

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

Responsible Name MSDS Administrator

? Section 1. Chemical Product and Company Identification

Product Name CN/DAB Substrate (10x)

Product no. 855900 1900081

Supplier	In USA: Pierce P.O. Box 117 Rockford, IL 61105 USA 815.968.0747 or 1.800.874.3723	In Europe: Perbio Science Industriezone III Industrielaan 27 9320 Erembodegem-Aalst Belgium Tel:+32 53 83 44 04 Fax:+32 53 83 76 38	Manufacturer	Pierce Biotechnology P.O. Box 117 Rockford, IL 61105 USA 815.968.0747 or 1.800.874.3723
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In case of emergency CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887

Print date 8/7/2006
Validation date 8/7/2006
MSDS# 3772

Use of the substance/preparation 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

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>	<u>EC number</u>	<u>Classification</u>
CN/DAB Substrate (10x)		98 - 100		F; R11 T; R23/24/25, 39/23/24/25

! 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 Warning!

HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
CAUSES EYE AND SKIN IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
KIDNEYS, LIVER, HEART, GASTROINTESTINAL TRACT, RESPIRATORY TRACT,
SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.

Target organs Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Contains material which causes damage to the following organs: kidneys, liver, heart, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes Irritating to eyes.

Skin Toxic in contact with skin. Irritating to skin.

Inhalation Toxic by inhalation.

Ingestion Toxic if swallowed.

Potential chronic health effects

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CN/DAB Substrate (10x)

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<i>Carcinogenic effects</i>	☑ CARCINOGENIC EFFECTS: Classified None. by OSHA, None. by NIOSH [CN/DAB Substrate (10x)]. Classified None. by OSHA, None. by NIOSH [4-Chloro-1-Naphthol]. MUTAGENIC EFFECTS: Classified SUSPECTED for human [CN/DAB Substrate (10x)]. TERATOGENIC EFFECTS: Classified SUSPECTED for human [CN/DAB Substrate (10x)].
<i>Medical conditions aggravated by overexposure</i>	☑ Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged inhalation of vapors may lead to chronic respiratory irritation.
<i>Over-exposure signs/symptoms</i>	Not available.

Europe

Classification	☑ R23/24/25, 39/23/24/25
<i>Physical/chemical hazards</i>	☑ Not applicable.
<i>Human health hazards</i>	☑ Toxic by inhalation, in contact with skin and if swallowed. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
<i>Environmental hazards</i>	☑ Not applicable.
See toxicological Information (section 11)	

+ Section 4. First aid measures

Notice to reader Get immediate medical attention.

Effects and symptoms

<i>Inhalation</i>	☑ Hazardous in case of inhalation (lung irritant).
<i>Ingestion</i>	Hazardous in case of ingestion.
<i>Skin contact</i>	☑ Sensitization of the product: Not available. Very hazardous in case of skin contact (permeator). Hazardous in case of skin contact (irritant). Severe over-exposure can result in death. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
<i>Eye contact</i>	☑ Hazardous in case of eye contact (irritant).
<i>Aggravating conditions</i>	☑ Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged inhalation of vapors may lead to chronic respiratory irritation.

First-Aid measures

<i>Inhalation</i>	☑ Inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
<i>Ingestion</i>	☑ Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
<i>Skin contact</i>	☑ In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
<i>Eye contact</i>	☑ In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
<i>Notes to physician</i>	Not available.
<i>Protection of first-aiders</i>	Not available.

🔥 Section 5. Fire fighting measures

<i>Flammability of the product</i>	Flammable.
<i>Flash Points</i>	☑ The lowest known value is Closed cup: 11°C (51.8°F). Open cup: 15.9°C (60.6°F). (CN/DAB Substrate (10x))
<i>Fire hazards in presence of various substances</i>	☑ Extremely flammable in presence of open flames, sparks and static discharge. Highly flammable in presence of heat.
<i>Fire fighting media and instructions</i>	☑ Use an extinguishing agent suitable for surrounding fires.
<i>Protective clothing (fire)</i>	Be sure to use an approved/certified respirator or equivalent.
<i>Special Remarks on Fire Hazards</i>	Flammable, dangerous fire risk, spontaneous heating. (CN/DAB Substrate (10x))
<i>Hazardous thermal decomposition products</i>	☑ These products are carbon oxides (CO, CO ₂).

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Section 6. Accidental release measures

Personal precautions Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Environmental precautions and clean-up methods Keep away from heat. Keep away from sources of ignition. 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 to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

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.

Section 7. Handling and storage

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

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area.

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.

Czech Republic - Storage code

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 occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the workstation location.

Exposure Limit Values

Ingredient Name

Occupational Exposure Limits

United States

CN/DAB Substrate (10x)

ACGIH (United States, 0/2000). Skin

TWA: 200 ppm

STEL: 250 ppm

CEIL: 200 ppm

OSHA (United States, 0/1989). Skin

TWA: 200 ppm

STEL: 250 ppm

MSHA (United States). Skin

TWA: 260 mg/m³

NIOSH (United States). Skin

TWA: 200 ppm

STEL: 250 ppm

Sweden

CN/DAB Substrate (10x)

AFS (Sweden, 0/1996). Skin

NGV: 200 ppm

KTV: 350 ppm

TGV: 250 ppm

(Sweden). Skin

NGV: 200 ppm

Denmark

CN/DAB Substrate (10x)

DK-Arbejdstilsynet (Denmark, 0/1996). Skin

GV: 200 ppm

Norway

CN/DAB Substrate (10x)

N-Arbejdstilsynet (Norway, 0/1996). Skin

AN: 100 ppm


Korttidsnormen: 325 ppm

(Norway). Sensitizer skin

TLV: 100 ppm

France

Continued on Next Page

 CN/DAB Substrate (10x)

INRS (France, 0/1999).

VME: 200 ppm
VLE: 1300 ppm
(France). Skin
VME: 200 ppm

Netherlands

 CN/DAB Substrate (10x)

Arbeidsinspectie (Netherlands, 0/2000).

TGG: 200 ppm

Germany

 CN/DAB Substrate (10x)

BAUA (Germany, 0/1999). Skin

Spitzenbegrenzung: 800 ppm
TWA: 200 ppm
STEL: 250 ppm

Finland

 CN/DAB Substrate (10x)

Työterveyslaitos (Finland, 0/1998). Skin

TWA: 270 mg/m³
STEL: 330 mg/m³

United Kingdom (UK)

 CN/DAB Substrate (10x)

EU OEL (Europe, 0/1998).

TWA: 200 ppm 8 hour(s).

Austria

 CN/DAB Substrate (10x)

TWA: 200 mg/m³ 8 hour(s).

AUVA (Austria, 0/1995). Skin

Spitzenbegrenzung: 520 mg/m³

MAK (Austria). Skin

TWA: 200 ppm

Switzerland

 CN/DAB Substrate (10x)

SUVA (Switzerland, 0/1997). Skin

MAK: 200 ppm 8 hour(s).
Kurzezeitgrenzwerte: 400 ppm 15 minute(s).

Belgium

 CN/DAB Substrate (10x)

TWA: 200 ppm
STEL: 333 ppm

Spain

 CN/DAB Substrate (10x)

VLA-ED: 200 ppm

Turkey

 CN/DAB Substrate (10x)

NIOSH (United States). Skin

TWA: 200 ppm
STEL: 250 ppm

Czech Republic

 CN/DAB Substrate (10x)

EU OEL (Europe, 0/1998).

TWA: 200 ppm 8 hour(s).

Ireland

 CN/DAB Substrate (10x)

EU OEL (Europe, 0/1998).

TWA: 200 ppm 8 hour(s).

Italy

 CN/DAB Substrate (10x)

OEL (Italy).

TWA: 200 ppm

Personal Protection

Eyes Splash goggles.

Body Lab coat.

Hands Gloves.

Respiratory Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Protective Clothing
(Pictograms)





Section 9. Physical and chemical properties

Physical State Liquid. (Clear sparkling liquid.) **Color** Brown. (Light.) **Odor** Not available.

Molecular weight Not applicable. **Taste** Not available.

Boiling/condensation point The lowest known value is 64.7°C (148.5°F) (CN/DAB Substrate (10x)).

Melting/freezing point May start to solidify at -98°C (-144.4°F) based on data for: CN/DAB Substrate (10x).

Critical temperature The lowest known value is 240°C (464°F) (CN/DAB Substrate (10x)).

Specific Gravity The only known value is 0.79 (Water = 1) (CN/DAB Substrate (10x)).

Vapor pressure The highest known value is 13 kPa (97.7 mm Hg) (at 20°C) (CN/DAB Substrate (10x)).

Vapor density The highest known value is 1.11 (Air = 1) (CN/DAB Substrate (10x)).

Odor threshold The lowest known value is 100 ppm (CN/DAB Substrate (10x))

Evaporation rate 5.2 (CN/DAB Substrate (10x)) compared to Ether (anhydrous).

Viscosity Dynamic: The highest known value is 0.55 cP (CN/DAB Substrate (10x))

Ionicity (in water) Non-ionic.

Dispersion properties See solubility in water, methanol, diethyl ether.

Solubility Easily soluble in cold water, hot water, methanol, diethyl ether.

Flash point The lowest known value is Closed cup: 11°C (51.8°F). Open cup: 15.9°C (60.6°F). (CN/DAB Substrate (10x))

Explosion limits The greatest known range is Lower: 6% Upper: 36% (CN/DAB Substrate (10x))



Section 10. Stability and reactivity

Stability and Reactivity The product is stable.

Conditions to avoid Not available.

Materials to avoid Reactive with oxidizing agents, reducing agents, acids.

Hazardous Decomposition Products Not available.



Section 11. Toxicological information

Toxicity to Animals **CN/DAB Substrate (10x):**
ORAL (LD50): Acute: 5628 mg/kg [Rat]. 7000 mg/kg [Monkey.]. 7300 mg/kg [Mouse].
DERMAL (LD50): Acute: 15800 mg/kg [Rabbit].
VAPOR (LC50): Acute: 64000 ppm 4 hour(s) [Rat].

4-Chloro-1-Naphthol

LD50: Not available.

LC50: Not available.

[1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE

LD50: Not available.

LC50: Not available.

Chronic Effects on Humans **CARCINOGENIC EFFECTS:** Classified None. by OSHA, None. by NIOSH [CN/DAB Substrate (10x)]. Classified None. by OSHA, None. by NIOSH [4-Chloro-1-Naphthol].

MUTAGENIC EFFECTS: Classified SUSPECTED for human [CN/DAB Substrate (10x)].

TERATOGENIC EFFECTS: Classified SUSPECTED for human [CN/DAB Substrate (10x)].

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED] [CN/DAB Substrate (10x)].

Contains material which causes damage to the following organs: kidneys, liver, heart, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Other Toxic Effects on Humans Hazardous in case of eye contact (irritant), of ingestion, of inhalation (lung irritant).

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CN/DAB Substrate (10x)

Special Remarks on Toxicity to Animals Not available.

Special Remarks on Chronic Effects on Humans Exposure can cause stomach pains, vomiting and diarrhea. (4-Chloro-1-Naphthol)

Special Remarks on Other Toxic Effects on Humans Exposure can cause nausea, headache and vomiting. May be fatal. Direct contact with the eyes can cause irreversible damage including blindness. (CN/DAB Substrate (10x))

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Reproductive toxicity No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Skin No known significant effects or critical hazards.

Target organs Contains material which causes damage to the following organs: kidneys, liver, heart, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.



Section 12. Ecological information

Mobility Not available.

Persistence/degradability Not available.

Bioaccumulative potential Not available.

Ecotoxicity Not available.

Germany water class VCI WGK: No products were found.

Ecotoxicity data

Ingredient name

CN/DAB Substrate (10x)

Species

Trout (LC50)
Cyprinus carpio (LC50)
Daphnia magna (EC50)
Minnows (LC50)
Trout (LC50)

Period

96 hour(s)
48 hour(s)
48 hour(s)
96 hour(s)
48 hour(s)

Result

19000 mg/l
36000 mg/l
24500 mg/l
29400 mg/l
8000 mg/l

Other ecological information

Persistence/degradability

Ingredient name

BOD₅

COD

Ingredient name

CN/DAB Substrate (10x)

Aquatic half-life

-

Photolysis

-

Biodegradability

Readily

Bioaccumulative potential

Ingredient name

CN/DAB Substrate (10x)

LogP_{ow}

-0.77

BCF

0.2

low

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.



Section 13. Disposal considerations

Waste Stream Not available.

Methods of disposal

Continued on Next Page

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

European waste catalogue (EWC) Not available.

Hazardous waste The classification of the product may meet the criteria for a hazardous waste

Denmark – Carcinogenic waste Not available.

Denmark - Waste card number Not available.

Denmark - Waste group Not available.

Sweden - thermoset plastic waste Not available.

Sweden - Waste group Not available.

Austria - Waste catalogue Not available.

Norway - Waste number Not available.

Norway - Hazardous waste The classification of the product may meet the criteria for a hazardous waste

Switzerland - Waste code Not available.

Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.

Section 15. Regulatory information

Label Requirements (Europe)

R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
 R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
 S1/2- Keep locked up and out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S63- In case of accident by inhalation: remove casualty to fresh air and keep at rest.



Toxic

HCS Classification
 Flammable liquid
 Toxic material
 Irritating material
 Target organ effects

U.S. Federal Regulations
 HCSA 8(b) inventory: CN/DAB Substrate (10x)
 SARA 302/304/311/312 extremely hazardous substances: No products were found.
 SARA 302/304 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: CN/DAB Substrate (10x)
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: CN/DAB Substrate (10x): Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean air act (CAA) 112 accidental release prevention: CN/DAB Substrate (10x)
 Clean air act (CAA) 112 regulated flammable substances: CN/DAB Substrate (10x)
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

Form R - Reporting requirements	: Product name CN/DAB Substrate (10x)	CAS number	Concentration 98 - 100
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SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

- State regulations**
- ✓ Pennsylvania RTK: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x): (environmental hazard, generic environmental hazard)
 - Florida: CN/DAB Substrate (10x)
 - Minnesota: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - Massachusetts RTK: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - Massachusetts spill list: CN/DAB Substrate (10x)
 - New Jersey: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - New Jersey spill list: CN/DAB Substrate (10x)
 - New Jersey toxic catastrophe prevention act: CN/DAB Substrate (10x)

- WHMIS (Canada)**
- ✓ Class D-1B: Material causing immediate and serious toxic effects (TOXIC).
 - Class D-2A: Material causing other toxic effects (VERY TOXIC).
 - Class D-2B: Material causing other toxic effects (TOXIC).

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- ✓ EPA DSL: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - CEPA NDSL: 4-Chloro-1-Naphthol

International Regulations

EINECS Not available.

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- DSCL (EEC)**
- ✓ R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
 - R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

International Lists ✓ Germany water class: 4-Chloro-1-Naphthol; [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)

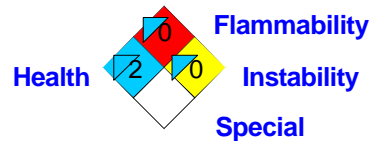
- State Regulations**
- ✓ Pennsylvania RTK: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x): (environmental hazard, generic environmental hazard)
 - Florida: CN/DAB Substrate (10x)
 - Minnesota: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - Massachusetts RTK: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - Massachusetts spill list: CN/DAB Substrate (10x)
 - New Jersey: [1,1'-BIPHENYL]-3,3',4,4'-TETRAMINE, TETRAHYDROCHLORIDE; CN/DAB Substrate (10x)
 - New Jersey spill list: CN/DAB Substrate (10x)
 - New Jersey toxic catastrophe prevention act: CN/DAB Substrate (10x)

Section 16. Other information

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

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

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 referred to in sections 2 and 3 - Europe

- ✓ R11- Highly flammable.
- R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.
- R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

Full text of classifications referred to in sections 2 and 3 - Europe

- ✓ F - Highly flammable
- T - Toxic

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

Validated by MSDS Administrator on 8/7/2006.

Verified by MSDS Administrator.

Date of previous issue

8/7/2006

Printed 8/7/2006.

Version

0.03

Notice to reader

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CN/DAB Substrate (10x)

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To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.