Safety Data Sheet

Cat. # 786-062

Sodium Cyanoborohydride

Size: 4 x 0.5g
SECTION 1: Identification

1.1. Identification

Product form: Substance
Substance name: sodium cyanoborohydride
CAS-No.: 25895-60-7
Product code: 223S
Formula: NaBH₃CN
Synonyms: borate(1-), (cyano-C)trihydro-, sodium, (beta-4)- / borate(1-), (cyano-C)trihydro-, sodium, (T-4)- / sodium (cyano-C)trihydroborate(1-) / sodium borocyanohydride / sodium cyanohydridoborate / sodium cyanotrihydridoborate / sodium cyanotrihydroborate
BIK No.: 31989

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
Saint Louis, 63132-1429 - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number

Emergency number: Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Int'l)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Substances and mixtures which in contact with water emit flammable gases Category 1  H260 - In contact with water releases flammable gases which may ignite spontaneously
Acute toxicity (oral) Category 3  H301 - Toxic if swallowed
Acute toxicity (dermal) Category 3  H311 - Toxic in contact with skin
Acute toxicity (inhalation) Category 3  H331 - Toxic if inhaled
Skin corrosion/irritation Category 1B  H314 - Causes severe skin burns and eye damage

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US):

Signal word (GHS US): Danger
Hazard statements (GHS US):
H260 - In contact with water releases flammable gases which may ignite spontaneously
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS US):
P223 - Do not allow contact with water.
P231+P232 - Handle under inert gas. Protect from moisture
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - If swallowed: Immediately call a poison center or doctor
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
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P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
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 or doctor
P311 - Call a poison center or doctor
P312 - Call a poison center or doctor if you feel unwell
P321 - Specific treatment (see supplemental first aid instruction on this label)
P322 - Specific treatment (see supplemental first aid instruction on this label)
P330 - Rinse mouth.
P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P370+P378 - In case of fire: Use media other than water to extinguish.
P402+P404 - Store in a dry place. Store in a closed container.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances
Substance type : Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium cyanoborohydride (Main constituent)</td>
<td>borate(1-), (cyano-C)trihydro-, sodium, (beta-4) / borate(1-), (cyano-C)trihydro-, sodium, (T-4) / sodium (cyano-C)trihydroborate(1-) / sodium borocyanohydride / sodium cyanohydrdriborate / sodium cyanotrihydroborate / sodium cyanotrihydroborate</td>
<td>(CAS-No.) 25895-60-7</td>
<td>100</td>
<td>Water-react. 1, H260</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Acute Tox. 3 (Oral), H301</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Dermal), H311</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Inhalation), H331</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Skin Corr. 1B, H314</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures


First-aid measures after inhalation : Remove the victim into fresh air.

First-aid measures after skin contact : Wash immediately with lots of water (15 minutes)/shower. Soap may be used. Remove clothing while washing. Cover wounds with sterile bandage. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist. Do not apply neutralizing agents.

First-aid measures after ingestion : Rinse mouth with water. Do not induce vomiting. Do not give activated charcoal. Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital. Do not give chemical antidote. Call Poison Information Centre (www.big.be/antigif.htm).

4.2. Most important symptoms and effects (acute and delayed)


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Symptoms/effects after skin contact: Caustic burns/corrosion of the skin.
Symptoms/effects after eye contact: Visual disturbances. Corrosion of the eye tissue.

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Suitable extinguishing media: Quick-acting ABC powder extinguisher. Class B foam (after consulting specialist).

5.2. Specific hazards arising from the chemical
Fire hazard: DIRECT FIRE HAZARD: Non-flammable. In finely divided state: increased fire hazard. INDIRECT FIRE HAZARD: Heating increases the fire hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard: DIRECT EXPLOSION HAZARD: Fine dust is explosive with air. INDIRECT EXPLOSION HAZARD: Dust cloud can be ignited by a spark. Reactions with explosion hazards: see "Reactivity Hazard".

5.3. Special protective equipment and precautions for fire-fighters
Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions: When cooling/extinguishing: no water in the substance. Do not move the load if exposed to heat. Dilute toxic gases with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders
Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions
Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up
For containment: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Hazardous reaction: measure explosive gas-air mixture. Powdered form: no compressed air for pumping over spills.
Methods for cleaning up: Cover spill with inert material, e.g.: dry sand dry lime or soda ash. Scoop solid spill into closing containers. Powdered: do not use compressed air for pumping over spills. Carefully collect the spill/leftovers. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.
Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections
For further information refer to section 13.
SECTION 7: Handling and storage

7.1. Precautions for safe handling
- **Additional hazards when processed**: Pulverization rapidly increases toxic concentration.
- **Precautions for safe handling**: Avoid raising dust. Keep away from naked flames/heat. In finely divided state: use spark/explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Powdered form: no compressed air for pumping over. Avoid contact of substance with water. Keep container tightly closed.

Hygiene measures: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities
- **Storage conditions**: Protect from moisture. Store in a dry place. Store in a closed container. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- **Heat-ignition**: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
- **Information on mixed storage**: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids.
- **Storage area**: Store in a dry area. Keep container in a well-ventilated place. Keep locked up. May be stored under nitrogen. May be stored under argon. Meet the legal requirements. Store at room temperature.
- **Special rules on packaging**: SPECIAL REQUIREMENTS: closing. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- **Packaging materials**: SUITABLE MATERIAL: glass.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
- sodium cyanoborohydride (25895-60-7)
  - No additional information available

8.2. Appropriate engineering controls
- **Appropriate engineering controls**: Ensure good ventilation of the work station.
- **Environmental exposure controls**: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment
- **Hand protection**: Gloves
- **Eye protection**: Face shield. In case of dust production: protective goggles
- **Skin and body protection**: Corrosion-proof clothing. In case of dust production: head/neck protection
- **Respiratory protection**: Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
- **Physical state**: Solid
- **Appearance**: Solid. Powder.
- **Color**: White to off-white
- **Odor**: No data available
- **Odor threshold**: No data available
- **pH**: No data available
- **Melting point**: 241 °C
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Freezing point : Not applicable
Boiling point : Not applicable
Flash point : Not applicable
Relative evaporation rate (butyl acetate=1) : No data available
Flammability (solid, gas) : In contact with water releases flammable gases which may ignite spontaneously.
Vapor pressure : No data available
Relative vapor density at 20 °C : Not applicable
Relative density : 1.2
Molecular mass : 62.84 g/mol
Solubility : Soluble in methanol. Soluble in tetrahydrofuran. Soluble in alcohols.
Log Pow : No data available
Auto-ignition temperature : Not applicable
Decomposition temperature : 241 °C
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosion limits : Not applicable
Explosive properties : No data available
Oxidizing properties : No data available

9.2. Other information
VOC content : Not applicable (inorganic)
Other properties : Hygroscopic.

SECTION 10: Stability and reactivity
10.1. Reactivity
In contact with water releases flammable gases which may ignite spontaneously.

10.2. Chemical stability
Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions
In contact with water releases flammable gases which may ignite spontaneously.

10.4. Conditions to avoid
Water, humidity.

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information
11.1. Information on toxicological effects
Acute toxicity (oral) : Toxic if swallowed.
Acute toxicity (dermal) : Toxic in contact with skin.
Acute toxicity (inhalation) : Toxic if inhaled.
ATE US (oral) : 100 mg/kg body weight
ATE US (dermal) : 300 mg/kg body weight
ATE US (gases) : 700 ppm/V/4h
ATE US (vapors) : 3 mg/l/4h
ATE US (dust, mist) : 0.5 mg/l/4h
Skin corrosion/irritation : Causes severe skin burns and eye damage.
Serious eye damage/irritation : Eye damage, category 1, implicit
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
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<table>
<thead>
<tr>
<th>Reproductive toxicity</th>
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<td>Specific target organ toxicity – single exposure</td>
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<tr>
<td>Specific target organ toxicity – repeated exposure</td>
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<tr>
<td>Aspiration hazard</td>
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<td>Viscosity, kinematic</td>
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<td>Symptoms/effects after skin contact</td>
<td>Caustic burns/corrosion of the skin.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Visual disturbances. Corrosion of the eye tissue.</td>
</tr>
</tbody>
</table>

## SECTION 12: Ecological information

### 12.1. Toxicity

**Ecology - general**: Before neutralisation, the product may represent a danger to aquatic organisms.

**Ecology - water**: Water pollutant (surface water). No data available on ecotoxicity.

### 12.2. Persistence and degradability

**sodium cyanoborohydride (25895-60-7)**

<table>
<thead>
<tr>
<th>Persistence and degradability</th>
<th>Biodegradability: not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical oxygen demand (COD)</td>
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</tr>
<tr>
<td>ThOD</td>
<td>Not applicable</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 12.3. Bioaccumulative potential

**sodium cyanoborohydride (25895-60-7)**

<table>
<thead>
<tr>
<th>Bioaccumulative potential</th>
<th>No bioaccumulation data available.</th>
</tr>
</thead>
</table>

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

**Waste treatment methods**: Waste treatment methods.

**Product/Packaging disposal recommendations**: Remove to an authorized waste treatment plant. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Specific preliminary treatment.

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SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT

Transport document description : UN3179 Flammable solid, toxic, inorganic, n.o.s., 4.1 (6.1), III
UN-No.(DOT) : UN3179
Proper Shipping Name (DOT) : Flammable solid, toxic, inorganic, n.o.s.
Class (DOT) : 4.1 - Class 4.1 - Flammable Solid 49 CFR 173.124
Packing group (DOT) : III - Minor Danger
Hazard labels (DOT) : 4.1 - Flammable solid
6.1 - Poison

DOT Packaging Non Bulk (49 CFR 173.xxx) : 213
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT Symbols : G - Identifies PSN requiring a technical name
IB6 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31NJ); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2). Additional Requirement: Composite IBCs 11HZ2 and 21HZ2 may not be used when the hazardous materials being transported may become liquid during transport.
T1 - 1.5 178.274(d)(2) Normal............. 178.275(d)(2)
TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx) : 151
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 25 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 100 kg

DOT Vessel Stowage Location : B - (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other : 40 - Stow “clear of living quarters”

Emergency Response Guide (ERG) Number : 134
Other information : No supplementary information available.

Transportation of Dangerous Goods

Transport by sea
Transport document description (IMDG) : UN 3134 FLAMMABLE SOLID, TOXIC, INORGANIC, N.O.S., 4.1 (6.1), III
UN-No. (IMDG) : 3134
Proper Shipping Name (IMDG) : FLAMMABLE SOLID, TOXIC, INORGANIC, N.O.S.
Class (IMDG) : 4.3 - Substances which, in contact with water, emit flammable gases
Packing group (IMDG) : III - substances presenting low danger
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<table>
<thead>
<tr>
<th>Subsidiary risks (IMDG)</th>
<th>6.1 - Toxic substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited quantities (IMDG)</td>
<td>5 kg</td>
</tr>
<tr>
<td>EmS-No. (1)</td>
<td>F-G</td>
</tr>
<tr>
<td>EmS-No. (2)</td>
<td>S-N</td>
</tr>
</tbody>
</table>

Air transport

| Transport document description (IATA) | UN 3134 Flammable solid, toxic, inorganic, n.o.s., 4.3, I |
| UN-No. (IATA) | 3134 |
| Proper Shipping Name (IATA) | Flammable solid, toxic, inorganic, n.o.s. |
| Class (IATA) | 4.3 - Substances which in Contact with Water emit Flammable Gases |
| Packing group (IATA) | I - Great Danger |
| Subsidiary hazards (IATA) | 6.1 - Toxic substances |

SECTION 15: Regulatory information

15.1. US Federal regulations

sodium cyanoborohydride (25895-60-7)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

EU-Regulations

National regulations
No additional information available

15.3. US State regulations

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 05/11/2017

Full text of H-phrases:

| 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 |
| H331 | Toxic if inhaled |

NFPA health hazard : 4 - Materials that, under emergency conditions, can be lethal.

NFPA fire hazard : 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity : 2 - Materials that readily undergo violent chemical change at elevated temperatures and pressures.

NFPA specific hazard : W - Materials that react violently or explosively with water.

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.