

# Material Safety Data Sheet

## 1. Product and company identification

**Product name** : Dulbecco's Phosphate Buffered Saline  
**Synonym** : Wash Buffer Powder  
**Supplier** : Thermo Fisher Scientific **Manufacturer** : Thermo Fisher Scientific  
 Pierce Biotechnology  
 P.O. Box 117  
 Rockford, IL 61105  
 United States  
 815.968.0747 or  
 800.874.3723  
 Pierce Biotechnology  
 P.O. Box 117  
 Rockford, IL 61105  
 United States  
 815.968.0747  
 800.874.3723

**Product No.** : 0028374 1858094 1887840  
**MSDS #** : 1093  
**Validation date** : 11/4/2009.  
**Print date** : 11/4/2009.  
**Responsible name** : MSDS (Regulatory Affairs)  
**In case of emergency** : CHEMTREC: **Use of** : Refer to the instruction booklet for  
 800.424.9300 **Substance/Preparation** proper and intended use.  
 OUTSIDE US: Otherwise, contact supplier for  
 202.483.7616 specific applications.

## 2. Hazards identification

**Physical state** : Solid. [Crystalline powder.]  
**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
**Emergency overview** : WARNING !  
 CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. CAN CAUSE TARGET ORGAN DAMAGE.  
 Harmful if swallowed. Irritating to eyes, respiratory system and skin. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat. Do not ingest. Avoid breathing dust. Avoid contact with eyes, skin and clothing. Can cause target organ damage. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

**Routes of entry** : Eye contact. Inhalation. Ingestion.  
**Potential acute health effects**  
**Inhalation** : Irritating to respiratory system.  
**Ingestion** : Harmful if swallowed.  
**Skin** : Irritating to skin.  
**Eyes** : Irritating to eyes.

**Potential chronic health effects**  
**Chronic effects** : Can cause target organ damage.  
**Carcinogenicity** : No known significant effects or critical hazards.

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## 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.  
**Target organs** : Causes damage to the following organs: heart.  
 Contains material which causes damage to the following organs: mucous membranes, gastrointestinal tract, skin, eye, lens or cornea.  
 Contains material which may cause damage to the following organs: stomach.

### Over-exposure signs/symptoms

**Inhalation** : Adverse symptoms may include the following:  
 respiratory tract irritation  
 coughing  
**Ingestion** : No specific data.  
**Skin** : Adverse symptoms may include the following:  
 irritation  
 redness  
**Eyes** : Adverse symptoms may include the following:  
 pain or irritation  
 watering  
 redness  
**Medical conditions aggravated by over-exposure** : Pre-existing digestive disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

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

### United States

| Name                           | CAS number | %       |
|--------------------------------|------------|---------|
| Sodium Chloride                | 7647-14-5  | 80 - 95 |
| Sodium Phosphate, Dibasic      | 7558-79-4  | 10 - 20 |
| Potassium Chloride             | 7447-40-7  | 1 - 3   |
| Potassium Phosphate, Monobasic | 7778-77-0  | 1 - 3   |

### Europe

**Substance/preparation** : Preparation

| Ingredient name           | CAS number | %       | EC number | Classification   |
|---------------------------|------------|---------|-----------|------------------|
| Sodium Phosphate, Dibasic | 7558-79-4  | 10 - 20 | 231-448-7 | Xi;<br>R36/37/38 |

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.

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

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**3. Composition/information on ingredients**

Occupational exposure limits, if available, are listed in section 8.

**4. First aid measures**

- Inhalation** : Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. 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. 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. Continue to rinse for at least 10 minutes. Get medical attention. 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.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See section 11 for more detailed information on health effects and symptoms.

**5. Fire-fighting measures**

- Flammability of the product** : No specific fire or explosion hazard.
- 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** : Decomposition products may include the following materials:  
phosphorus oxides  
halogenated compounds  
metal oxide/oxides
- 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.

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**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 dust. 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** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste 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 breathe dust. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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: 20 to 25°C (68 to 77°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.

**8. Exposure controls/personal protection**

- Europe**  
No exposure limit value known.
- Consult local authorities for acceptable exposure limits.**
- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere 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** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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**8 . Exposure controls/personal protection**

**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. If operating conditions cause high dust concentrations to be produced, use dust goggles.

**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** : Solid. [Crystalline powder.]  
**Color** : White.  
**pH** : 7.2 to 7.6 [Conc. (% w/w): 1%]  
**Solubility** : Easily soluble in the following materials: cold water and hot water.

**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.

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**11 . Toxicological information**

**United States**

**Acute toxicity**

| Product/ingredient name             | Result               | Species    | Dose        | Exposure |
|-------------------------------------|----------------------|------------|-------------|----------|
| sodium chloride                     | LD50 Dermal          | Rabbit     | 10000 mg/kg | -        |
|                                     | LD50 Intraperitoneal | Rat        | 2600 mg/kg  | -        |
|                                     | LD50 Oral            | Rat        | 3000 mg/kg  | -        |
|                                     | LDLo                 | Rat        | 3.72 g/kg   | -        |
|                                     | LD50 Intraperitoneal | Rat        | 3500 mg/kg  | -        |
|                                     | LDLo Subcutaneous    | Rat        | 3500 mg/kg  | -        |
| sodium phosphate, dibasic           | LC50 Inhalation      | Rat        | >42 gm/m3   | 1 hours  |
|                                     | Dusts and mists      |            |             |          |
|                                     | LD50 Oral            | Rat        | 17000 mg/kg | -        |
|                                     | LDLo                 | Rat        | 1 g/kg      | -        |
|                                     | Intraperitoneal      |            |             |          |
|                                     | LDLo                 | Rat        | 1 g/kg      | -        |
| potassium chloride                  | Intramuscular        |            |             |          |
|                                     | LDLo                 | Rat        | 1 g/kg      | -        |
|                                     | Subcutaneous         |            |             |          |
|                                     | LD50                 | Rat        | 660 mg/kg   | -        |
|                                     | Intraperitoneal      |            |             |          |
|                                     | LD50 Intravenous     | Rat        | 142 mg/kg   | -        |
| phosphoric acid, monopotassium salt | LD50 Intravenous     | Rat        | 142 mg/kg   | -        |
|                                     | LD50 Oral            | Rat - Male | 2600 mg/kg  | -        |
|                                     | TDL0                 | Rat        | 272.7 mg/kg | -        |
|                                     | Intracerebral        |            |             |          |
|                                     | LD50 Dermal          | Rabbit     | >4640 mg/kg | -        |
|                                     | LDLo Oral            | Rat        | 4640 mg/kg  | -        |

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name             | ACGIH | IARC | EPA | NIOSH | NTP | OSHA  |
|-------------------------------------|-------|------|-----|-------|-----|-------|
| sodium chloride                     | -     | -    | -   | None. | -   | None. |
| sodium phosphate, dibasic           | -     | -    | -   | None. | -   | None. |
| potassium chloride                  | -     | -    | -   | None. | -   | None. |
| phosphoric acid, monopotassium salt | -     | -    | -   | None. | -   | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Europe**

**Chronic effects** : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

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**11 . Toxicological information**

- 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** : Irritating material  
Target organ effects
- U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.

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**15 . Regulatory information**

- 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**: potassium chloride; sodium phosphate, dibasic; sodium chloride
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: potassium chloride: Immediate (acute) health hazard, Delayed (chronic) health hazard; sodium phosphate, dibasic: Immediate (acute) health hazard; 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 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)** : Class D-2B: Material causing other toxic effects (Toxic).
- Canadian lists** : **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.
- 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** : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF SWALLOWED. CAN CAUSE TARGET ORGAN DAMAGE.
- Hazardous Material Information System (U.S.A.)** :

|                  |   |
|------------------|---|
| Health           | 2 |
| Flammability     | 0 |
| Physical hazards | 0 |

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

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

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## 16 . Other information



Date of printing : 11/4/2009.  
Date of issue : 11/4/2009.  
Date of previous issue : 2/13/2008.  
Version : 1.01

Indicates information that has changed from previously issued version.

Full text of R-phrases : R36/37/38- Irritating to eyes, respiratory system and skin.  
referred to in sections 2 and  
3 - Europe

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

### 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.