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**Product Item Name/Description: 4FB-HRP**

## I. Product and Company Description

Solulink Biosciences  
9853 Pacific Heights Blvd, Ste H.  
San Diego, CA 92121

### For Product Information/Emergency Phone Number:

Emergency Telephone ChemTrec:  
1-800-424-9300 (North America)  
+1-703-527-3887(International)

SoluLink-858.625.0670 (For product use see product data sheet insert)

### Chemical Name or Synonym:

4FB-modified horseradish peroxidase, formylbenzamide-modified horseradish peroxidase, 4FB-HRP, hydrogen peroxide oxidoreductase

## II. Chemical Composition

4FB-HRP is a horseradish derived oxidoreductase enzyme modified with succinimidyl 4-formylbenzoate in a pH 6.0 sodium phosphate buffered solution with preservatives.

Ingredient Name	CAS Number	%	EC number	Classification
Formylbenzamide-modified horseradish peroxidase	9003-99-0	0.07%	232-668-6	Not available
Sodium phosphate, monobasic	10049-21-5	0.4%	231-449-2	Xi, R 36/37/38
Sodium phosphate, dibasic	7558-79-4	1.1 %	231-448-7	Xi, R 36/37/38
Sodium chloride	7647-14-5	0.88 %	231-598-3	Xi, R 36/37/38
Water	07732-18-5	97.55	N/A	Not controlled

## III. Hazards Identification

Emergency Overview and Health Hazards:

HMIS Rating (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0  
NFPA Ratings (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0

### A. Emergency Overview:

#### Information Pertaining To Particular Dangers for Man And Environment:

**Major Health Hazards** (Sodium phosphate buffer): Respiratory tract irritation. Skin and eye irritation.

**Horseradish peroxidase:** No known OSHA hazards

**Physical Appearance:** Brown translucent aqueous solution

**HMIS Rating:** Health: 2 Fire hazard: 0 Reactivity: 0 Personal protection: C

### **Acute Health Effects:**

**Acute Eye:**

Direct contact may cause irritation with redness.

**Acute Skin:**

Direct contact may cause skin irritation with redness.

**Acute Inhalation:**

Acute and chronic exposure may cause irritation of the mucous membranes. Symptoms may include tightness and pain in the chest, coughing, and difficulty breathing. No significant adverse effects have been reported.

**Acute ingestion:**

Acute exposure may cause gastrointestinal irritation to the mouth and stomach.

### **Chronic Health Effects:**

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Over-exposure signs and symptoms: Not available.

## **IV. First Aid Measures**

### **First Aid Measures for Accidental:**

**Eye Exposure:**

Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation develops seek medical attention.

**Skin Exposure:**

Wash affected areas with soap and water. If irritation develops seek medical attention.

**Inhalation:**

Move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel. SEEK MEDICAL ATTENTION.

**Ingestion:**

If a large amount is swallowed, rinse mouth out with water. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. SEEK MEDICAL ATTENTION.

## **V. Fire Fighting Measures**

### **Fire Hazard Data:**

**Flammability:** no data available.

**Autoignition:** no data available

**Flash Point:** no data available

**Flammability Limits (vol/vol%):** not available

**Lower: Upper:** not available

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products.

**Unusual Fire and Explosion Hazards:** None

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. No special measures are indicated.

## VII. Handling and Storage

**Handling/Storage:** Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Handle wearing appropriate lab personal protective equipment as gloves, lab coat, and goggles. Store material refrigerated.

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
Sodium phosphate, dibasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium phosphate, monobasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium chloride	N/A	N/A	N/A

### Engineering Controls:

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

### Respiratory Protection:

Not required under anticipated use conditions.

### Eye / Face Protection:

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

### Skin Protection:

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

Component: 4FB-Modified Horseradish peroxidase  
Physical Appearance: Brown translucent liquid  
Percent Purity: not available  
Boiling Point: 212F, 100C  
Melting Point: not available  
Specific gravity: not available  
Freezing Point: not available  
Solubility: water  
pH: 6.0

## X. Stability and Reactivity

### **Chemical Stability:**

This product is stable.

### **Conditions to Avoid:**

No data available

### **Materials / Chemicals to Be Avoided:**

Highly reactive with oxidizing agents. Reactive with acids.

### **Hazardous Decomposition Products:**

Phosphorus oxides may form when heated to decomposition. Halogenated compound, hydrogen chloride.

### **Hazardous Polymerization:**

Will not occur.

## XI. Toxicological Information

### **Carcinogenicity:**

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Developmental toxicity: Classified reproductive system/toxi/female (proven) sodium chloride.

Classified developmental toxin (possible) sodium chloride

### **Acute Toxicity:**

**Sodium phosphate, dibasic:** Oral (LD50) acute: 17000 mg/kg rat

**Sodium chloride:** Oral (LD50) acute: 3000 mg/kg rat

Dermal (LD50) acute: 10000 mg/kg rabbit rat

Dust (LC50) acute: >42000 mg/m<sup>3</sup>/hr rat

**Sodium phosphate, monobasic:** LD50: not available, LC50: not available

See Hazardous identification

## XII. Ecological Information

### **Ecotoxicological Information:**

**Mobility:** Not available

**Persistence/degradability:** Not available  
**Bioaccumulative potential;** Not available  
**Ecotoxicity:** Not available

### **XIII. Disposal Considerations**

**Waste Disposal Method:**

Discard any product, residue, disposable container or liner in full compliance with national regulations.

**Container Handling and Disposal:**

Dispose of container and unused contents in accordance with national regulations.

### **XIV. Transportation Information**

**Shipping Name: ADR/RID/IMO/ICAO/US DOT**

**Proper Shipping Name:** Not Regulated  
**Hazard Class:** Not Regulated  
**ID Number:** Not Regulated  
**Packaging Group:** Not Regulated  
**Label Statement:** Not Regulated

### **XV. Regulatory Information**

#### **U.S. Federal Regulations:**

**HCS Classification:** Irritating material

**SARA Title III Hazard Classes:**

**SARA 302/304/312** extremely hazardous substances; no products were found

**SARA 302/304** emergency planning and notification: No products found.

**SARA 302/304/311/312** hazardous chemicals; sodium phosphate, dibasic; sodium chloride

**SARA 311/312 MSDS distribution**-chemical inventory-hazardous identification: sodium phosphate, dibasic; sodium chloride: immediate (Acute) health hazard, delayed (Chronic) health hazard

**Clean Water Act (CWA) 307:** no products were found

**Clean Water Act (CWA) 311:** Sodium phosphate, dibasic

**Clean Water Act (CAA) 112 :** accidental release prevention: No products were found

**Clean Water Act (CAA) 112:** Regulated flammable substances: No products were found

**Clean Water Act (CAA) 112:** Regulated toxic substances: No products were found

**TSCA:** TSCA 8(b) inventory; sodium phosphate, dibasic; sodium chloride

#### **U.S. State Regulations:**

Pennsylvania RTK: Sodium Phosphate, Dibasic

Massachusetts RTK: Sodium Phosphate, Dibasic

Massachusetts spill list: Sodium Phosphate, Dibasic

New Jersey: Sodium Phosphate, Dibasic

New Jersey spill list: Sodium Phosphate, Dibasic

New Jersey toxic catastrophe prevention act: Sodium Phosphate, Dibasic

WHMIS (Canada)

Class D-2A: Material causing other toxic effects (Very toxic)  
Class D-2B: Material causing other toxic effects (Toxic)  
DEPA DSL: Sodium Phosphate, Dibasic, Sodium Chloride

## International Regulations:

**EINECS:** not available

**DSCL (EEC):** R36/37/38-Irritating to eyes, respiratory system and skin

### European

**EC Classification Xi:** Irritant

**EC Risk and Safety Phrases:** R36 irritating to eyes  
R37 irritating to respiratory system  
R38 irritating to skin

**Risk Phrases:** None

**Safety Phrases:** S23 Keep out of reach of children  
S24 Avoid skin contact.  
S25 Avoid contact with eyes  
S26 In case of contact with eyes, rinse immediately with water and seek medical advice  
S46 If swallowed, see medical advice immediately and show this container to label

## XVI. Other Information

**NFPA:** Health 2 Flammability 0 Instability 0

**HMIS:** Health 2 Fire Hazard 0 Reactivity 0 Personal protection C

### Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of Governmental Industrial Hygienists

OSHA – Occupational Safety and Health Administration

TLV – Threshold Limit Value

PEL – Permissible Exposure Limit

TWA – Time Weighted Average

STEL – Short Term Exposure Limit

NTP – National Toxicology Program

IARC – International Agency for Research on Cancer

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**Product Name/Description:** S-HyNic

### I. Chemical Name or Synonym:

S-HyNic (succinimidyl 6-hydrazinonicotinate acetone hydrazone), HyNic, protected aromatic hydrazine

### II. Chemical Composition

Name: S-HyNic  
Molecular formula: C<sub>13</sub>H<sub>14</sub>N<sub>4</sub>O<sub>4</sub>  
Molecular weight: MW 290.2

S-HyNic is a custom synthesized compound with no available CAS registry number.  
S-HyNic is supplied as a dried, slight yellowish-white dry residue.

Ingredient Name	CAS Number	%	EC number	Classification
S-HyNic	Not listed	>90%	Not available	Not available

### III. Hazards Identification

Emergency Overview and Health Hazards: Data not available

NFPA Rating (Scale 0-4): Health = unknown    Fire = unknown    Reactivity = unknown  
HMIS Rating (Scale 0-4): Health = unknown    Fire = unknown    Reactivity = unknown

#### A. Emergency Overview:

Information Pertaining To Particular Dangers for Man And Environment: Unknown

**Physical Appearance:** Nearly colorless dried residue, slightly yellowish when resuspended in an aqueous solution.

#### B. Potential Health Effects:

**Acute Eye:**

Unknown. Avoid contact or exposure to eyes.

**Acute Skin:**

Unknown. Avoid contact or exposure to skin.

**Acute Inhalation:**

Unknown. Avoid contact or exposure to skin.

**Acute ingestion:**

Unknown. Avoid ingestion.

### IV. First Aid Measures

#### First Aid Measures for Accidental:

**Eye Exposure:**

In case of contact with eyes, immediately flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating eye lids.

**Skin Exposure:**

In case of skin contact, wash affected areas with soap and water and flush the area with copious amounts of water. Remove contaminated clothing.

**Inhalation:**

In inhaled, move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel.

**Ingestion:**

If swallowed, rinse mouth out with water provided person is conscious. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.

## V. Fire Fighting Measures

### Fire Hazard Data:

**Fire:** Materials contained in this product are not considered to be a fire hazard.

**Autoignition:** unknown

**Flash Point:** unknown

**Flammability Limits (vol/vol%):** unknown

**Lower:** unknown

**Upper:** unknown

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products.

**Unusual Fire and Explosion Hazards:** None

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use lab personal protective equipment such as gloves, lab coat, goggles and self-contained breathing apparatus. Wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

## VII. Handling and Storage

### Handling/Storage:

Do not breathe dust. Do not get into eyes, skin or clothing. Avoid prolonged or repeated exposure. Handle wearing gloves.

Store material dry at room temperature and keep container tightly closed.

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
S-HyNic	No occupational limits established	No occupational limits established	No occupational limits established

### Engineering Controls:

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

### Respiratory Protection:

Not required under anticipated use conditions.

**Eye / Face Protection:**

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

**Skin Protection:**

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

**Component:** S-HyNic

**Physical Appearance:** Slight yellowish-white residue

**Percent Purity:** >90%

**Boiling Point:** Not available

**Melting Point:** Not available

**Specific gravity:** Not available

**Freezing Point:** Not Available

**Vapor pressure:** Not available

**Vapor density:** Not available

**Solubility:** only slightly soluble in aqueous solutions, soluble in DMF and DMSO solvents

**Evaporation rate:** Not available

## X. Stability and Reactivity

**Chemical Stability:**

This compound is considered stable.

**Conditions to Avoid:**

Susceptible to aqueous hydrolysis, avoid exposure to aqueous solutions before use.

**Materials / Chemicals to Be Avoided:**

Aromatic hydrazines decompose on exposure to oxidizing agents and metals

**Hazardous Decomposition Products:**

Carbon monoxide, carbon dioxide

**Hazardous Polymerization:**

Unknown

## XI. Toxicological Information

**Acute Oral Toxicity:** Unknown

**Acute Inhalation Toxicity:** Unknown

**Carcinogenicity:**

NTP: Unknown

IARC: Unknown

OSHA: Unknown

## XII. Ecological Information

**Ecotoxicological Information:**

None available.

## XIII. Disposal Considerations

**Waste Disposal Method:**

Discard any product, residue, disposable container or liner in full compliance with national regulations.

**Container Handling and Disposal:**

Dispose of container and unused contents in accordance with national regulations.

**XIV. Transportation Information**

**Shipping Name: ADR/RID/IMO/ICAO/US DOT/IATA**

**DOT**

**Proper Shipping Name: ND**

**UN #: ND**

**Hazard Class: ND**

**Packaging Group: ND**

**Label Statement: ND**

**IATA**

**Proper Shipping Name: ND**

**IATA UN Number: ND**

**Hazard Class: ND**

**Packaging Group: ND**

**XV. Regulatory Information**

**Indication of danger: ND**

**Risk Assessment: ND**

**Safety Statement: ND**

**U.S. Federal Regulations:**

**SARA Title III Hazard Classes:**

**Not listed**

**TSCA**

All components in this product are not listed.

**Other Regulations:**

**U.S. State None**

**European/International Regulations**

**EC Classification: ND**

**EC Risk and Safety Phrases: ND**

**Risk Phrases: ND**

**Safety Phrases: ND**

**XVI. Other Information**

**Key Legend Information:**

N/A – Not Applicable  
ND – Not Determined  
ACGIH – American Conference of Governmental Industrial Hygienists  
OSHA – Occupational Safety and Health Administration  
TLV – Threshold Limit Value  
PEL – Permissible Exposure Limit  
TWA – Time Weighted Average  
STEL – Short Term Exposure Limit  
NTP – National Toxicology Program  
IARC – International Agency for Research on Cancer

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**Product Name/Description:** Buffer A**I. Chemical Name or Synonym:**

Sodium phosphate buffer

**II. Chemical Composition**

Buffer A is supplied as an aqueous solution containing 100 mM sodium phosphate, 150 mM sodium chloride solution, pH 7.4

Ingredient Name	CAS Number	%	EC number	Classification
Sodium phosphate, monobasic	10049-21-5	0.4%	231-449-2	Xi, R 36/37/38
Sodium phosphate, dibasic	7558-79-4	1.1 %	231-448-7	Xi, R 36/37/38
Sodium chloride	7647-14-5	0.88 %	231-598-3	Xi, R 36/37/38
Water	07732-18-5	97.62	N/A	Not controlled

**III. Hazards Identification**

NFPA Ratings (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0

Major Health Hazards: Respiratory tract irritation. Skin and eye irritation.

Physical Hazards: None

**A. Emergency Overview:****Information Pertaining To Particular Dangers for Man and Environment:** Not known**Physical Appearance:** Clear liquid**B. Potential Health Effects:****HMIS Rating:** Health: 1 Fire hazard: 0 Reactivity: 0 Personal protection: C**Acute Health Effects:****Acute Eye:**

Direct contact may cause irritation with redness.

**Acute Skin:**

Direct contact may cause skin irritation with redness.

**Acute Inhalation:**

Acute and chronic exposure may cause irritation of the mucous membranes. Symptoms may include tightness and pain in the chest, coughing, and difficulty breathing. No significant adverse effects have been reported.

**Acute ingestion:**

Acute exposure may cause gastrointestinal irritation to the mouth and stomach.

## Chronic Health Effects:

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Over-exposure signs and symptoms: Not available.

## IV. First Aid Measures

### First Aid Measures for Accidental:

**Eye Exposure:**

Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation develops seek medical attention.

**Skin Exposure:**

Wash affected areas with soap and water. If irritation develops seek medical attention.

**Inhalation:**

Move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel. SEEK MEDICAL ATTENTION.

**Ingestion:**

If a large amount is swallowed, rinse mouth out with water. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. SEEK MEDICAL ATTENTION.

## V. Fire Fighting Measures

### Fire Hazard Data:

**Flammability:** may be combustible at high temperature

**Autoignition:** not available

**Flash Point:** not available

**Flammability Limits (vol/vol%):** not available

**Lower: Upper:** not available

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products.

**Unusual Fire and Explosion Hazards:** None

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. No special measures are indicated.

## VII. Handling and Storage

**Handling/Storage:** Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Handle wearing appropriate lab personal protective equipment as gloves, lab coat, and goggles. Store material refrigerated.

### SODIUM PHOSPHATE MONOBASIC

OSHA-PEL-TWA-	1mg/m <sup>3</sup>
OSHA-PEL-STEL-	3mg/m <sup>3</sup>
ACGIH-PEL-TWA	1mg/m <sup>3</sup>

### SODIUM PHOSPHATE DIBASIC

OSHA-PEL-TWA-	1mg/m <sup>3</sup>
OSHA-PEL-STEL	3mg/m <sup>3</sup>
ACGIH-PEL-TWA	1mg/m <sup>3</sup>

### SODIUM CHLORIDE

N/A

### WATER

N/A

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
Sodium phosphate, dibasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium phosphate, monobasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium chloride	N/A	N/A	N/A

### Engineering Controls:

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

**Respiratory Protection:**

Not required under anticipated use conditions.

**Eye / Face Protection:**

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

**Skin Protection:**

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

Component: Buffer A

Physical Appearance: Clear liquid

Percent Purity: 100%

Boiling Point: 212F, 100C

Melting Point: 1479.2 °F based on sodium chloride

Specific gravity: Only known value is 1.5 (sodium phosphate, dibasic)

Freezing Point: Not Available

Solubility: water, methanol

pH: 7.4

## X. Stability and Reactivity

**Chemical Stability:**

This product is stable.

**Conditions to Avoid:**

Not available

**Materials / Chemicals to Be Avoided:**

Highly reactive with oxidizing agents. Reactive with acids.

**Hazardous Decomposition Products:**

Phosphorus oxides may form when heated to decomposition. Halogenated compound, hydrogen chloride.

**Hazardous Polymerization:**

Will not occur.

## XI. Toxicological Information

**Carcinogenicity:**

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Developmental toxicity: Classified reproductive system/toxi/female (proven) sodium chloride.

Classified developmental toxin (possible) sodium chloride

**Acute Toxicity: Sodium phosphate, dibasic:** Oral (LD50) acute: 17000 mg/kg rat

**Sodium chloride:** Oral (LD50) acute: 3000 mg/kg rat

Dermal (LD50) acute: 10000 mg/kg rabbit rat

Dust (LC50) acute: >42000 mg/m<sup>3</sup>/hr rat

**Sodium phosphate, monobasic:** LD50: not available, LC50: not available

See Hazardous identification

## XII. Ecological Information

### Ecotoxicological Information:

**Mobility:** Not available

**Persistence/degradability:** Not available

**Bioaccumulative potential;** Not available

**Ecotoxicity:** Not available

## XIII. Disposal Considerations

### Waste Disposal Method:

Discard any product, residue, disposable container or liner in full compliance with national regulations.

### Container Handling and Disposal:

Dispose of container and unused contents in accordance with national regulations.

## XIV. Transportation Information

**Shipping Name: ADR/RID/IMO/ICAO/US DOT**

**Proper Shipping Name:** Not Regulated

**Hazard Class:** Not Regulated

**ID Number:** Not Regulated

**Packaging Group:** Not Regulated

**Label Statement:** Not Regulated

## XV. Regulatory Information

### U.S. Federal Regulations:

**HCS Classification:** Irritating material

### SARA Title III Hazard Classes:

**SARA 302/304/312** extremely hazardous substances; no products were found

**SARA 302/304** emergency planning and notification: No products found.

**SARA 302/304/311/312** hazardous chemicals; sodium phosphate, dibasic; sodium chloride

**SARA 311/312 MSDS distribution**-chemical inventory-hazardous identification: sodium phosphate, dibasic; sodium chloride: immediate (Acute) health hazard, delayed (Chronic) health hazard

**Clean Water Act (CWA) 307:** no products were found

**Clean Water Act (CWA) 311:** Sodium phosphate, dibasic

**Clean Water Act (CAA) 112 :** accidental release prevention: No products were found

**Clean Water Act (CAA) 112:** Regulated flammable substances: No products were found

**Clean Water Act (CAA) 112:** Regulated toxic substances: No products were found

**TSCA:** TSCA 8(b) inventory; sodium phosphate, dibasic; sodium chloride

### U.S. State Regulations:

Pennsylvania RTK: Sodium Phosphate, Dibasic

Massachusetts RTK: Sodium Phosphate, Dibasic  
Massachusetts spill list: Sodium Phosphate, Dibasic  
New Jersey: Sodium Phosphate, Dibasic  
New Jersey spill list: Sodium Phosphate, Dibasic  
New Jersey toxic catastrophe prevention act: Sodium Phosphate, Dibasic

#### WHMIS (Canada)

Class D-2A: Material causing other toxic effects (Very toxic)  
Class D-2B: Material causing other toxic effects (Toxic)  
DEPA DSL: Sodium Phosphate, Dibasic, Sodium Chloride

#### International Regulations:

**EINECS:** not available

**DSCL (EEC):** R36/37/38-Irritating to eyes, respiratory system and skin

#### European

**EC Classification Xi:** Irritant

**EC Risk and Safety Phrases:** R36 irritating to eyes  
R37 irritating to respiratory system  
R38 irritating to skin

**Risk Phrases:** None

**Safety Phrases:** S23 Keep out of reach of children  
S24 Avoid skin contact.  
S25 Avoid contact with eyes  
S26 In case of contact with eyes, rinse immediately with water and seek medical advice  
S46 If swallowed, see medical advice immediately and show this container to label

#### XVI. Other Information

**NFPA:** Health 2 Flammability 0 Instability 0

**HMIS:** Health 1 Fire Hazard 0 Reactivity 0 Personal protection C

#### Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of Governmental Industrial Hygienists

OSHA – Occupational Safety and Health Administration

TLV – Threshold Limit Value

PEL – Permissible Exposure Limit

TWA – Time Weighted Average

STEL – Short Term Exposure Limit

NTP – National Toxicology Program

IARC – International Agency for Research on Cancer

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**Product Name/Description:** Buffer B with Aniline

## I. Chemical Name or Synonym:

Sodium phosphate buffer containing low concentrations (90 mM) of aniline.

Synonyms for aniline are

Aminophen  
Aniline  
Aniline (Italian, Polish)  
Anilin (Czech)  
Benzamine  
Arylamine  
Aromatic amine  
Phenylamine  
Benzenamine  
Benzidam

**RTECS Number:** BW6650000

## II. Chemical Composition

Buffer B is supplied as a clear aqueous solution containing 50 mM sodium phosphate, 150 mM sodium chloride solution with less than 1% aniline, pH 6.0

Ingredient Name	CAS Number	%	EC number	Classification
Sodium phosphate, monobasic	10049-21-5	0.2%	231-449-2	Xi, R 36/37/38
Sodium phosphate, dibasic	7558-79-4	0.55 %	231-448-7	Xi, R 36/37/38
Sodium chloride	7647-14-5	0.88%	231-598-3	Xi, R 36/37/38
Aniline	62-53-3	0.83%	200-539-3	T, R /23/24/25/40 S 2/28/45
Water	07732-18-5	97.54	N/A	Not controlled

## III. Hazards Identification

NFPA Ratings (Scale 0-4): Health = 3 Fire = 0 Reactivity = 1

Major Health Hazards:

Aniline is toxic and dangerous for the environment. Toxic by inhalation, in contact with skin and if swallowed. Irritating to respiratory system and skin. Limited evidence of a carcinogenic effect. Serious risk of damage to eyes. May cause skin sensitization by skin contact. Danger of serious damage to health on prolonged exposure through inhalation, skin contact, or if swallowed. Possible risk of irreversible effects. Very toxic to aquatic organisms. Aniline is readily absorbed through the skin. Causes cyanosis. Target organs kidneys, bladder. Possible carcinogen (US).

### A. Emergency Overview:

**Information Pertaining To Particular Dangers for Man And Environment:** Refer to sections III, VIII, XII, XV in this document.

**Physical Appearance:** Clear liquid

## B. Potential Health Effects:

### Acute Health Effects for Aniline

**Acute Eye:** Causes severe eye irritation. May cause lacrimation (tearing), blurred vision, and photophobia. May cause chemical conjunctivitis and corneal damage.

**Acute Skin:** Causes moderate skin irritation. Readily absorbed through skin. Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

**Acute Ingestion:** Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause effects similar to those of acute inhalation. May cause central nervous system depression, convulsions, coma, and possible death due to respiratory paralysis. May cause cardiac effects such as heart blocks, arrhythmias, shock and possible death due to cardiovascular collapse. Alcohol can intensify the ability of aniline to induce methemoglobinemia

**Acute Inhalation:** Effects may be delayed. Causes respiratory tract irritation. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. Aspiration may lead to pulmonary edema.

**Chronic:** May cause liver and kidney damage. May cause fetal effects. Repeated exposure may cause sensitization dermatitis. Chronic exposure may cause hemolysis of the red blood cells followed by stimulation of the bone marrow. Laboratory experiments have resulted in mutagenic effects. May cause cyanosis - a blue-gray coloring of the skin and lips caused by a lack of oxygen. Animal studies have reported the development of tumors.

### Chronic Health Effects for Aniline

May cause liver and kidney damage. May cause fetal effects. Repeated exposure may cause sensitization dermatitis. Chronic exposure may cause hemolysis of the red blood cells followed by stimulation of the bone marrow. Laboratory experiments have resulted in mutagenic effects. May cause cyanosis - a blue-gray coloring of the skin and lips caused by a lack of oxygen. Animal studies have reported the development of tumors.

## IV. First Aid Measures

### First Aid Measures for Accidental Exposure:

#### Eye Exposure:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Do NOT allow victim to rub or keep eyes closed. If irritation develops seek medical attention.

#### Skin Exposure:

Immediately wash affected areas with soap and water. If irritation develops seek medical attention. Wash clothing before reuse. Destroy contaminated shoes.

#### Inhalation:

Move to fresh air. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. SEEK MEDICAL ATTENTION.

#### Ingestion:

Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. SEEK MEDICAL ATTENTION.

**Notes to Physician:** Absorption of this product into the body may cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). Moderate degrees of cyanosis need to be treated only by supportive measures: bed rest and oxygen inhalation. Cleansing of the entire contaminated area of the body is of utmost importance. Do not administer alcohol in any form.

Individuals with liver or kidney disorders, impaired cardiovascular status, or a history of alcoholism may be more susceptible to the effects of this product. Effects may be delayed. If cyanosis is severe, intravenous injection of Methylene blue, 1mg/kg of body weight may be of value.

**Antidote:** Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

## V. Fire Fighting Measures

### Fire Hazard Data:

**Fire:** materials contained in this product at the indicated concentration are not considered to be a fire hazard.

**Autoignition:** not applicable

**Flash Point:** not applicable

**Flammability Limits (vol/vol%):** not applicable **Lower:** **Upper:** not applicable

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products.

**Unusual Fire and Explosion Hazards:** None

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations.

## VII. Handling and Storage

**Handling:** Handle wearing gloves and lab coat. Do not breathe vapor. Avoid contact with eyes, skin, clothing.

**Storage:** Store material refrigerated.

**Special requirements:** Light sensitive

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
Sodium phosphate, dibasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium	PEL-TWA	Not listed	PEL-TWA

phosphate, monobasic	1 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium chloride	N/A	N/A	N/A
Aniline	PEL-TWA 7.6 mg/m <sup>3</sup>	N/A	PEL-TWA 5ppm

**Engineering Controls:**

Safety shower and eye bath. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

**Respiratory Protection:**

Not required under anticipated use conditions.

**Eye / Face Protection:**

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

**Skin Protection:**

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

Component: Buffer B

Physical Appearance: Clear liquid

Percent Purity: 100%

Boiling Point: Not available

Melting Point: Not available

Specific gravity: Not available

Freezing Point: Not Available

pH: 6.0

## X. Stability and Reactivity

**Chemical Stability:**

Stable, may be slightly hygroscopic.

**Conditions to Avoid:**

Temperatures <0°C or > 50°C

**Materials / Chemicals to Be Avoided:**

Reactive with strong oxidizing agents, metal, acids, alkali

**Hazardous Decomposition Products:**

Phosphorus oxides may form when heated to decomposition

**Hazardous Polymerization:**

Unknown

## XI. Toxicological Information

Information for Aniline

**Route of exposure:**

Skin absorption: toxic if absorbed through skin. Readily absorbed through skin.

Eye contact: Causes severe eye irritation.

Ingestion: toxic if swallowed  
Inhalation: Material is irritating to mucous membranes and upper respiratory tract.  
Toxic if inhaled.

**Sensitization;**

Skin: May cause allergic skin reaction.

**Target Organs:**

Blood, bladder, kidneys, central nervous system.

**Signs and symptoms of exposure:**

Fatigue. Incoordination. Nausea. Vomiting. Headache. Dizziness.  
Symptoms may be delayed. Unconsciousness. Weakness. Confusion. Drowsiness.  
Absorption into body leads to methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2-4 hours.

**Carcinogenicity:**

ACGIH: Classified A3 (proven for animal)  
IARC: (not classifiable for human)  
OSHA: Not available

**Mutagenic Effects:**

Mutagenic for mammalian somatic cells. Species human, dose 300 umol.L, cell type lymphocyte, mutation test: sister chromatid exchange.  
Mutagenic for bacteria and or yeast.

**Developmental toxicity:** not available

**Reproductive effects:** chronic exposure to aniline (6-13 days, pregnant) poses reproductive hazard in mouse at 4.48 g/kg (oral)

**Acute Oral Toxicity:** Oral LD50; Acute: 250 mg/Kg (rat), 464 mg/Kg (mouse);

**Acute Dermal Toxicity:** Dermal (LD50): Acute: 820 mg/Kg (rabbit), 1400 mg/Kg (rat)

**Acute Inhalation Toxicity:** Mouse (LD50) 247.5 ppm

See Hazardous identification

## **XII. Ecological Information**

**Ecotoxicological Information:** not available

**BOD5 and COD:** not available

**Products of Biodegradation:** Possibly hazardous short term degradation products are not likely. Long term degradation products may arise.

**Toxicity of products of Biodegradation:** Products of degradation are less toxic than the product itself.

## **XIII. Disposal Considerations**

**Waste Disposal Method:**

Discard any product, residue, disposable container or liner in full compliance with national regulations.

**Container Handling and Disposal:**

Dispose of container and unused contents in accordance with national regulations.

**XIV. Transportation Information**

**Shipping Name: ADR/RID/IMO/ICAO/US DOT**

IATA Special Provision - Aqueous solutions containing 1% or less aniline by volume is not subject to these regulations.

**Proper Shipping Name:** Not regulated  
**Hazard Class:** Not regulated  
**ID Number:** Not regulated  
**Packaging Group:** Not regulated  
**Hazard label:** Not regulated  
**Information reported for product/size:** 3 mL

**XV. Regulatory Information**

**U.S. Federal Regulations:**

**WARNING:** THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

California prop, 65; This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: aniline  
to cause birth defects or reproductive harm which requires a warning under the statute: aniline  
California prop, 65: No significant risk level: aniline: 0.1 mg/ml (value)  
Connecticut hazardous material survey: aniline  
Illinois toxic substances disclosure to employee act: aniline  
New York release reporting list: aniline  
Rhode Island RTK: aniline  
Pennsylvania RTK: aniline  
Minnesota: aniline  
Massachusetts RTK: aniline  
New Jersey: aniline  
Louisiana RTK: aniline  
California Director's list of Hazardous substances: aniline

**TSCA**

8(b) inventory: aniline  
8(b) inventory: aniline  
8(b) inventory: aniline  
Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes

**SARA Title III Hazard Classes:**

SARA 302/304/311/312 extremely hazardous substances: aniline :5000 lbs  
SARA 302/304/311/312 extremely hazardous substances: aniline

CERCLAL Hazardous substances: aniline: 5000 lbs (2268 kg)

**Australian Hazchem Code:** 3X

## Other Regulations:

### U.S. Federal and State Regulations:

California prop, 65: This product contains ingredients for which the State of California has found

### European/International Regulations

**EC Classification T:** Toxic

**EC Risk Phrases:** R2: Keep out of reach of children  
R23 Toxic by inhalation  
R24 Toxic in contact with skin  
R25 Toxic if swallowed  
R40 Limited evidence of a carcinogenic effect

**Safety Phrases:** S2 Keep out of reach of children  
S28 After contact with skin, wash immediately with plenty of water  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show label if possible)

### WHMIS (Canada):

Class D-1A: Material causing immediate and serious toxic effects (Very toxic)

Class D-2B: Material causing other toxic effects (Toxic)

## XVI. Other Information

### Key Legend Information:

**N/A** – Not Applicable

**ND** – Not Determined

**ACGIH** – American Conference of Governmental Industrial Hygienists

**OSHA** – Occupational Safety and Health Administration

**TLV** – Threshold Limit Value

**PEL** – Permissible Exposure Limit

**TWA** – Time Weighted Average

**STEL** – Short Term Exposure Limit

**NTP** – National Toxicology Program

**IARC** – International Agency for Research on Cancer

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**Product Name/Description:** Conjugate Spin Column

### I. Chemical Name or Synonym:

Sodium phosphate buffer

### II. Chemical Composition

Conjugate spin columns contain a 50% aqueous slurry of cross-linked in a sodium phosphate buffer with preservative.

Ingredient Name	CAS Number	%	EC number	Classification
Sodium phosphate,	10049-21-5	0.4%	231-449-2	Xi, R 36/37/38

monobasic				
Sodium phosphate, dibasic	7558-79-4	1.1 %	231-448-7	Xi, R 36/37/38
Sodium chloride	7647-14-5	0.88 %	231-598-3	Xi, R 36/37/38
Cellulose matrix	9004-34-6	50 – 75%	45 232-674-9	Not classified
Sodium azide	26628-22-8	<0.05%	247-852-1	T+; N, R 28-32-50/52
Water	07732-18-5	23-47%	N/A	Not controlled

### III. Hazards Identification

NFPA Ratings (Scale 0-4): Health = 2 Fire = 0 Reactivity = 0

Major Health Hazards: Respiratory tract irritation. Skin and eye irritation.

Sodium azide is highly toxic and is readily absorbed through skin. Sodium azide may react with lead and copper plumbing to form highly explosive metal azides.

**Concentration of Hazardous Components:** 0.5 mg sodium azide/ml (0.05%) of reconstituted product. According to the OSHA Hazard Communications Standard (CFR 1910.1200), if a mixture contains less than 1% of a hazardous chemical or 0.1% of a carcinogen, the mixture shall not be considered hazardous. However, precautions for handling potentially dangerous reagents should be practiced when using these products. To aide in determining handling procedures, we offer the following additional information.

**Toxicity Data:** LD 50 (sodium azide) = 27 mg/kg (rat-oral)

**Potential Hazard:** The only hazards identified with this product are those associated with sodium azide.

**Fire Hazard:** Sodium azide emits toxic fumes under fire conditions.

**Explosion Hazard:** Azide reacts with many heavy metals, including copper and lead, to form explosive compounds. Use large volumes of water to flush this product through any plumbing containing these heavy metals.

#### A. Emergency Overview:

##### Information Pertaining To Particular Dangers for Man and Environment:

CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist.

**Physical Appearance:** Aqueous gel slurry enclosed in a plastic housing.

#### B. Potential Health Effects:

**HMIS Rating:** Health: 2 Fire hazard: 0 Reactivity: 0 Personal protection: C

##### Acute Health Effects:

###### Acute Eye:

Direct contact may cause irritation with redness.

###### Acute Skin:

Direct contact may cause skin irritation with redness.

**Acute Inhalation:**

Acute and chronic exposure may cause irritation of the mucous membranes. Symptoms may include tightness and pain in the chest, coughing, and difficulty breathing. No significant adverse effects have been reported.

**Acute ingestion:**

Acute exposure may cause gastrointestinal irritation to the mouth and stomach.

**Chronic Health Effects:**

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Over-exposure signs and symptoms: Not available.

**IV. First Aid Measures****First Aid Measures for Accidental:****Eye Exposure:**

Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation develops seek medical attention.

**Skin Exposure:**

Wash affected areas with soap and water. If irritation develops seek medical attention.

**Inhalation:**

Move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel. SEEK MEDICAL ATTENTION.

**Ingestion:**

If a large amount is swallowed, rinse mouth out with water. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. SEEK MEDICAL ATTENTION.

**V. Fire Fighting Measures****Fire Hazard Data:**

**Flammability:** may be combustible at high temperature

**Autoignition:** not available

**Flash Point:** not available

**Flammability Limits (vol/vol%):** not available

**Lower: Upper:** not available

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products. Sodium azide emits toxic fumes under fire conditions.

**Unusual Fire and Explosion Hazards:** Sodium azide may react with lead and copper plumbing to form highly explosive metal azides.

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. No special measures are indicated.

## VII. Handling and Storage

**Handling/Storage:** Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Handle wearing appropriate lab personal protective equipment as gloves, lab coat, and goggles. Store material refrigerated. Eating, drinking, or smoking should be prohibited in areas where this material is handled, stored or processed. Do not get in eyes or on skin or clothing.

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

#### United States

Ingredient Name	ACGIH (USA)	NIOSH(USA)	OSHA-PELs (USA)
Sodium phosphate, dibasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium phosphate, monobasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium chloride	N/A	N/A	N/A
Cellulose	PEL-TWA: 10 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup> Inhalation  TWA: 10 mg/m <sup>3</sup> Total	TWA: 5 mg/m <sup>3</sup> Inhalation  TWA: 15 mg/m <sup>3</sup> Total
Sodium azide			

#### Europe

INGREDIENT NAME	EU OEL (TWA)	EU EOL (STEL)	EU Skin Notation	Austria OEL (MAK)	Belgium (TWA)	Denmark (TWA)	UK OEL (STEL)
Sodium azide	0.1mg/m <sup>3</sup>	0.3mg/m <sup>3</sup>	-	0.1mg/m <sup>3</sup>	0.1mg/m <sup>3</sup>	0.1mg/m <sup>3</sup>	0.3mg/m <sup>3</sup>

### Engineering Controls:

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

### Respiratory Protection:

Not required under anticipated use conditions.

### Eye / Face Protection:

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

**Skin Protection:**

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

**IX. Physical and Chemical Properties**

Component: Conjugate Spin Column  
Physical Appearance: White gel slurry in a plastic housing  
Percent Purity: 50% aqueous slurry  
Boiling Point: unknown  
Melting Point: unknown  
Specific gravity: 1.22  
Freezing Point: Not Available  
Solubility: cold and hot water, alcohol  
pH: 7.2

**X. Stability and Reactivity****Chemical Stability:**

This product is stable under normal use conditions.

**Conditions to Avoid:**

Not available

**Materials / Chemicals to Be Avoided:**

Highly reactive with oxidizing agents. Reactive with acids.

**Hazardous Decomposition Products:**

Phosphorus oxides may form when heated to decomposition. Halogenated compound, hydrogen chloride.

**Hazardous Polymerization:**

Will not occur.

**XI. Toxicological Information****Carcinogenicity:**

Carcinogenic effects: classified none by OSHA, none by NIOSH (sodium phosphate, dibasic), classified none by OSHA, none by NIOSH (sodium chloride), classified none by OSHA, none by NIOSH (sodium phosphate, monobasic)

Mutagenic effects: Classified Suspected for human (sodium chloride). Mutagenic for bacteria and or yeast (sodium chloride).

Teratogenic effects: Classified Suspected for human (sodium chloride).

Developmental toxicity: Classified reproductive system/toxi/female (proven) sodium chloride.

Classified developmental toxin (possible) sodium chloride

**Acute Toxicity: Sodium phosphate, dibasic:** Oral (LD50) acute: 17000 mg/kg rat

**Sodium chloride:** Oral (LD50) acute: 3000 mg/kg rat

Dermal (LD50) acute: 10000 mg/kg rabbit rat

Dust (LC50) acute: >42000 mg/m<sup>3</sup>/hr rat

**Sodium phosphate, monobasic:** LD50: not available, LC50: not available

**Sodium azide:** Oral (LD50): 27 mg/kg (rat), LD50L 20 mg/kg (rabbit), LC50:

Inhalation (LC50) 37 mg/m<sup>3</sup> (rat/mouse)

**See Hazardous identification**

## XII. Ecological Information

**Ecotoxicological Information:** No information available

**Mobility:** Not available

**Persistence/degradability:** Degradable

**Bioaccumulative potential;** Not available

**Ecotoxicity:** Toxic to aquatic environment

## XIII. Disposal Considerations

### Waste Disposal Method:

Discard any product, residue, disposable container or liner in full compliance with national regulations.

### Container Handling and Disposal:

Dispose of container and unused contents in accordance with national regulations.

## XIV. Transportation Information

**Shipping Name:** ADR/RID/IMO/ICAO/US DOT

**Proper Shipping Name:** Not Regulated

**Hazard Class:** Not Regulated

**ID Number:** Not Regulated

**Packaging Group:** Not Regulated

**Label Statement:** Not Regulated

## XV. Regulatory Information

### U.S. Federal Regulations:

**HCS Classification:** Irritating material

### SARA Title III Hazard Classes:

**SARA 302/304/312** extremely hazardous substances; no products were found

**SARA 302/304** emergency planning and notification: No products found.

**SARA 302/304/311/312** hazardous chemicals; sodium phosphate, dibasic; sodium chloride

**SARA 311/312 MSDS distribution**-chemical inventory-hazardous identification: sodium phosphate, dibasic; sodium chloride: immediate (Acute) health hazard, delayed (Chronic) health hazard

**Clean Water Act (CWA) 307:** no products were found

**Clean Water Act (CWA) 311:** Sodium phosphate, dibasic

**Clean Water Act (CAA) 112 :** accidental release prevention: No products were found

**Clean Water Act (CAA) 112:** Regulated flammable substances: No products were found

**Clean Water Act (CAA) 112:** Regulated toxic substances: No products were found

**TSCA:** TSCA 8(b) inventory; sodium phosphate, dibasic; sodium chloride

**CERCLA SECTION 103 (40CFR302.4):Sodium azide:** 1000 LBS RQ

**SARA SECTION 302 (40CFR355.30):** Not regulated.

**SARA SECTION 304 (40CFR355.40):** Not regulated.

**SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):**

ACUTE: No

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: No

**SARA SECTION 313 (40CFR372.65):** Not regulated.

**STATE REGULATIONS:**

**California Proposition 65:**

**CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** Not a Controlled Product under Canada's Workplace Hazardous Material Information System.

**EUROPEAN REGULATIONS:**

**EC CLASSIFICATION for Sodium azide**

**EC INDEX NO:** 011-004-00-7

VERY TOXIC

R 28

VERY TOXIC IF SWALLOWED.

R 32

CONTACT WITH ACIDS LIBERATES VERY TOXIC GAS.

S 3/9/49

AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF SOAPSUDS.

S 45

**ADVICE :** IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK

ACGIH TLV-NOT CLASSIFIABLE AS A HUMAN CARCINOGEN DTLVS\* TLV/BEI, 1999

ACGIH TLV-CL 0.29 MG/M3 (SODIUM AZIDE) DTLVS\* TLV/BEI, 1999

OEL-AUSTRALIA: TWA 0.1 PPM (0.3 MG/M3) JAN 1993

OEL-AUSTRIA: MAK 0.07 PPM (0.2 MG/M3), JAN1999

OEL-BELGIUM: STEL 0.11 PPM (0.3 MG/M3) JAN 1993

OEL-DENMARK: TWA 0.3 MG/M3, JAN1999

OEL-FINLAND: TWA 0.1 PPM (0.3 MG/M3); STEL 0.3 PPM (0.9 MG/M3) JAN 1993

OEL-GERMANY: TWA 0.07 PPM (0.2 MG/M3) JAN 1993

OEL-THE NETHERLANDS: TWA 0.1 PPM (0.3 MG/M3) JAN 1993

OEL-SWITZERLAND: TWA 0.07 PPM (0.2 MG/M3) JAN 1993

OEL-UNITED KINGDOM: TWA 0.1 PPM (0.3 MG/M3); STEL JAN 1993

OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV

OEL IN NEW ZEALAND SINGAPORE, VIETNAM CHECK ACGIH TLV

NIOSH REL TO SODIUM AZIDE, AS HN3-AIR: CL 0.1 PPM (SK)

NIOSH\* DHHS #92-100,1992

NOHS 1974: HZD 68820; NIS 13; TNF 877; NOS 10; TNE 5953

NOES 1983: HZD 68820; NIS 19; TNF 3640; NOS 27; TNE 54959; TFE 38370

EPA GENETOX PROGRAM 1988, POSITIVE: L5178Y CELLS IN VITRO-TK TEST

EPA GENETOX PROGRAM 1988, POSITIVE: D MELANOGASTER SEX-LINKED LETHAL

EPA GENETOX PROGRAM 1988, POSITIVE: S CEREVISIAE GENE CONVERSION

EPA GENETOX PROGRAM 1988, POSITIVE: S CEREVISIAE-FORWARD MUTATION; S CEREVISIAE- REVERSION

EPA GENETOX PROGRAM 1988, NEGATIVE: IN VITRO CYTOGENETICS-HUMAN LYMPHOCYTE

EPA GENETOX PROGRAM 1988, NEGATIVE: SPERM MORPHOLOGY-MOUSE; IN VITRO UDS-HUMAN

FIBROBLAST

EPA GENETOX PROGRAM 1988, NEGATIVE: TRP REVERSION

EPA GENETOX PROGRAM 1988, INCONCLUSIVE: CARCINOGENICITY-MOUSE/RAT;

TRP  
REVERSION  
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY  
EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES  
ON EPA IRIS DATABASE  
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, DECEMBER 1999  
NIOSH CURRENT INTELLIGENCE BULLETIN 13, 1976  
NTP CARCINOGENESIS STUDIES (GAVAGE); NO EVIDENCE: RAT  
NTPTR\* NTP-TR-389, 1991  
U.S. INFORMATION  
THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS.

### **U.S. State Regulations:**

Pennsylvania RTK: Sodium Phosphate, Dibasic  
Massachusetts RTK: Sodium Phosphate, Dibasic  
Massachusetts spill list: Sodium Phosphate, Dibasic  
New Jersey: Sodium Phosphate, Dibasic  
New Jersey spill list: Sodium Phosphate, Dibasic  
New Jersey toxic catastrophe prevention act: Sodium Phosphate, Dibasic

WHMIS (Canada)

DEPA DSL: Sodium Phosphate, Dibasic, Sodium Chloride

### **International Regulations:**

**EINECS:** not available

**DSCL (EEC):** R36/37/38- R50/53 Irritating to eyes, respiratory system and skin

**European**

**EC Classification** Xi: Irritant

T+: very toxic

**EC Risk and Safety Phrases:** R36 irritating to eyes

R37 irritating to respiratory system

R38 irritating to skin

R50 very toxic to aquatic organism

R53 may cause long-term adverse effects in aquatic environment

**Safety Phrases:** S23 Keep out of reach of children

S24 Avoid skin contact.

S25 Avoid contact with eyes

S26 In case of contact with eyes, rinse immediately with water  
and seek medical advice

S46 If swallowed, see medical advice immediately and show this  
container label

### **XVI. Other Information**

**NFPA:** Health 2 Flammability 0 Instability 0

**HMIS:** Health 2 Fire Hazard 0 Reactivity 0 Personal protection C

**Key Legend Information:**

N/A – Not Applicable  
ND – Not Determined  
ACGIH – American Conference of Governmental Industrial Hygienists  
OSHA – Occupational Safety and Health Administration  
TLV – Threshold Limit Value  
PEL – Permissible Exposure Limit  
TWA – Time Weighted Average  
STEL – Short Term Exposure Limit  
NTP – National Toxicology Program  
IARC – International Agency for Research on Cancer

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**Product Name/Description:** PBS (pH 6.5)

**Chemical Name or Synonym:**

PBS (pH 6.5)

## II. Chemical Composition

PBS is supplied as a 10 mM sodium phosphate, 150 mM sodium chloride buffer solution, pH 6.5

Ingredient Name	CAS Number	%	EC number	Classification
Sodium phosphate, monobasic	10049-21-5	0.03%	231-449-2	Xi, R 36/37/38
Sodium phosphate, dibasic	7558-79-4	0.1125 %	231-448-7	Xi, R 36/37/38
Sodium chloride	7647-14-5	0.875%	231-598-3	Xi, R 36/37/38
Water	07732-18-5	98.98	N/A	Not controlled

## III. Hazards Identification

NFPA Ratings (Scale 0-4): Health = 0 Fire = 0 Reactivity = 0

Major Health Hazards: Respiratory tract irritation. Skin and eye irritation.

Physical Hazards: None

### A. Emergency Overview:

**Information Pertaining To Particular Dangers for Man And Environment:** Not known

**Physical Appearance:** Clear, colorless liquid

### B. Potential Health Effects:

**Acute Eye:**

Direct contact may cause irritation with redness.

**Acute Skin:**

Direct contact may cause skin irritation with redness.

**Acute Inhalation:**

Acute and chronic exposure may cause irritation of the mucous membranes. Symptoms may include tightness and pain in the chest, coughing, and difficulty breathing. No significant adverse effects have been reported.

**Acute ingestion:**

Acute exposure may cause gastrointestinal irritation to the mouth and stomach.

## IV. First Aid Measures

### First Aid Measures for Accidental:

**Eye Exposure:**

Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation develops seek medical attention.

**Skin Exposure:**

Wash affected areas with soap and water. If irritation develops seek medical attention.

**Inhalation:**

Move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel. SEEK MEDICAL ATTENTION.

**Ingestion:**

If a large amount is swallowed, rinse mouth out with water. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. SEEK MEDICAL ATTENTION.

## V. Fire Fighting Measures

### Fire Hazard Data:

**Fire:** Materials contained in this product are not considered to be a fire hazard.

**Auto-ignition:** not applicable

**Flash Point:** not applicable

**Flammability Limits (vol/vol%):** not applicable **Lower: Upper:** not applicable

**Extinguishing Media:** Use extinguishing media appropriate for surrounding fire

**Special Fire Fighting Procedures:** Use extinguishing media appropriate for surrounding fire such as water spray, carbon dioxide, dry powder. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus. Avoid inhalation of material or combustion by-products.

**Unusual Fire and Explosion Hazards:** None

## VI. Accidental Release Measures

### Cleanup and Disposal of Spill:

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. No special measures are indicated.

## VII. Handling and Storage

**Handling/Storage:** Handle wearing gloves. Store material at room temperature.

## VIII. Exposure Controls / Personal Protection

### Exposure Guidelines:

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
Sodium phosphate, dibasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium phosphate, monobasic	PEL-TWA 1 mg/m <sup>3</sup>	Not listed	PEL-TWA 1 mg/m <sup>3</sup> PEL-STEL 3 mg/ m <sup>3</sup>
Sodium chloride	N/A	N/A	N/A

### Engineering Controls:

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

### Respiratory Protection:

Not required under anticipated use conditions.

### Eye / Face Protection:

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166.

### Skin Protection:

Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

Component: PBS (pH 6.5)  
Physical Appearance: Clear liquid  
Percent Purity: 100% PBS  
Boiling Point: 212°F, 100°C  
Melting Point: Not available  
Specific gravity: Not available  
Freezing Point: Not Available  
pH: 6.5  
Solubility in water: aqueous suspension

## X. Stability and Reactivity

### Chemical Stability:

Stable, may be slightly hygroscopic.

### Conditions to Avoid:

Temperatures <0°C or > 104°C

### Materials / Chemicals to Be Avoided:

No information is available

**Hazardous Decomposition Products:**

Phosphorus oxides may form when heated to decomposition

**Hazardous Polymerization:**

Will not occur.

**XI. Toxicological Information****Carcinogenicity:**

NTP: NO

IARC: NO

OSHA:NO

**Acute toxicity****Components**

WATER

SODIUM CHLORIDE

**RTECS Number:**

ZC0110000

VZ4725000 Inhalation

**Selected LD50s and LC50s**

Oral LD50 Rat = > 90 ml/kg

LC50 Rat : >42 gm/m<sup>3</sup>/1H

Oral LD50 Rat : 3 gm/kg

Oral LD50 Mouse : 4 gm/kg

Dermal LD50 Rabbit : >10 gm/kg

SODIUM PHOSPHATE DIBASIC WC4500000

ANHYDROUS

Oral LD50 Rat : 17 gm/kg

**XII. Ecological Information****Ecotoxicological Information:**

Leaches through the soil or the sediment at a moderate rate. Accumulates very little in bodies of living organisms.

**Mobility:** No data available

**Bioaccumulation:** No data available

**Ecotoxicity effects:** No data available

**Aquatic toxicity:** May cause long-term adverse effects in the aquatic environment.

**XIII. Disposal Considerations****Waste Disposal Method:**

Discard any product, residue, disposable container or liner in full compliance with national regulations.

**Container Handling and Disposal:**

Dispose of container and unused contents in accordance with national regulations.

**XIV. Transportation Information**

**Shipping Name:** ADR/RID/IMO/ICAO/US DOT

**Proper Shipping Name** Not Regulated

**Hazard Class** Not Regulated

**ID Number** Not Regulated

**Packaging Group** Not Regulated

**Label Statement** Not Regulated

## XV. Regulatory Information

### U.S. Federal Regulations:

#### SARA Title III Hazard Classes:

Fire Hazard: Not regulated  
Reactive Hazard: Not regulated  
Release of Pressure: Not regulated  
Acute Health Hazard: Not regulated  
Chronic Health Hazard: Not regulated

#### TSCA

All components of this product are on the TSCA inventory or are not listed.

### Other Regulations:

U.S. State None

#### European/International Regulations

EC Classification: Xi - Irritant

EC Risk and Safety Phrases: R36 irritating to eyes  
R37 irritating to respiratory system  
R38 irritating to skin

Safety Phrases: S23 Keep out of reach of children  
S24 Avoid skin contact.  
S25 Avoid contact with eyes  
S26 In case of contact with eyes, rinse immediately with water and seek medical advice  
S46 If swallowed, see medical advice immediately and show this container to label

## XVI. Other Information

### Key Legend Information:

N/A – Not Applicable  
ND – Not Determined  
ACGIH – American Conference of Governmental Industrial Hygienists  
OSHA – Occupational Safety and Health Administration  
TLV – Threshold Limit Value  
PEL – Permissible Exposure Limit  
TWA – Time Weighted Average  
STEL – Short Term Exposure Limit  
NTP – National Toxicology Program  
IARC – International Agency for Research on Cancer

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**Product Name/Description:** DMF (Anhydrous)

### I. Chemical Name or Synonym:

DMF, Dimethylformamide, formyldimethylamine, formamide, N,N-dimethyl

## II. Chemical Composition

Ingredient Name	CAS Number	%	EC number	Classification
DMF	68-12-2	>98-100%	200-679-5	T R20, R21, R36, R61 S45, S53

## III. Hazards Identification

NFPA Rating (Scale 0-4): Health = 2 –Moderate (life) Fire = 2 (moderate) Reactivity = 2 (moderate) Contact rating = 3 –severe (life)

**Major Health Hazards:** Warning, harmful if swallowed, inhaled or absorbed through skin. Causes irritation to skin, eyes, and respiratory tract. Toxic to liver. Affects kidneys, cardiovascular system and central nervous system. Causes alcohol intolerance and skin problems.

**Physical Hazards:** Flammable liquid and vapor

### A. Emergency Overview:

**Information Pertaining To Particular Dangers for Man And Environment:**

**Physical Appearance:** Clear liquid

### B. Potential Health Effects:

**Acute Eye:**

Direct contact causes irritation, redness and pain. May cause severe irritation and blurred vision.

**Acute Skin:**

Causes skin irritation with redness, itching, and pain. Can cause skin problems. Absorption can readily occur through the skin causing symptoms that parallel inhalation.

**Acute Inhalation:**

Exposure causes irritation to respiratory tract. of the mucous membranes. Symptoms may include coughing, shortness of breath, and difficulty breathing. May cause abdominal pain, loss of appetite, nausea, weakness, dizziness, headache, constipation, vomiting, diarrhea, increased blood pressure anxiety, and palpitations. A flushing of the face and skin may occur, especially coincident with ingestion of alcoholic beverages

**Acute ingestion:**

Ingestion causes gastrointestinal irritation. Symptoms parallel inhalation. Fatal dose estimated at 10 grams.

## IV. First Aid Measures

### First Aid Measures for Accidental:

**Eye Exposure:**

Immediately flush eyes with copious amounts of water for at least 15 minutes. Lift upper and lower eyelids occasionally. GET MEDICAL ATTENTION.  
develops seek medical attention.

**Skin Exposure:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. GET MEDICAL ATTENTION.

**Inhalation:**

Move to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen or artificial respiration by qualified personnel. GET MEDICAL ATTENTION.

**Ingestion:**

Give large amounts of water to drink. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. GET MEDICAL ATTENTION.

**V. Fire Fighting Measures****Fire Hazard Data:**

**Fire:** Material is considered flammable.

**Autoignition:** 445 °C (833 °F)

**Flash Point:** 58 °C (136 °F)

**Flammability Limits (vol/vol%):** Lower: 2.2 Upper: 15.2

**Extinguishing Media:** Use dry chemical, alcohol foam or carbon dioxide

**Special Fire Fighting Procedures:** In the event of a fire wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gas.

**VI. Accidental Release Measures****Cleanup and Disposal of Spill:**

Use standard lab personal protective equipment such as gloves, lab coat, and goggles and wipe spills with absorbent wipes and discard any product, residue, disposable container or liner in full compliance with national or international regulations. No special measures are indicated.

**VII. Handling and Storage**

**Handling/Storage:** Handle wearing gloves (latex or vinyl). Store material at room temperature.

**VIII. Exposure Controls / Personal Protection****Exposure Guidelines:**

Ingredient Name	ACGIH	NIOSH	OSHA-PELs
DMF or N,N-Dimethylformamide	10 ppm, skin	10 ppm, skin	10 ppm

**Engineering Controls:**

Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS. General room ventilation is satisfactory under anticipated use conditions.

**Respiratory Protection:**

If exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or other self-contained breathing apparatus approved by NIOSH.

**Eye / Face Protection:**

Wear appropriate safety glasses with side shields or chemical goggles as described by OSHA's eye and face protection regulations in 29CFR 1910.133 or European Standard EN166. Maintain eye wash fountain and quick-drench facilities in work area.

**Skin Protection:**

Wear chemical resistant gloves (such as latex or vinyl) and impervious protective clothing to prevent skin contact.

## IX. Physical and Chemical Properties

**Component:** DMF  
**Physical Appearance:** Clear liquid  
**Odor:** fishy, pungent.  
**Solubility:** completely soluble with water  
**Percent Purity:** 98-100%  
**% volatiles by volume @ 21°C :** 100  
**Boiling Point:** 307°F, 253°C  
**Melting Point:** 170-61°C  
**Specific gravity:** 0.949 @ 20 °C (68 °F)  
**Freezing Point:** Not Available  
**Evaporation rate (buAc =1):** 0.17  
**Vapor pressure (mmHg):** 2.7 @ 20 °C

## X. Stability and Reactivity

**Chemical Stability:**

Stable under ordinary conditions of use and storage

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

**Materials /Incompatibles/Chemicals to Be Avoided:**

Bromine, carbon tetrachloride, chromic anhydride, 2,5-dimethylpyrole, phosphorus oxychloride, hexachlorobenzene, magnesium nitrate, ethylene diisocyanate, phosphorus trioxide, triethyl aluminum, organic nitrates, acidic and alkaline materials and other halogenated compounds. Contact with iron or strong oxidizers may cause fires and explosions: may react violently with alkyl aluminums. Methylene diisocyanate can polymerize violently on contact with DMF.

**Hazardous Decomposition Products:**

May form ammonia, carbon dioxide, amines, and nitrogen oxides when heated to decomposition. Above 350 °C DMF begins to degrade with formation of dimethylamine and carbon monoxide.

**Hazardous Polymerization:**

Will not occur.

## XI. Toxicological Information

**Carcinogenicity:** NTP: Not listed, IARC: Not listed, ACGIH: Not listed, CA Prop 65: Not listed

Reported non-mutagenic in a number of assays using cultured cells, yeast and bacteria.

**Epidmiology:** Experimental reproductive effects have been reported

**Teratogenicity:** No information available

**Reproductive effects:** Similar compounds have shown reproductive effects.

**Neurotoxicity:** No information available.

**LD50/LC50 for CAS # 68-12-2**

**Acute Oral Toxicity:** LD50 rat, LD50 = 2800 mg/kg

**Acute Inhalation Toxicity:** rat LC50 = 3421 ppm/1H

**Skin toxicity:** LD50 rabbit 4.72 g/kg

See Hazardous identification

## XII. Ecological Information

### Ecotoxicological Information:

When released into soil or water this material is expected to readily biodegrade and is not expected to bioaccumulate. When released into the air, this material is expected to degrade by photochemical reaction to produce hydroxyl radicals.

## XIII. Disposal Considerations

### Waste Disposal Method:

Discard any product, residue, disposable container or liner in full compliance with national, state, and local regulations. Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility.

### Container Handling and Disposal:

Dispose of container and unused contents in accordance with national regulations.

## XIV. Transportation Information

### Shipping Name: ADR/RID/IMO/ICAO/US DOT

**Proper Shipping Name** RQ, N,N-Dimethylformamide  
**Hazard Class:** 3  
**UN:** UN2265  
**Packaging Group:** III

## XV. Regulatory Information

### U.S. Federal Regulations:

#### SARA Title III Hazard Classes:

Fire Hazard: Not regulated  
Reactive Hazard: Not regulated  
Release of Pressure: Not regulated  
Acute Health Hazard: Not regulated  
Chronic Health Hazard: Not regulated

#### TSCA

This product is on the TSCA inventory.

### Other Regulations:

**U.S. State** None

#### European/International Regulations

**EC Classification** T Toxic

**EC Risk and Safety Phrases:** R20 Harmful by inhalation  
R21 Harmful by contact with skin  
R36 Irritating to eyes  
R61 May cause harm to unborn child

**Safety Phrases:** S45 In case of accident or if you feel unwell; seek medical advice, show this label  
S53 Avoid exposure and obtain special instructions before use.

## **XVI. Other Information**

### **Key Legend Information:**

N/A – Not Applicable  
ND – Not Determined  
ACGIH – American Conference of Governmental Industrial Hygienists  
OSHA – Occupational Safety and Health Administration  
TLV – Threshold Limit Value  
PEL – Permissible Exposure Limit  
TWA – Time Weighted Average  
STEL – Short Term Exposure Limit  
NTP – National Toxicology Program  
IARC – International Agency for Research on Cancer

**The information contained herein is based on the data available to us and is believed to be correct. However Solulink Incorporated makes no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the**

# Material Safety Data Sheet

## 1. Product and company identification

**Product name** : Zeba™ Desalting Resin  
**Synonym** : Zeba™ Desalt Columns; Zeba™ 96-Well Desalt Plates; Chromix™ Desalting Columns; Zeba™ Desalt Columns, 7K MWCO

**Supplier** : Solulink  
9853 Pacific Heights Blvd  
Suite H  
San Diego, CA 92121  
United States  
858-625-0670  
or  
800.625.0670

**Manufacturer** : Thermo Fisher Scientific  
Pierce Biotechnology  
P.O. Box 117  
Rockford, IL 61105  
United States  
815.968.0747  
800.874.3723

**Product No.** : 0089877 0089877S 0089878 0089882 0089882S 0089883 0089889 0089890 0089891 0089891S 0089892 0089893 0089894 0089894 0089934 0089935 1859836 1859837 1860080 1860739 1861573 1862296

**MSDS #** : 7593  
**Validation date** : 2/26/2010.  
**Print date** : 2/26/2010.  
**Responsible name** : **MSDS Specialist**  
**In case of emergency** : CHEMTREC: **Use of Substance/Preparation**  
800.424.9300  
OUTSIDE US: 202.483.7616

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

## 2. Hazards identification

**Physical state** : Liquid. [slurry gel]  
**OSHA/HCS status** : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

**Emergency overview** : NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.  
No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.

**Routes of entry** : Eye contact. Inhalation. Ingestion.

**Potential acute health effects**

**Inhalation** : No known significant effects or critical hazards.  
**Ingestion** : No known significant effects or critical hazards.  
**Skin** : No known significant effects or critical hazards.  
**Eyes** : No known significant effects or critical hazards.

**Potential chronic health effects**

**Chronic effects** : No known significant effects or critical hazards.  
**Carcinogenicity** : No known significant effects or critical hazards.

2/26/2010.

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eba™ Desalting Resin

## 2. Hazards identification

**Mutagenicity** : No known significant effects or critical hazards.  
**Teratogenicity** : No known significant effects or critical hazards.  
**Developmental effects** : No known significant effects or critical hazards.  
**Fertility effects** : No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

**Inhalation** : No specific data.  
**Ingestion** : No specific data.  
**Skin** : No specific data.  
**Eyes** : No specific data.

**Medical conditions aggravated by over-exposure** : None known.

The preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

**Classification** : Not classified.

See toxicological information (section 11)

## 3. Composition/information on ingredients

**Substance/preparation** : Preparation

There are no ingredients or additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are

classified as hazardous to health or the environment and hence require reporting in this section.

## 4. First aid measures

- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if symptoms occur. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.
- See section 11 for more detailed information on health effects and symptoms.

2/26/2010.

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Zeba™ Desalting Resin

## 5. Fire-fighting measures

- Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous combustion products** : No specific data.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store between the following temperatures: 2 to 8 °C (35.6 to 46.4 °F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

**Zeba™ Desalting Resin****8 . Exposure controls/personal protection****Europe**

No exposure limit value known.

**Consult local authorities for acceptable exposure limits.**

**Recommended monitoring** : If this product contains ingredients with exposure limits, personal, workplace atmosphere **procedures** or biological monitoring may be required to determine the effectiveness of the ventilation

or other control measures and/or the necessity to use respiratory protective equipment.

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Personal protection****Respiratory**

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hands**

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Eyes**

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

**Skin**

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Environmental exposure controls**

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**9 . Physical and chemical properties****Physical state**

: Liquid. [slurry gel]

**Color**

: White.

**Relative density**

: 1.22

**Dispersibility properties**

: Easily dispersible in the following materials: cold water and hot water.

**Zeba™ Desalting Resin****10 . Stability and reactivity****Chemical stability**

: The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.

**Conditions to avoid**

: No specific data.

**Incompatible materials**

: No specific data.

**Hazardous decomposition products**

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**Possibility of hazardous reactions**

: Will not occur.

**11 . Toxicological information****United States****Acute toxicity****Conclusion/Summary**

: To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated.

**Chronic toxicity****Conclusion/Summary**

: Not available.

[Carcinogenicity](#)  
Conclusion/Summary : Not available.  
[Mutagenicity](#)  
Conclusion/Summary : Not available.  
[Teratogenicity](#)  
Conclusion/Summary : Not available.  
[Reproductive toxicity](#)  
Conclusion/Summary : Not available.

[Europe](#)

Chronic effects : No known significant effects or critical hazards.  
Carcinogenicity : No known significant effects or critical hazards.  
Mutagenicity : No known significant effects or critical hazards.  
Teratogenicity : No known significant effects or critical hazards.  
Developmental effects : No known significant effects or critical hazards.  
Fertility effects : No known significant effects or critical hazards.

## 12. Ecological information

[Environmental effects](#) : No known significant effects or critical hazards.

[United States](#)

[Aquatic ecotoxicity](#)

Conclusion/Summary : Not available.

[Other adverse effects](#) : No known significant effects or critical hazards.

### 13 . Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Hazardous waste** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

### 14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*
<b>DOT Classification</b>	Not regulated.	-	-	-
<b>IATA-DGR Class</b>	Not regulated.	-	-	-

PG\* : Packing group

### 15 . Regulatory information

#### United States

**HCS Classification** : Not regulated.

**U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.  
**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**: No products were found.  
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: No products were found.  
**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**: No products were found.  
**Clean Air Act (CAA) 112 regulated flammable substances**: No products were found.  
**Clean Air Act (CAA) 112 regulated toxic substances**: No products were found.

#### Canada

**WHMIS (Canada) Canadian lists** : Not controlled under WHMIS (Canada).  
: **CEPA Toxic substances**: None of the components are listed.  
**Canadian ARET**: None of the components are listed.  
**Canadian NPRI**: None of the components are listed.  
**Alberta Designated Substances**: None of the components are listed.  
**Ontario Designated Substances**: None of the components are listed.  
**Quebec Designated Substances**: None of the components are listed.

**Canada inventory** : **Canada inventory**: All components are listed or exempted.

# Material Safety Data Sheet

Solulink Biosciences  
9853 Pacific Heights Blvd, Ste H.  
San Diego, CA 92121

Tel: 858.625.0670  
Fax: 858.625.0770  
Prepared: 07/09/08

Zeba™ Desalting Resin

## 15. Regulatory information

### EU regulations

**Risk phrases** : This product is not classified according to EU legislation.  
:

### International regulations

#### International lists

: **Australia inventory (AICS)**: All components are listed or exempted.  
: **China inventory (IECSC)**: All components are listed or exempted.  
: **Korea inventory (KECI)**: All components are listed or exempted.  
: **Philippines inventory (PICCS)**: All components are listed or exempted.  
: **Japan inventory (ENCS)**: All components are listed or exempted.

## 16. Other information

**Label requirements** : NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

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

Health	0
Flammability	0
Physical hazards	0

The customer is responsible for determining the PPE code for this material.

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



**Date of printing** : 2/26/2010.

**Date of issue** : 2/26/2010.

**Date of previous issue** : 7/13/2009.

**Version** : 1.04

☑ Indicates information that has changed from previously issued version.

### Notice to reader

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.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

2/26/2010.

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