

## Material Safety Data Sheet

### 1. Product and company identification

**Product name** : HisProbe™-HRP  
**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  
 800.874.3723

**Product No.** : 0015165  
**MSDS #** : 2485  
**Validation date** : 8/28/2009.  
**Print date** : 8/28/2009.  
**Responsible name** : MSDS Specialist  
**In case of emergency** : CHEMTREC: 800.424.9300  
 OUTSIDE US: 202.483.7616  
**Use of Substance/Preparation** : Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

### 2. Hazards identification

**Physical state** : Solid. [Solid pellets.]  
**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
**Emergency overview** : WARNING !  
 HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.  
 Toxic if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation. Avoid exposure - obtain special instructions before use. Do not ingest. Avoid contact with eyes, skin and clothing. Contains material that may cause target organ damage, based on animal data. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

**Routes of entry** : Eye contact. Inhalation. Ingestion.  
**Potential acute health effects**  
**Inhalation** : Irritating to respiratory system. May cause sensitization by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.  
**Ingestion** : Toxic if swallowed.  
**Skin** : Irritating to skin.  
**Eyes** : Irritating to eyes.

8/28/2009.

1/10

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### 2. Hazards identification

#### Potential chronic health effects

**Chronic effects** : Contains material that may cause target organ damage, based on animal data.  
**Carcinogenicity** : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.  
**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 may cause damage to the following organs: lungs, skin, nose/sinuses.

#### Over-exposure signs/symptoms

**Inhalation** : Adverse symptoms may include the following:  
 respiratory tract irritation  
 coughing  
 wheezing and breathing difficulties  
 asthma  
**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 respiratory and digestive disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

The preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

**Classification** : Xn; R22  
**Human health hazards** : Harmful if swallowed.

See toxicological information (section 11)

### 3. Composition/information on ingredients

#### United States

Name	CAS number	%
Horseradish Peroxidase	9003-99-0	80 - 95
Nickel(II) Chloride Hexahydrate	7791-20-0	7 - 10
MES	4432-31-9	1 - 3

#### Europe

**Substance/preparation** : Preparation

Ingredient name	CAS number	%	EC number	Classification
Nickel(II) Chloride Hexahydrate	7791-20-0	7 - 10	231-743-0	T; R25 [1] [2]

8/28/2009.

2/10

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### 3. Composition/information on ingredients

There are no ingredients or additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

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

### 4. First aid measures

**Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. 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. In the event of any complaints or symptoms, avoid further exposure.

**Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

**Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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

**Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

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

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### 5. Fire-fighting measures

**Flammability of the product** : No specific fire or explosion hazard.

**Extinguishing media**

**Suitable** : Use an extinguishing agent suitable for the surrounding fire.  
**Not suitable** : None known.

**Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Hazardous combustion products** : Decomposition products may include the following materials:  
carbon oxides  
nitrogen oxides  
sulfur oxides  
halogenated compounds  
metal oxide/oxides

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

### 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).

**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.

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

### 7. Handling and storage

**Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. 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.

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## 7. Handling and storage

**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

### Product name

### Exposure limits

#### United States

nickel(ii) chloride hexahydrate

**OSHA PEL 1989 (United States, 3/1989).**  
TWA: 0.1 mg/m<sup>3</sup>, (as Ni) 8 hour(s). Form: Soluble  
**NIOSH REL (United States, 6/2008).**  
TWA: 0.015 mg/m<sup>3</sup>, (as Ni) 10 hour(s).  
**ACGIH TLV (United States, 1/2008).**  
TWA: 0.1 mg/m<sup>3</sup>, (as Ni) 8 hour(s). Form: Soluble  
**OSHA PEL (United States, 11/2006).**  
TWA: 1 mg/m<sup>3</sup>, (as Ni) 8 hour(s).

#### Europe

nickel(ii) chloride hexahydrate

**ACGIH TLV (United States, 1/2008).**  
TWA: 0.1 mg/m<sup>3</sup>, (as Ni) 8 hour(s). Form: Soluble

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, gases or dusts.

#### Skin

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

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5/10

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## 8. Exposure controls/personal protection

**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. [Solid pellets.]

**Color** : Tan. Brown.

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

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

## 10. Stability and reactivity

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

**Conditions to avoid** : Avoid exposure - obtain special instructions before use.

**Incompatible materials** : No specific data.

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

**Possibility of hazardous reactions** : Will not occur.

## 11. Toxicological information

### United States

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
nickel(ii) chloride hexahydrate	LD50 Oral	Rat	105 mg/kg	-
	LD50 Oral	Rat	186 mg/kg	-
	TDL <sub>o</sub>	Rat	4 mg/kg	-
	Intraperitoneal TDL <sub>o</sub>	Rat	6 mg/kg	-
	Intraperitoneal			

**Conclusion/Summary** : Not available.

#### Chronic toxicity

**Conclusion/Summary** : Not available.

#### Carcinogenicity

**Conclusion/Summary** : Not available.

#### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
nickel(ii) chloride hexahydrate	A4	1	-	+	-	-
4-morpholineethanesulfonic acid monohydrate	-	-	-	None.	-	None.

#### Mutagenicity

**Conclusion/Summary** : Not available.

#### Teratogenicity

**Conclusion/Summary** : Not available.

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6/10

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## 11 . Toxicological information

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Europe

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

## 12 . Ecological information

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

### United States

#### Aquatic ecotoxicity

**Conclusion/Summary** : Not available.

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

## 13 . Disposal considerations

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

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

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

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

## 14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*
<b>DOT Classification</b>	UN3288	Toxic solid, inorganic, n.o.s. (nickel(ii) chloride hexahydrate)	6.1	III
<b>IATA-DGR Class</b>	Not available.	Not available.	Not available.	-

PG\* : Packing group

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## 15 . Regulatory information

### United States

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

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

**SARA 302/304/311/312 extremely hazardous substances**: No products were found.

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

**SARA 302/304/311/312 hazardous chemicals**: Peroxidase; nickel(ii) chloride hexahydrate

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: Peroxidase: Immediate (acute) health hazard; nickel(ii) chloride hexahydrate: Immediate (acute) health hazard, Delayed (chronic) health hazard

**Clean Water Act (CWA) 307**: nickel(ii) chloride hexahydrate

**Clean Water Act (CWA) 311**: No products were found.

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

**Clean Air Act (CAA) 112 regulated flammable substances**: No products were found.

**Clean Air Act (CAA) 112 regulated toxic substances**: No products were found.

### SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
<b>Form R - Reporting requirements</b>	: nickel(ii) chloride hexahydrate	7791-20-0	7 - 10
<b>Supplier notification</b>	: nickel(ii) chloride hexahydrate	7791-20-0	7 - 10

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.

### California Prop. 65

**WARNING**: This product contains a chemical known to the State of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
nickel(ii) chloride hexahydrate	Yes.	No.	No.	No.

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

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

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

**Alberta Designated Substances**: None of the components are listed.

**Ontario Designated Substances**: None of the components are listed.

**Quebec Designated Substances**: None of the components are listed.

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

### EU regulations

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## 15 . Regulatory information

Hazard symbol or symbols :



Harmful

Risk phrases : R22- Harmful if swallowed.

### International regulations

International lists : **Australia inventory (AICS):** All components are listed or exempted.  
**China inventory (IECS):** All components are listed or exempted.  
**Korea inventory (KECI):** All components are listed or exempted.  
**Philippines inventory (PICCS):** Not determined.  
**Japan inventory (ENCS):** Not determined.

## 16 . Other information

Label requirements : HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC RESPIRATORY REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

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

Health	*	2
Flammability		0
Physical hazards		0

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

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



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 Date of previous issue : No previous validation.  
 Version : 1

Indicates information that has changed from previously issued version.

Full text of R-phrases referred to in sections 2 and 3 - Europe : R25- Toxic if swallowed.  
 R22- Harmful if swallowed.  
 Full text of classifications referred to in sections 2 and 3 - Europe : T - Toxic  
 Xn - Harmful

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9/10

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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.

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

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