MATERIAL SAFETY DATA SHEET

NFPA	HMIS	Personal Protective Equipment
 		 See Section 8.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code:	S1261
Product Name:	SODIUM CYANOBOROHYDRIDE
Chemical Name:	Borate(1-), (cyano-kappaC)trihydro-, sodium, (T-4)-
Synonyms:	Cyanotrihydroborate de sodium (French)
Recommended use:	Reducing agent.
CAS #:	25895-60-7
Formula:	NaBH3CN
RTECS #	ED3372500
CI#:	Not available
Supplier:	Spectrum Chemicals and Laboratory Products, Inc. 14422 South San Pedro St. Gardena, CA 90248 (310) 516-8000
Emergency Telephone Number:	CHEMTREC: 1-800-424-9300
Contact Person:	Martin LaBenz (West Coast)
Contact Person:	Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER CORROSIVE!. The product causes burns of eyes, skin and mucous membranes. Harmful by inhalation, in contact with skin and if swallowed. Dangerous When Wet. Water Reactive.

Odor:	**Physical state:**	**Appearance:**	**Color:**
Unpleasant. Stench.	Solid.	Powder.	White. Off-white.

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

2. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:
Skin. Inhalation. Ingestion.

Acute Potential Health Effects:

Skin Contact:
Causes skin burns. Toxic in contact with skin. It may be absorbed through the skin and cause symptoms similar to cyanide poisoning. It may be metabolized to cyanide which inhibits cytochrome oxidase thus impairing cellular respiration.

Eye Contact:
Causes eye burns.

Inhalation:
Causes chemical burns to the respiratory tract. Toxic by inhalation. It may cause symptoms similar to cyanide poisoning. It may be metabolized to cyanide which inhibits cytochrome oxidase thus impairing cellular respiration.

Ingestion:
Causes burns. Can burn mouth, throat, and stomach. Toxic if swallowed. Ingestion may cause symptoms similar to cyanide poisoning. It may be metabolized to cyanide which inhibits cytochrome oxidase thus impairing cellular respiration.

Chronic Potential Health Effects:

Target Organs: No information available

Carcinogen Status: No information available

Mutagenic Effects: No information available

Teratogenic Effects: No information available

Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Sodium Cyanoborohydride	25895-60-7	100

4. FIRST AID MEASURES

General Advice: Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126). Ensure that medical personnel are aware of the material(s) involved and take precautons to protect themselves. First aider needs to protect himself.

Skin Contact: Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician immediately.

Eye Contact: Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. Call a physician immediately.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

Notes to Physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F):	No information available.

Tested according to:
Not available

Lower Explosion Limit (%):	No information available
Upper Explosion Limit (%):	No information available

Autoignition Temperature (°C/°F):	Not applicable.

Suitable Extinguishing Media: Dry chemical. Dry sand. Soda Ash.

Unsuitable Extinguishing Media: Water. Foam.

Hazardous Combustion Products: Carbon oxides, Nitrogen oxides, Hydrogen cyanide, Boron oxides, Borane

Specific hazards: Flammable. Container explosion may occur under fire conditions or when heated. Evolves flammable hydrogen gas on contact with water. Containers may explode if contaminated with water. Fire may produce irritating, corrosive and/or toxic gases. Contact with strong oxidizers may cause fire.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Specific Methods: No information available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Remove all sources of ignition. Avoid dust formation. Do not get water inside containers. Do not expose spill to water.

Environmental Precautions:
Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not let product enter drains. Do not flush into surface water or sanitary sewer system. Prevent entry into waterways, sewers, basements or confined areas.

Methods for Cleaning Up:
Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling

Technical Measures/Precautions:
Use only in area provided with appropriate exhaust ventilation. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Keep away from heat and sources of ignition. Do not ingest. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice.

Storage

Technical Measures/Storage Conditions:
Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store in a segrated and approved area. Store away from incompatible materials.

Incompatible Products:
Oxidizing agents. Acids. Water.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protective Equipment

Eye protection: Face-shield.

Skin and body protection: Chemical resistant protective suit. Gloves.

Respiratory protection: Wear respirator with dust filter.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

National occupational exposure limits

United States

U.S Occupational Exposure Limits: Not determined

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Sodium Cyanoborohydride - 25895-60-7	None	None	None	None

Canada

Canada Occupational Exposure Limits: Not determined

Components	Alberta	British Columbia	Quebec	Ontario
Sodium Cyanoborohydride 25895-60-7	None	None	None	None

Australia and Mexico

Occupational Exposure Limits for Australia and Mexico: Not determined

Components	Australia	Mexico
Sodium Cyanoborohydride 25895-60-7	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Solid.

Appearance:
Powder.

Color:
White. Off-white.

Odor:
Unpleasant. Stench.

Taste
No information available

Molecular/Formula weight:
62.84

Flash point (°C):
Not applicable

Lower Explosion Limit (%):
Not applicable

Upper Explosion Limit (%):
Not applicable

Autoignition Temperature (°C/°F):
No information available

pH:
No information available

Boiling point/range(°C/°F):
No information available

Melting point/range(°C/°F):
No information available

Decomposition temperature(°C/°F):
240-242 °C/464-468 °F

Specific gravity:
1.20

Density (g/cm3):
No information available

Bulk density:
No information available

Vapor pressure @ 20°C (kPa):
No information available

Vapor density:
No information available

Evaporation rate:
No information available

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

Partition coefficient (n-octanol/water):
No information available

Miscibility:
No information available

Solubility:
Reacts with water

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions

Conditions to avoid: Heat. Ignition sources. Exposure to moisture. Exposure to moist air. Incompatible materials.

Materials to avoid: Acids. Oxidising agents. water.

Hazardous decomposition products:	When heated to decomposition it emits very toxic fumes. Carbon monoxide. Carbon dioxide. Nitrogen oxides (NOx). Hydrogen cyanide (hydrocyanic acid). Boron oxides. Borane.
Possibility of Hazardous Reactions:	Evolves flammable hydrogen gas on contact with water. Contact with strong oxidizers may cause fire.
Polymerization:	Hazardous polymerisation does not occur
Corrosivity:	No information available
Special Remarks on Corrosivity:	No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Sodium Cyanoborohydride - 25895-60-7

LD50/oral/rat = No information available
LD50/oral/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No infomaton available
Other LD50 information =
No information available

Product Information

LC50/inhalation/rat = No information available
LC50/Inhalation/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LD50/oral/rat = No information available
LD50/oral/mouse = No information available

Local Effects

Skin irritation:	Causes burns.
Eye irritation:	Causes burns.
Inhalation:	Causes chemical burns to the respiratory tract. It may be metabolized to cyanide which inhibits cytochrome oxidase thus impairing cellular respiration. It may cause symptoms similar to cyanide poisoning (see acute ingestion for symptoms).
Ingestion:	Ingestion may cause symptoms similar to cyanide poisoning. It may be metabolized to cyanide which inhibits cytochrome oxidase thus impairing cellular respiration. Cyanide poisoning is characterized by central nervous system, cardiovascular system, and respiratory system effects such as general weakness, giddiness, confusion, sleepiness, headache, dizziness, seizures, ataxia, tetany, irritability, stupor, anxiety, hallucinations, agitation, tremors, unconciouness, coma, palpitations, cardiac arrhythmias, slow or rapid heartbeat, hypertension or hypotension, perceived breathing difficulty, hyperventilation, asphyxiation/respiratory failure.
Sensitization:	No information available

Chronic Toxicity

Chronic Toxicity No information available

Carcinogenic effects: Not considered carcinogenic

Components	NTP	IARC	OSHA	ACGIH - Carcinogens	Australia Prohibited Carcinogenic Substances	Australia Notifiable Carcinogenic Substances
Sodium Cyanoborohydride	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects: No information available

Reproductive Effects: No information available

Teratogenic Effects: No information available

Target Organs: No information available

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: Information given is based on data on the components and the ecotoxicology of similar products

Ecotoxicity effects: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Aquatic toxicity: Contains components that are toxic to the aquatic environment

Mobility: No information available

Persistence and degradability: No information available

Bioaccumulative potential: No information available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Sodium Cyanoborohydride	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN3134
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
Hazard Class: 4.3
Packing Group: II
Subsidiary Risk: 6.1
Marine Pollutant Marine Pollutant

ERG No: 139
DOT RQ (lbs): No information available
Symbol(s): G

TDG (Canada)
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
UN-No: UN3134
Hazard Class: 4.3
Packing Group: II
Subsidiary Risk: 6.1
Description: No information available

ADR
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
UN-No: UN3134
Hazard Class: 4.3
Packing Group: II
Subsidiary Risk: 6.1
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
UN-No: UN3134
Hazard Class: 4.3
Subsidiary Risk: 6.1
Packing Group: II
Description: No information available
IMDG Page: No information available
Marine Pollutant Marine Pollutant
EMS: F-G
MFAG: No information available
Maximum Quantity: No information available

RID
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
UN-No: UN3134
Hazard Class: 4.3
Packing Group: II
Subsidiary Risk: 4.3 + 6.1
Classification Code: No information available
Description: No information available

ICAO
UN-No: UN3134
Hazard Class: 4.3
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
Packing Group: II
Subsidiary Risk: 6.1
Description: No information available

IATA
Proper Shipping Name: Water-reactive solid, toxic, n.o.s. (Sodium cyanoborohydride)
UN-No: UN3134
Hazard Class: 4.3
Packing Group: II
Subsidiary Risk: 6.1

ERG Code: 4PW
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	Philippines (PICCS)	KOREA KECL	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Sodium Cyanoborohydride	Present	Present	KE-05-1186	Not present	Present	Present	247-317-2

U.S. Regulations

California Prop. 65: Safe Drinking Water and Toxic Enforcment Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Sodium Cyanoborohydride	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting *de minimis*
Sodium Cyanoborohydride	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Sodium Cyanoborohydride	Not Applicable	Not Applicable

Canada

WHMIS hazard class:
B6 Reactive flammable material
D1A Very toxic materials
E Corrosive material

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	Canada (DSL)	Canada (NDSL)
Sodium Cyanoborohydride	Not Listed	Present

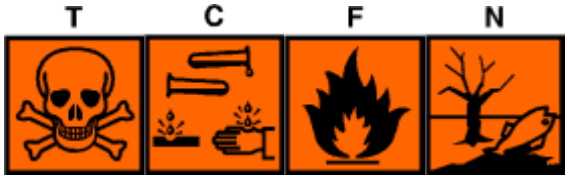
EU Classification

R -phrase(s)
R11 - Highly flammable.
R15 - Contact with water liberates extremely flammable gases.
R16 - Explosive when mixed with oxidising substances.
R32 - Contact with acids liberates very toxic gas.
R34 - Causes burns.
R26/27/28 - Also very toxic by inhalation, in contact with skin and if swallowed
R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S -phrase(s)
S 8 - Keep container dry.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
28A - After contact with skin, wash immediately with plenty of water.
S43 - In case of fire use Dry Chemical powder, Dry Sand. Never use water
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60 - This material and its container must be disposed of as hazardous waste.
S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.
S50A - Do not mix with acids
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
None.



16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date 06-Apr-2011

Reason for revision: Not applicable

Prepared by: Sonia Owen

Literature reference: No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.