 20 °C):	1,07 g/cm³
Bulk density:	350-500 kg/m³
Relative vapour density:	No data available

9.2. Other information

Information with regard to physical hazard classes

Explosive properties
No data available

Sustained combustibility:	No data available
Self-ignition temperature	
Solid:	>400 °C
Gas:	No data available
Oxidizing properties	
No data available	

Other safety characteristics

Evaporation rate:	No data available
Solvent separation test:	No data available
Solvent content:	0
Solid content:	100,00 %
Sublimation point:	No data available
Softening point:	No data available
Pour point:	No data available
No data available:	
Viscosity / dynamic:	No data available
Flow time:	No data available

Further Information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

In case of warming: Vapours can form explosive mixtures with air. Danger of dust explosion. 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.

10.2. Chemical stability

Protect against: Humidity

10.3. Possibility of hazardous reactions

Explosion hazard with: Water, Alcohols (Formation of: Hydrogen)
Copper, nickel (Metal powder),
Oxidising agent, strong
Phenol
Hydrogen peroxide
Acids
Metal powder
Exothermic reaction with:
Dimethylformamide
Sulphuric acid, concentrated
H_3PO_4

10.4. Conditions to avoid

Humidity
Heat

10.5. Incompatible materials

No data available

10.6. Hazardous decomposition products

No data available

Further information

No data available

SECTION 11: Toxicological information

11.1. Information on hazard classes

Acute toxicity

Toxic if swallowed.

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

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
16940-66-2	sodium tetrahydroborate				
	oral	LD50 56,57 mg/kg	Rat	Study report (2005)	OECD Guideline 425
	dermal	LD50 > 2000 mg/kg	Rabbit	Publication (1982)	other: FIFRA
	inhalation (1 h) dust/mist	LC50 > 5,18 mg/l	Rat	Study report (1974)	other: Continuous dynamic exposure metho

Irritation and corrosivity

Skin corrosion/irritation: Causes severe skin burns and eye damage.

Serious eye damage/eye irritation: Causes serious eye damage.

Corneal opacity.

Sensitising effects

Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction

May damage fertility or the unborn child. (sodium tetrahydroborate)

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

Further information

Irritant — skin irritation and eye damage

Causes burns.

Cough

Dyspnoea

Risk of serious damage to eyes.

Corneal opacity.

Headache

Agitation

Spasms

Circulatory collapse

Gastrointestinal complaints

Vomiting

SECTION 12: Ecological information

12.1. Toxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name						
	Aquatic toxicity	Dose		[h] | [d]	Species	Source	Method
16940-66-2	sodium tetrahydroborate						
	Acute fish toxicity	LC50	74 mg/l	96 h	Limanda limanda	Publication (1985)	The acute toxicity of boron has been stu
	Acute algae toxicity	ErC50	66 mg/l	72 h	Phaeodactylum tricornutum	Study report (2011)	ISO 10253
	Acute crustacea toxicity	EC50	133 mg/l	48 h	Daphnia magna	Environ. Toxicol. Chem., 3, #1, 89-94 (1	other: ASTM Standard E 729-80
	Fish toxicity	NOEC	5,6 mg/l	34 d	Danio rerio	Study report (2000)	OECD Guideline 210
	Algae toxicity	NOEC	>= 100 mg/l	10 d	Agmenellum quadruplicatum	J. Fish. Res. Board Can., 32, #12, 2487-	Axenic cultures of 19 species were chose
	Crustacea toxicity	NOEC	33,1 mg/l	28 d	Americamysis bahia	Study report (2011)	EPA OPPTS 850.1350
	Acute bacteria toxicity	EC50	> 175 mg/l ( )	3 h	Activated sludge	Study report (2000)	OECD Guideline 209

12.2. Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
16940-66-2	sodium tetrahydroborate	-1,09

BCF

CAS No	Chemical name	BCF	Species	Source
16940-66-2	sodium tetrahydroborate	0,558	Oncorhynchus nerka	Water Research Vol.

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of UK REACH.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms.

12.7. Other adverse effects

Discharge into the environment must be avoided.

Further information

Do not allow to enter into surface water or drains.

Danger of explosion

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
Send to a physico-chemical treatment facility under observation of official regulations.
Do not allow to enter into surface water or drains.

Contaminated packaging

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.
Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1. UN number or ID number:	UN 1426
14.2. UN proper shipping name:	SODIUM BOROHYDRIDE
14.3. Transport hazard class(es):	4.3
14.4. Packing group:	I
Hazard label:	4.3
Classification code:	W2
Limited quantity:	0
Excepted quantity:	E0
Transport category:	1
Tunnel restriction code:	E

Inland waterways transport (ADN)

14.1. UN number or ID number:	UN 1426
14.2. UN proper shipping name:	SODIUM BOROHYDRIDE
14.3. Transport hazard class(es):	4.3
14.4. Packing group:	I
Hazard label:	4.3
Classification code:	W2
Limited quantity:	0
Excepted quantity:	E0

Marine transport (IMDG)

14.1. UN number or ID number:	UN 1426
14.2. UN proper shipping name:	SODIUM BOROHYDRIDE
14.3. Transport hazard class(es):	4.3
14.4. Packing group:	I
Hazard label:	4.3
Special Provisions:	-
Limited quantity:	0
Excepted quantity:	E0
EmS:	F-G, S-O

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number or ID number:	UN 1426
14.2. UN proper shipping name:	SODIUM BOROHYDRIDE
14.3. Transport hazard class(es):	4.3
14.4. Packing group:	I
Hazard label:	4.3
Limited quantity Passenger:	Forbidden
Passenger LQ:	Forbidden
Excepted quantity:	E0
IATA-packing instructions - Passenger:	Forbidden
IATA-max. quantity - Passenger:	Forbidden

IATA-packing instructions - Cargo: 487
IATA-max. quantity - Cargo: 15 kg

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

SECTION 15: Regulatory information

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

EU regulatory information

Restrictions on use (REACH, annex XVII):
Entry 40

Information according to Directive 2012/18/EU (SEVESO III): H2 ACUTE TOXIC
Additional information: O1

National regulatory information

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 2 - obviously hazardous to water

SECTION 16: Other information

Changes

This data sheet contains changes from the previous version in section(s): 1,12.

Abbreviations and acronyms

Water-react. 1: Substances and mixtures which in contact with water emit flammable gases, hazard category 1
Acute Tox. 3: Acute toxicity, hazard category 3
Skin Corr. 1C: Skin corrosion, sub-category 1C
Eye Dam. 1: Serious eye damage, hazard category 1
Repr. 1B: Reproductive toxicity, hazard category 1B

Relevant H and EUH statements (number and full text)

H260	In contact with water releases flammable gases which may ignite spontaneously.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H360	May damage fertility or the unborn child.
H360F	May damage fertility.
EUH014	Reacts violently with water.

Further Information

Provide appropriate information, instructions and training to users
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.
The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.
The receiver of our product is singularly responsible for adhering to existing laws and regulations.