

Conforms to 93/112/EC and ISO 11014-1

Responsible Name Pierce Administration

? **Section 1. Chemical Product and Company Identification**

Product name **Sodium Cyanoborohydride Solution, 5.0M**

Product No. 1856084

Supplier	<i>In USA:</i>	<i>In Europe:</i>	Manufacturer	Pierce Biotechnology
	Pierce	Perbio Science		P.O. Box 117
	P.O. Box 117	Industriezone III		Rockford, IL 61105
	Rockford, IL 61105	Industrielaan 27		USA
	USA	9320 Erembodegem-Aalst		815.968.0747 or
	815.968.0747 or	Belgium		1.800.874.3723
	1.800.874.3723	Tel:+32 53 83 44 04		
		Fax:+32 53 83 76 38		

In Case of Emergency CALL CHEMTREC:

800.424.9300
OUTSIDE US:
202.483.7616

Print Date 2/18/2003

Validation Date **2/17/2003**

MSDS# 6707

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

 **Section 2. Composition, Information on Ingredients**

Substance/Preparation : Preparation

Ingredient Name	CAS No.	%	EC Number	Symbol	R-Phrases
1) Sodium Cyanoborohydride	25895-60-7	20-25	247-317-2	F, T	R11, R23/24/25, R32, R33, R34
2) Sodium Hydroxide	1310-73-2	1-3	215-185-5	C	R22, R35, R40

 **Section 3. Hazards Identification**

United States Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.

Emergency Overview DANGER!

CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS.
HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
LUNGS, MUCOUS MEMBRANES, RESPIRATORY TRACT, SKIN, EYES, EYE, LENS
OR CORNEA.

Do not get in eyes, on skin or on clothing. Avoid contact with eyes, skin and clothing. Do not ingest. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of Entry Absorbed through skin. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, of inhalation (lung corrosive). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death.

Carcinogenic Effects Data **CARCINOGENIC EFFECTS:** Classified None. by NIOSH [Sodium Hydroxide].

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

Medical Conditions Aggravated by Overexposure: Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Overexposure /Signs/Symptoms Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Not available.

Classification	R23/24/25, R34
Physical/chemical hazards	Not applicable.
Human health hazards	Toxic by inhalation, in contact with skin and if swallowed. Causes burns.
Environmental hazards	Not applicable.

See Toxicological Information (section 11)

Section 4. First Aid Measures

Notice to Reader Get immediate medical attention.

Effects and symptoms

Inhalation	Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Over-exposure by inhalation may cause respiratory irritation. May be fatal if inhaled.
Ingestion	May be fatal if swallowed. May cause burns to mouth, throat, and stomach.
Skin Contact	Irritation of the product in case of skin contact: Not available. Sensitization of the product: Not available. Slightly hazardous in case of skin contact (corrosive). Skin contact may produce burns. Severe over-exposure can result in death.
Eye Contact	Slightly hazardous in case of eye contact (corrosive).
Aggravating conditions	Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

First-Aid Measures

Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
Notes to Physician	Not available.
Protection of first-aiders	Not available.

Section 5. Fire Fighting Measures

Flammability of the Product May be combustible at high temperature.

Flash Points Not available.

Fire Hazards in Presence of Various Substances Extremely flammable in presence of open flames and sparks, of heat.
Non-flammable in presence of shocks, of oxidizing materials, of reducing materials, of combustible materials, of organic materials, of metals, of acids, of alkalis.

Fire Fighting Media and Instructions SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Protective Clothing (Fire) Be sure to use an approved/certified respirator or equivalent.

Hazardous thermal (de)composition products These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...). Some metallic oxides.

Section 6. Accidental Release Measures

Personal precautions Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Environmental Precautions and Clean-up Methods Corrosive liquid. Poisonous liquid.
Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. **Neutralize the residue with a dilute solution of acetic acid.** Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Small Spill and Leak Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: **Neutralize the residue with a dilute solution of acetic acid.**

Section 7. Handling and Storage

Handling Avoid contact with eyes, skin, and clothing. Do not ingest. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area. Store between 2 to 8°C (35.6 to 46.4°F).

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

Packaging materials

Suitable / Not suitable Use original container.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Exposure Limit Values

Ingredient Name

Occupational Exposure Limits

United States

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

Not available.
CEIL: 2 (mg/m³) from ACGIH (TLV) [United States] [2000] Inhalation
CEIL: 2 (ppb) from OSHA (PEL) [United States] [1989] Inhalation

Sweden

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

Not available.
STEL: 2 (mg/m³) from AFS [Sweden] [1996] Inhalation

Denmark

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

Not available.
TWA: 2 CEIL: 2 (mg/m³) from Arbejdstilsynet [Denmark] [1996] Inhalation

Norway

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

TWA: 5 (mg/m³) from Arbejdstilsynet [Norway] [1996] SKIN
TWA: 2 CEIL: 2 (mg/m³) from Arbejdstilsynet [Norway] [1996] Inhalation

France

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

Not available.
TWA: 2 (mg/m³) from INRS [France] [1999] Inhalation

Netherlands

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

TWA: 5 (mg/m³) from Arbeidsinspectie [Netherlands] [2000] Inhalation
TWA: 2 CEIL: 2 (mg/m³) from Arbeidsinspectie [Netherlands] [2000] Inhalation

Germany

- 1) Sodium Cyanoborohydride
- 2) Sodium Hydroxide

TWA: 5 CEIL: 20 (mg/m³) from BAuA [Germany] [1997] SKIN
TWA: 2 CEIL: 2 (mg/m³) from BAuA [Germany] [1999] Inhalation

Personal Protection

Eyes Splash goggles.

Body Lab coat.

Continued on Next Page

Hands Gloves.**Respiratory** Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.**Feet** Boots.Protective Clothing
(Pictograms)

Section 9. Physical and Chemical Properties

Physical State and Appearance Liquid.**Odor** Not available.**Molecular Weight** Not applicable.**Taste** Not available.**pH (1% Soln/Water)** Basic.**Color** Colorless to light yellow.**Boiling/Condensation Point** 100°C (212°F) (Deionized Water).**Melting/Freezing Point** 242°C (467.6°F)**Specific Gravity** 1.083 (Water = 1)**Vapor Pressure** The highest known value is 2.3 kPa (@ 20°C) (Deionized Water).**Vapor Density** The highest known value is 0.62 (Air = 1) (Deionized Water).**Evaporation Rate** 0.36 (Deionized Water) compared to (n-BUTYL ACETATE=1)**Dispersion Properties** See solubility in water, methanol.**Solubility** Easily soluble in cold water, hot water.
Soluble in methanol.
Insoluble in diethyl ether.

Section 10. Stability and Reactivity

Stability and Reactivity Stable**Conditions to avoid** Not available.**Materials to avoid** Highly reactive with acids.
Slightly reactive to reactive with oxidizing agents, metals.**Hazardous Polymerization** Will not occur.**Hazardous Decomposition Products** These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...). Some metallic oxides.

Section 11. Toxicological Information

Toxicity to Animals Acute oral toxicity (LD50): 500 mg/kg [Rabbit]. (Sodium Hydroxide).**Chronic Effects on Humans** **CARCINOGENIC EFFECTS:** Classified None. by NIOSH [Sodium Hydroxide].
Contains material which causes damage to the following organs: central nervous system (CNS).**Other Toxic Effects on Humans** Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).
Slightly hazardous in case of ingestion, .**Special Remarks on Toxicity to Animals** Not available.**Special Remarks on Chronic Effects on Humans** Not available.**Special Remarks on Other Toxic Effects on Humans** Not available.

WHMIS (Canada) CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
 CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
 CLASS E: Corrosive liquid.

CEPA DSL: Deionized Water; Sodium Hydroxide

CEPA NDSL: Sodium Cyanoborohydride

International Regulations

EINECS Not available.

DSCL (EEC) R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
 R34- Causes burns.

International Lists Australia (NICNAS): Deionized Water; Sodium Cyanoborohydride; Sodium Hydroxide

Germany water class: Sodium Hydroxide

VCI WGK: No products were found.

Korea (TCCL): Deionized Water; Sodium Hydroxide

Philippines (RA6969): Deionized Water; Sodium Cyanoborohydride; Sodium Hydroxide

State Regulations Pennsylvania RTK: Sodium Hydroxide: (environmental hazard, generic environmental hazard)

Massachusetts RTK: Sodium Hydroxide

New Jersey: Sodium Hydroxide

California prop. 65: **No products were found.**

Section 16. Other Information

Hazardous Material Information System (U.S.A.)

Health	*	3
Fire Hazard		1
Reactivity		1
Personal Protection		

National Fire Protection Association (U.S.A.)



References Not available.

History of Document Changes Any information changes since last document version are marked with a triangle symbol. ▶

Full text of R-Phrases referenced under headings 2 and 3: Toxic by inhalation, in contact with skin and if swallowed.
 Contact with acids liberates very toxic gas.
 Danger of cumulative effects.
 Causes burns.
 Harmful if ingested.
 Causes severe burns.
 Possible risks of irreversible effects.

Intended Use Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

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Verified by Pierce Administration.

Date of Previous Issue No Previous Validation

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