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# MSDS# 8964 COVER SHEET

| 90103 | iodoTMTsimplex™ Isobaric Mass Tag Labeling Kit |
|---|---|
| | |
| Component # | Description |
| 1862754 | HES Buffer |
| 1860741 | Bond-Breaker TCEP Solution |
| 1862613 | iodoTMT6-126 Label Reagent |
| 1862614 | iodoTMT6-127 Label Reagent |
| 1862615 | iodoTMT6-128 Label Reagent |
| 1862616 | iodoTMT6-129 Label Reagent |
| 1862617 | iodoTMT6-130 Label Reagent |
| 1862618 | iodoTMT6-131 Label Reagent |
| 1862748 | Trypsin Endoproteinase |
| 1856180 | Albumin |
| 1861446 | Trypsin Storage Solution |
| 1859330 | No-Weigh DTT |

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# Material Safety Data Sheet

HES Buffer

## 1. Product and company identification

**Product name** : HES Buffer

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

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

**Code** : 1862754

**MSDS #** 8956

**Validation date** : 8/27/2012.

**Print date** : 8/27/2012.

**Responsible name** MSDS Specialist

**CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Liquid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Liquid.

**Color** : Clear.

**Hazard statements** : MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

**Precautionary measures** : Avoid breathing vapor or mist. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

**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.

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

**Potential acute health effects**

**Inhalation** : Slightly irritating to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Ingestion** : No known significant effects or critical hazards.

**Skin** : Slightly irritating to the skin.

**Eyes** : Slightly irritating to the eyes.

**Potential chronic health effects**



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## 2. Hazards identification

**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.

**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:
irritation
watering
redness

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

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**United States**

| Name | CAS number | % |
|---|---|---|
| 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid | 7365-45-9 | 1 - 3 |

**There are no 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

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.



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## 4. First aid measures

**Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

## 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 thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur 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.

## 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).

**Methods for cleaning up**

**Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

**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.

## 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. 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



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## 7. Handling and storage

product residue and can be hazardous. Do not reuse container.

**Storage** : 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

**Canada**

**Occupational exposure limits**

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.

**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 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.



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## 9. Physical and chemical properties

**Physical state** : Liquid.

**Color** : Clear.

**pH** : 8

**Solubility** : Soluble in the following materials: cold water and hot water.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**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** : Under normal conditions of storage and use, hazardous reactions will not occur.

## 11. Toxicological information

**United States**

**Acute toxicity**

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Canada**

**Acute toxicity**

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**



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## 11. Toxicological information

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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.**



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## 14. Transport information

| Regulatory information | UN number | Proper shipping name | Classes | PG* |
|---|---|---|---|---|
| DOT Classification | Not regulated. | - | - | - |
| IATA-DGR Class | Not regulated. | - | - | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Not regulated.

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**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**: 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid: Immediate (acute) health hazard

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**

**Massachusetts** : None of the components are listed.

**New York** : None of the components are listed.

**New Jersey** : None of the components are listed.

**Pennsylvania** : None of the components are listed.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Canada**

**WHMIS (Canada)** : Not controlled under WHMIS (Canada).

**Canadian lists**

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

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



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## 15. Regulatory information

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

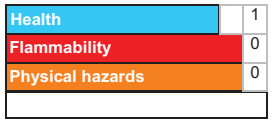
**International regulations**

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
**China inventory (IECSC)**: All components are listed or exempted.
**Japan inventory**: Not determined.
**Korea inventory**: Not determined.
**New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
**Philippines inventory (PICCS)**: All components are listed or exempted.

## 16. Other information

**Label requirements** : MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

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




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

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


**Date of printing** : **8/27/2012.**

**Date of issue** : 8/27/2012.

**Date of previous issue** : No previous validation.

**Version** : 1

**Prepared by** : MSDS Specialist

**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.**



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# Material Safety Data Sheet

TCEP Solution

## 1. Product and company identification

**Product name** : TCEP Solution

**Synonym** : BondBreaker® TCEP; Reducing Reagent

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

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

**Code** : 0077720 0077720B 1860741 1861438

**MSDS #** : 3975

**Validation date** : 6/24/2011.

**Print date** : 6/24/2011.

**Responsible name** : MSDS Specialist

**In case of emergency** : **CHEMTREC:
800.424.9300
OUTSIDE US:
703.527.3887**

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

**Product type** : Liquid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Liquid. [Clear sparkling liquid.]

**Color** : Colorless.

**Odor** : Unpleasant.

**Signal word** : DANGER!

**Hazard statements** : CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

**Precautionary measures** : Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do not get in eyes. Do not get on skin. Do not eat, drink or smoke when using this product. Avoid prolonged contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

**Potential acute health effects**

**Inhalation** : Corrosive to the respiratory system.



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## 2. Hazards identification

**Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

**Skin** : Corrosive to the skin. Causes burns. Harmful in contact with skin.

**Eyes** : Corrosive to eyes. Causes burns.

**Potential chronic health effects**

**Chronic effects** : Contains material that can cause target organ damage.

**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.

**Target organs** : Contains material which causes damage to the following organs: mucous membranes, upper respiratory tract, skin, eyes.

**Over-exposure signs/symptoms**

**Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing

**Ingestion** : Adverse symptoms may include the following:
stomach pains

**Skin** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

**Eyes** : Adverse symptoms may include the following:
pain
watering
redness

**Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**United States**

| Name | CAS number | % |
|---|---|---|
| Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride | 51805-45-9 | 10 - 20 |

**Canada**

| Name | CAS number | % |
|---|---|---|
| Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride | 51805-45-9 | 10 - 20 |

**There are no 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.**



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## 4. First aid measures

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 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 thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
phosphorus oxides
halogenated compounds

**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. Do not breathe 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).

**Methods for cleaning up**

**Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.



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*TCEP Solution*

## 6. Accidental release measures

**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.

## 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. 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 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

**Canada**

**Occupational exposure limits**
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.

**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.



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## 8. Exposure controls/personal protection

**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 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. [Clear sparkling liquid.]

**Flash point** : [Product does not sustain combustion.]

**Color** : Colorless.

**Odor** : Unpleasant.

**pH** : 6.5 to 6.7

**Dispersibility properties** : Partially dispersible in the following materials: cold water and hot water.

**Solubility** : Easily soluble in the following materials: cold water and hot water.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**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** : Under normal conditions of storage and use, hazardous reactions will not occur.

## 11. Toxicological information

**United States**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride | LD50 Dermal | Rabbit | 3000 mg/kg | - |
| | LD50 Intraperitoneal | Rat | >1024 mg/kg | - |
| | LD50 Oral | Rat | 3500 mg/kg | - |

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**



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## 11. Toxicological information

**Conclusion/Summary** : Not available.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Canada**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride | LD50 Dermal | Rabbit | 3000 mg/kg | - |
| | LD50 Intraperitoneal | Rat | >1024 mg/kg | - |
| | LD50 Oral | Rat | 3500 mg/kg | - |

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**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.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.



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## 12. Ecological information

**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. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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* |
|---|---|---|---|---|
| DOT Classification | UN3265 | Corrosive liquid, acidic, organic, n.o.s. (Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride) | 8 | III |
| IATA-DGR Class | UN3265 | Corrosive liquid, acidic, organic, n.o.s. (Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride) | 8 | III |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Corrosive material
Target organ effects

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**United States inventory (TSCA 8b)**: At least one component is not listed.

**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**: Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: Propanoic acid, 3,3',3"-phosphinidynetris-, hydrochloride: Immediate (acute) health hazard, Delayed (chronic) health hazard



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## 15. Regulatory information

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**

**Massachusetts** : None of the components are listed.

**New York** : None of the components are listed.

**New Jersey** : None of the components are listed.

**Pennsylvania** : None of the components are listed.

**United States inventory (TSCA 8b)** : At least one component is not listed.

**Canada**

**WHMIS (Canada)** : Class E: Corrosive material

**Canadian lists**

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

**Canada inventory** : At least one component is not listed.

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

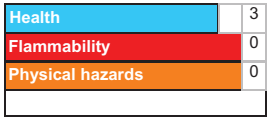
**International regulations**

**International lists** : **Australia inventory (AICS)**: Not determined.
**China inventory (IECSC)**: Not determined.
**Japan inventory**: Not determined.
**Korea inventory**: Not determined.
**New Zealand Inventory of Chemicals (NZIoC)**: Not determined.
**Philippines inventory (PICCS)**: Not determined.

## 16. Other information

**Label requirements** : CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

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




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



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## 16. Other information

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


**Date of printing** : **6/24/2011.**

**Date of issue** : 6/24/2011.

**Date of previous issue** : No previous validation.

**Version** : 1

**Prepared by** : MSDS Specialist

**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.**



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# Material Safety Data Sheet

iodoTMT™ Reagents

## 1. Product and company identification

**Product name** : iodoTMT™ Reagents

**Synonym** : iodoTMTzero; iodoTMTsixplex-126; iodoTMTsixplex-127; iodoTMTsixplex-128; iodoTMTsixplex-129; iodoTMTsixplex-130; iodoTMTsixplex-131

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

**Manufacturer** : Thermo Fisher Scientific
Pierce Biotechnology
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United States
815.968.0747 or
800.874.3723

**Code** : 0090100 0090100B 0090101 0090101B 0090102 0090102B 1896459 1896460 1896461 1896462 1896463 1896464 1896465 1862607 1862608 1862609 1862610 1862611 1862612 1862613 1862614 1862615 1862616 1862617 1862618 1862757

**MSDS #** 8829

**Validation date** : 8/28/2012.

**Print date** : 8/28/2012.

**Responsible name** MSDS Specialist

**CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Solid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Solid.

**Signal word** : WARNING!

**Hazard statements** : HARMFUL IF INHALED. CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

**Precautionary measures** : Do not ingest. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Avoid prolonged contact with eyes, skin and clothing. Keep container closed. Wash thoroughly after handling.

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

**Potential acute health effects**

**Inhalation** : Toxic by inhalation.

**Ingestion** : Harmful if swallowed.



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## 2. Hazards identification

**Skin** : Harmful in contact with skin. Irritating to skin.

**Eyes** : Irritating to eyes.

**Potential chronic health effects**

**Chronic effects** : Contains material that can cause target organ damage.

**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.

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

**Over-exposure signs/symptoms**

**Inhalation** : No specific data.

**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 disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**United States**

| Name | CAS number | % |
|---|---|---|
| methanol | 67-56-1 | 1 - 3 |

**Canada**

| Name | CAS number | % |
|---|---|---|
| methanol | 67-56-1 | 1 - 3 |

**There are no 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

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.



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## 4. First aid measures

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 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 thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

**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. 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).

**Methods for cleaning up**

**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.

**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. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.



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## 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not ingest. 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 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

**United States**

| Ingredient | Exposure limits |
|---|---|
| methanol | **ACGIH (United States, 0/2003). Absorbed through skin.**<br>CEIL: 200 ppm<br>**ACGIH (United States). Absorbed through skin.**<br>STEL: 250 ppm<br>TWA: 200 ppm<br>**MSHA (United States). Absorbed through skin.**<br>TWA: 260 mg/m³<br>**NIOSH (United States). Absorbed through skin.**<br>STEL: 250 ppm<br>TWA: 200 ppm<br>**OSHA (United States, 0/2003). Absorbed through skin.**<br>STEL: 250 ppm<br>TWA: 200 ppm<br>**ACGIH TLV (United States, 3/2012). Absorbed through skin.**<br>STEL: 328 mg/m³ 15 minute(s).<br>STEL: 250 ppm 15 minute(s).<br>TWA: 262 mg/m³ 8 hour(s).<br>TWA: 200 ppm 8 hour(s).<br>**NIOSH REL (United States, 6/2009). Absorbed through skin.**<br>STEL: 325 mg/m³ 15 minute(s).<br>STEL: 250 ppm 15 minute(s).<br>TWA: 260 mg/m³ 10 hour(s).<br>TWA: 200 ppm 10 hour(s).<br>**OSHA PEL (United States, 6/2010).**<br>TWA: 260 mg/m³ 8 hour(s).<br>TWA: 200 ppm 8 hour(s).<br>**OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.**<br>STEL: 325 mg/m³ 15 minute(s).<br>STEL: 250 ppm 15 minute(s).<br>TWA: 260 mg/m³ 8 hour(s).<br>TWA: 200 ppm 8 hour(s). |

**Canada**



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## 8. Exposure controls/personal protection

| Occupational exposure limits | | TWA (8 hours) | | | STEL (15 mins) | | | Ceiling | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingredient | List name | ppm | mg/m³ | Other | ppm | mg/m³ | Other | ppm | mg/m³ | Other | Notations |
| methanol | US ACGIH 3/2012 | 200 | 262 | - | 250 | 328 | - | - | - | - | [1] |
| | AB 4/2009 | 200 | 262 | - | 250 | 328 | - | - | - | - | [1] |
| | BC 9/2011 | 200 | - | - | 250 | - | - | - | - | - | [1] |
| | ON 7/2010 | 200 | 262 | - | 250 | 328 | - | - | - | - | [1] |
| | QC 9/2011 | 200 | 262 | - | 250 | 328 | - | - | - | - | [1] |

[1]Absorbed through skin.

**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. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants 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 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** : Solid.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**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** : Under normal conditions of storage and use, hazardous reactions will not occur.



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## 11. Toxicological information

**United States**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| methanol | LC50 Inhalation Gas. | Rat | 145000 ppm | 1 hours |
| | LC50 Inhalation Gas. | Rat | 64000 ppm | 4 hours |
| | LC50 Inhalation Vapor | Rat | 83.2 mg/L | 4 hours |
| | LD50 Dermal | Rabbit | 15800 mg/kg | - |
| | LD50 Oral | Rat | 5600 mg/kg | - |

**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.

**Irritation/Corrosion**

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| methanol | Eyes - Moderate irritant | Rabbit | - | 24 hours 100 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 40 milligrams | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| methanol | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Canada**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| methanol | LC50 Inhalation Gas. | Rat | 145000 ppm | 1 hours |
| | LC50 Inhalation Gas. | Rat | 64000 ppm | 4 hours |
| | LC50 Inhalation Vapor | Rat | 83.2 mg/L | 4 hours |
| | LD50 Dermal | Rabbit | 15800 mg/kg | - |
| | LD50 Oral | Rat | 5600 mg/kg | - |

**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.



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## 11. Toxicological information

**Irritation/Corrosion**

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| methanol | Eyes - Moderate irritant | Rabbit | - | 24 hours 100 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 40 milligrams | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| methanol | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| methanol | Acute EC50 16.912 mg/L Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute LC50 2500000 ug/L Marine water | Crustaceans - Crangon crangon - Adult | 48 hours |
| | Acute LC50 3289 to 4395 mg/L Fresh water | Daphnia - Daphnia magna - Neonate - <24 hours | 48 hours |
| | Acute LC50 290 mg/L Fresh water | Fish - Danio rerio - Egg - esa:856s:7pt | 96 hours |

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|



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## 12. Ecological information

| | | | |
|---|---|---|---|
| methanol | Acute EC50 16.912 mg/L Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute LC50 2500000 ug/L Marine water | Crustaceans - Crangon crangon - Adult | 48 hours |
| | Acute LC50 3289 to 4395 mg/L Fresh water | Daphnia - Daphnia magna - Neonate - <24 hours | 48 hours |
| | Acute LC50 290 mg/L Fresh water | Fish - Danio rerio - Egg - esa:856s:7pt | 96 hours |

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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* |
|---|---|---|---|---|
| DOT Classification | Not regulated. | - | - | - |
| IATA-DGR Class | Not regulated. | - | - | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Toxic material
Irritating material
Target organ effects

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**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**: methanol
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: methanol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**SARA 313**

| | Product name | CAS number | Concentration |
|---|---|---|---|
| **Form R - Reporting requirements** | methanol | 67-56-1 | 1 - 3 |
| **Supplier notification** | methanol | 67-56-1 | 1 - 3 |

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations**

**Massachusetts** : The following components are listed: METHANOL

**New York** : The following components are listed: Methanol

**New Jersey** : The following components are listed: METHYL ALCOHOL; METHANOL

**Pennsylvania** : The following components are listed: METHANOL

**California Prop. 65**

**WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

| Ingredient name | Cancer | Reproductive | No significant risk level | Maximum acceptable dosage level |
|---|---|---|---|---|
| methanol | No. | Yes. | No. | No. |

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Canada**

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

**Canadian lists**

**Canadian NPRI** : The following components are listed: Methanol



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## 15. Regulatory information

**CEPA Toxic substances** : None of the components are listed.

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

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

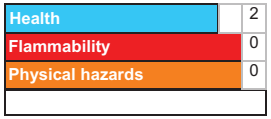
**International regulations**

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
**China inventory (IECSC)**: All components are listed or exempted.
**Japan inventory**: All components are listed or exempted.
**Korea inventory**: All components are listed or exempted.
**New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
**Philippines inventory (PICCS)**: All components are listed or exempted.

## 16. Other information

**Label requirements** : HARMFUL IF INHALED. CAUSES EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

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




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

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


**Date of printing** : **8/28/2012.**

**Date of issue** : 8/28/2012.

**Date of previous issue** : 8/27/2012.

**Version** : 1.03

**Prepared by** : MSDS Specialist

**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.**



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# Material Safety Data Sheet

Pierce Trypsin Protease

## 1. Product and company identification

**Product name** : Pierce Trypsin Protease

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

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

**Code** : 0090057 0090057S 0090058 0090059 1862748

**MSDS #** 9018

**Validation date** : 11/8/2012.

**Print date** : 11/8/2012.

**Responsible name** MSDS (Regulatory Specialist)

**CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Solid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Solid. [Lyophilized.]

**Odor** : Odorless.

**Signal word** : WARNING!

**Hazard statements** : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

**Precautionary measures** : Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

**Potential acute health effects**

**Inhalation** : Irritating to respiratory system.

**Ingestion** : No known significant effects or critical hazards.

**Skin** : Irritating to skin.

**Eyes** : Irritating to eyes.

**Potential chronic health effects**



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## 2. Hazards identification

**Chronic effects** : Contains material that can cause target organ damage.

**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.

**Target organs** : Contains material which causes damage to the following organs: lungs, upper respiratory tract, skin, eyes.

**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 disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**United States**

| Name | CAS number | % |
|---|---|---|
| trypsin | 9002-07-7 | 98 - 100 |

**Canada**

| Name | CAS number | % |
|---|---|---|
| trypsin | 9002-07-7 | 98 - 100 |

**There are no 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

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.



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## 4. First aid measures

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**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.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 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 thermal decomposition 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. 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).

**Methods for cleaning up**

**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.

**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. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.





## 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. Remove contaminated clothing and protective equipment before entering eating areas. 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 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

**Canada**

**Occupational exposure limits**
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. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**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.

**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, particulate filter 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**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 or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

## 8. Exposure controls/personal protection

**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. [Lyophilized.]

**Odor** : Odorless.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**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** : Under normal conditions of storage and use, hazardous reactions will not occur.

## 11. Toxicological information

**United States**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| trypsin | LD50 Oral | Rat | >5 g/kg | - |

**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.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| trypsin | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.



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*Pierce Trypsin Protease*

## 11. Toxicological information

**Canada**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| trypsin | LD50 Oral | Rat | >5 g/kg | - |

**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.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| trypsin | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.



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## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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* |
|---|---|---|---|---|
| DOT Classification | Not regulated. | - | - | - |
| IATA-DGR Class | Not regulated. | - | - | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Irritating material
Target organ effects

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**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**: trypsin
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: trypsin: Delayed (chronic) health hazard
**Clean Water Act (CWA) 311**: acetic acid

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed



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## 15. Regulatory information

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**

**Massachusetts** : None of the components are listed.

**New York** : None of the components are listed.

**New Jersey** : None of the components are listed.

**Pennsylvania** : The following components are listed: trypsin

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Canada**

**WHMIS (Canada)** : Class D-2B: Material causing other toxic effects (Toxic).

**Canadian lists**

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

**Canada inventory** : Not determined.

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

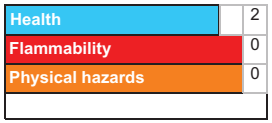
**International regulations**

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
**China inventory (IECSC)**: All components are listed or exempted.
**Japan inventory**: Not determined.
**Korea inventory**: All components are listed or exempted.
**Malaysia Inventory (EHS Register)**: Not determined.
**New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
**Philippines inventory (PICCS)**: All components are listed or exempted.
**Taiwan inventory (CSNN)**: Not determined.

## 16. Other information

**Label requirements** : CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

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




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

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


**Date of printing** : **11/8/2012.**

**Date of issue** : 11/8/2012.



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## 16. Other information

**Date of previous issue** : No previous validation.
**Version** : 1
**Prepared by** : MSDS (Regulatory Specialist)

**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.**



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# Material Safety Data Sheet

Bovine Serum Albumin

## 1. Product and company identification

**Product name** : Bovine Serum Albumin

**Synonym** : Albumin, bovine serum; Human serum albumin

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

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

**Code** : 1856180 1859695 1879370 1883480 1889598 1890253 1890254 1891655 1891658 1896443 1896448 1896479 1896611

**MSDS #** : 3817

**Validation date** : 1/10/2013.

**Print date** : 1/10/2013.

**Responsible name** : MSDS (Regulatory Specialist)

**In case of emergency** : **CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Solid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Solid. [Crystalline.]

**Color** : White. Off-white.

**Odor** : Characteristic. [Slight]

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

**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.

**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.



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## 2. Hazards identification

**Potential chronic health effects**

**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.

**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.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**There are no 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

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 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.



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## 5. Fire-fighting measures

**Hazardous thermal decomposition 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. 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).

**Methods for cleaning up**

**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.

**Large spill** : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## 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. Remove contaminated clothing and protective equipment before entering eating areas.

**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.

## 8. Exposure controls/personal protection

**Canada**

**Occupational exposure limits**

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** : 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.



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*Bovine Serum Albumin*

## 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 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** : Solid. [Crystalline.]

**Color** : White. Off-white.

**Odor** : Characteristic. [Slight]

**pH** : 6.7 to 7.3 [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.

**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** : Under normal conditions of storage and use, 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 substance have not been thoroughly investigated.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.



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## 11. Toxicological information

**Sensitizer**

**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.

**Canada**

**Acute toxicity**

**Conclusion/Summary** : To the best of our knowledge, the toxicological properties of this substance have not been thoroughly investigated.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**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.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

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



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*Bovine Serum Albumin*

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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* |
|---|---|---|---|---|
| DOT Classification | Not regulated. | - | - | - |
| IATA-DGR Class | Not regulated. | - | - | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Not regulated.

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: This material is listed or exempted.
**United States inventory (TSCA 8b)**: This material is 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 Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**



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## 15. Regulatory information

| | | |
|---|---|---|
| **Massachusetts** | : | This material is not listed. |
| **New York** | : | This material is not listed. |
| **New Jersey** | : | This material is not listed. |
| **Pennsylvania** | : | This material is not listed. |
| **United States inventory (TSCA 8b)** | : | This material is listed or exempted. |

**Canada**

| | | |
|---|---|---|
| **WHMIS (Canada)** | : | Not controlled under WHMIS (Canada). |
| **Canadian lists** | | |
| **Canadian NPRI** | : | This material is not listed. |
| **CEPA Toxic substances** | : | This material is not listed. |
| **Canada inventory** | : | This material is listed or exempted. |

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

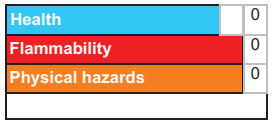
**International regulations**

**International lists** : **Australia inventory (AICS)**: This material is listed or exempted.
**China inventory (IECSC)**: This material is listed or exempted.
**Japan inventory**: Not determined.
**Korea inventory**: This material is listed or exempted.
**New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.
**Philippines inventory (PICCS)**: This material is 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.)** :




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

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


| | | |
|---|---|---|
| **Date of printing** | : | **1/10/2013.** |
| **Date of issue** | : | 1/10/2013. |
| **Date of previous issue** | : | 10/1/2012. |
| **Version** | : | 1.04 |
| **Prepared by** | : | MSDS (Regulatory Specialist) |

**Indicates information that has changed from previously issued version.**



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## 16. Other information

**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.**



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# Material Safety Data Sheet

Trypsin Storage Solution, 50µl

## 1. Product and company identification

**Product name** : Trypsin Storage Solution, 50µl

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

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

**Code** : 1859622 1861446

**MSDS #** : 7231

**Validation date** : 7/19/2011.

**Print date** : 7/19/2011.

**Responsible name** : MSDS Specialist

**In case of emergency** : **CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Liquid.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Liquid.

**Color** : Clear

**Odor** : Odorless.

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

**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.

**Routes of entry** : Dermal contact. 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.



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## 2. Hazards identification

**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.

**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.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**There are no 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

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 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 thermal decomposition products** : No specific data.



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## 5. Fire-fighting measures

**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. 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).

**Methods for cleaning up**

**Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

**Large spill** : Stop leak if without risk. Move containers from spill area. 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. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 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. Remove contaminated clothing and protective equipment before entering eating areas.

**Storage** : 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

**Canada**

**Occupational exposure limits**
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** : 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.



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*Trypsin Storage Solution, 50µl*

## 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 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.

**Flash point** : [Product does not sustain combustion.]

**Color** : Clear

**Odor** : Odorless.

**Dispersibility properties** : Dispersible in the following materials: cold water and hot water.

**Solubility** : Soluble in the following materials: cold water and hot water.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**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** : Under normal conditions of storage and use, 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.



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## 11. Toxicological information

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**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.

**Canada**

**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.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**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.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.



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*Trypsin Storage Solution, 50µl*

## 12. Ecological information

**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. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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* |
|---|---|---|---|---|
| DOT Classification | Not regulated. | - | - | - |
| IATA-DGR Class | Not regulated. | - | - | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Not regulated.

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**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) 311**: Hydrogen chloride

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed



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## 15. Regulatory information

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**

**Massachusetts** : None of the components are listed.

**New York** : None of the components are listed.

**New Jersey** : None of the components are listed.

**Pennsylvania** : None of the components are listed.

**United States inventory (TSCA 8b)** : All components are listed or exempted.

**Canada**

**WHMIS (Canada)** : Not controlled under WHMIS (Canada).

**Canadian lists**

**Canadian NPRI** : None of the components are listed.

**CEPA Toxic substances** : None of the components are listed.

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

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

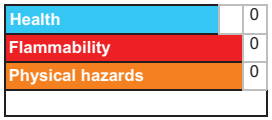
**International regulations**

**International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
**China inventory (IECSC)**: All components are listed or exempted.
**Japan inventory**: All components are listed or exempted.
**Korea inventory**: All components are listed or exempted.
**New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
**Philippines inventory (PICCS)**: 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.)** :




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

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


**Date of printing** : **7/19/2011.**

**Date of issue** : 7/19/2011.

**Date of previous issue** : No previous validation.



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*Trypsin Storage Solution, 50µl*

## 16. Other information

**Version** : 1

**Prepared by** : MSDS Specialist

**◤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.**



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# Material Safety Data Sheet

Dithiothreitol (DTT)

## 1. Product and company identification

**Product name** : Dithiothreitol (DTT)

**Synonym** : 2,3-Butanediol, 1,4-dimercapto-, (2R,3R)-rel-; 1,4-Dithiothreitol; 2,3-Butanediol, 1, 4-dimercapto-, ( theta, theta)-; 2,3-Butanediol, 1,4-dimercapto-, (R*,R*)-; 2,3-Butanediol, 1,4-dimercapto-, D-threo-

**Chemical formula** : C4-H10-O2-S2

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

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

**Code** : 0020290 0020290B 0020291 1859330 1859618 1862792 1870800 NCI0290 NCI0291

**MSDS #** : 5179

**Validation date** : 11/9/2012.

**Print date** : 11/9/2012.

**Responsible name** : MSDS (Regulatory Specialist)

**In case of emergency** : **CHEMTREC:**
**800.424.9300**
**OUTSIDE US:**
**703.527.3887**

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

**Product type** : Powder.

## 2. Hazards identification

**Emergency overview**

**Physical state** : Solid. [Crystalline powder.]

**Color** : White.

**Odor** : Stench. [Strong]

**Signal word** : WARNING!

**Hazard statements** : HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CAN CAUSE TARGET ORGAN DAMAGE.

**Precautionary measures** : Do not breathe dust. Do not ingest. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

**Potential acute health effects**



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## 2. Hazards identification

**Inhalation** : Irritating to respiratory system.

**Ingestion** : Toxic if swallowed.

**Skin** : Irritating to skin.

**Eyes** : Irritating to eyes.

**Potential chronic health effects**

**Chronic effects** : Can cause target organ damage. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

**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.

**Target organs** : Causes damage to the following organs: mucous membranes, upper respiratory tract, skin, eyes, central nervous system (CNS).

**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 disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

**See toxicological information (Section 11)**

## 3. Composition/information on ingredients

**United States**

| Name | CAS number | % |
|---|---|---|
| (R*,R*)-1,4-dimercaptobutane-2,3-diol | 3483-12-3 | 98 - 100 |

**Canada**

| Name | CAS number | % |
|---|---|---|
| (R*,R*)-1,4-dimercaptobutane-2,3-diol | 3483-12-3 | 98 - 100 |

**There are no 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.**



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## 4. First aid measures

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

## 5. Fire-fighting measures

**Flammability of the product** : Fine dust clouds may form explosive mixtures with air.

**Extinguishing media**

**Suitable** : Use dry chemical powder.

**Not suitable** : Do not use water jet.

**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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur 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.

## 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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe 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).

**Methods for cleaning up**

**Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.



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*Dithiothreitol (DTT)*

## 6. Accidental release measures

**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. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. 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. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage** : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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

**Canada**

**Occupational exposure limits**

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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.



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## 8. Exposure controls/personal protection

**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 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.]

**Flash point** : Closed cup: 113°C (235.4°F)

**Color** : White.

**Odor** : Stench. [Strong]

**Molecular weight** : 154.25 g/mole

**Molecular formula** : C4-H10-O2-S2

**pH** : 4 to 6.5 [Conc. (% w/w): 1.5%]

**Boiling/condensation point** : 125 to 130°C (257 to 266°F)

**Melting/freezing point** : 42 to 43°C (107.6 to 109.4°F)

**Relative density** : 1

**Vapor density** : <5.3 [Air = 1]

**Volatility** : 0% (v/v)

**Solubility** : Easily soluble in the following materials: cold water, hot water, diethyl ether and acetone.

## 10. Stability and reactivity

**Chemical stability** : The product is stable.

**Conditions to avoid** : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.

**Incompatible materials** : Reactive or incompatible with the following materials:
oxidizing materials

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

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.



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## 11. Toxicological information

**United States**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | LD50 Oral | Rat | 400 mg/kg | - |

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Can cause central nervous system (CNS) depression. Can cause gastrointestinal disturbances.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Laboratory experiments have shown mutagenic effects.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Canada**

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | LD50 Oral | Rat | 400 mg/kg | - |

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Can cause central nervous system (CNS) depression. Can cause gastrointestinal disturbances.

**Irritation/Corrosion**

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**



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## 11. Toxicological information

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|---|---|---|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | - | - | - | None. | - | None. |

**Mutagenicity**

**Conclusion/Summary** : Laboratory experiments have shown mutagenic effects.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

**United States**

**Aquatic ecotoxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | Acute LC50 27000 to 30000 ug/L Fresh water | Daphnia - Daphnia magna - <24 hours | 48 hours |

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada**

**Aquatic ecotoxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| (R*,R*)-1, 4-dimercaptobutane-2,3-diol | Acute LC50 27000 to 30000 ug/L Fresh water | Daphnia - Daphnia magna - <24 hours | 48 hours |

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**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. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**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.**



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## 14. Transport information

| Regulatory information | UN number | Proper shipping name | Classes | PG* |
|---|---|---|---|---|
| DOT Classification | UN3335 | Aviation regulated solid, n.o.s. (Dithiothreitol) ((R*, R*)-1, 4-dimercaptobutane-2, 3-diol) | 9 | - |
| IATA-DGR Class | UN3335 | Aviation regulated solid, n.o.s. (Dithiothreitol) ((R*, R*)-1, 4-dimercaptobutane-2, 3-diol) | 9 | - |

PG* : Packing group

## 15. Regulatory information

**United States**

**HCS Classification** : Toxic material
Irritating material
Target organ effects

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
**United States inventory (TSCA 8b)**: This material is 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 Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**State regulations**

**Massachusetts** : This material is not listed.

**New York** : This material is not listed.

**New Jersey** : This material is not listed.

**Pennsylvania** : This material is not listed.

**United States inventory (TSCA 8b)** : This material is listed or exempted.



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## 15. Regulatory information

**Canada**

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

**Canadian lists**

**Canadian NPRI** : This material is not listed.

**CEPA Toxic substances** : This material is not listed.

**Canada inventory** : This material is listed or exempted.

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.**

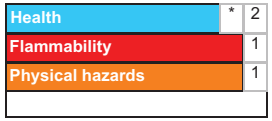
**International regulations**

**International lists** : **Australia inventory (AICS)**: This material is listed or exempted.
**China inventory (IECSC)**: This material is listed or exempted.
**Japan inventory**: Not determined.
**Korea inventory**: Not determined.
**New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.
**Philippines inventory (PICCS)**: This material is listed or exempted.

## 16. Other information

**Label requirements** : HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CAN CAUSE TARGET ORGAN DAMAGE.

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




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

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


**Date of printing** : **11/9/2012.**

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**Version** : 1.02

**Prepared by** : MSDS (Regulatory Specialist)

**Indicates information that has changed from previously issued version.**

**Notice to reader**



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