

## Material Safety Data Sheet

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

Responsible Name MSDS\_Specialist

**? Section 1. Chemical Product and Company Identification****Product Name** ImmunoPure® Antibody Binding/Wash Buffer**Product no.** 1852200**Supplier** In USA:  
Thermo Fisher Scientific  
P.O. Box 117  
Rockford, IL 61105  
USA  
815.968.0747 or  
1.800.874.3723**In Europe:**  
Perbio Science  
Industriezone III  
Industrielaan 27  
9320 Erembodegem-Aalst  
Belgium  
Tel:+32 53 83 44 04  
Fax:+32 53 83 76 38**Manufacturer** Pierce  
3747 N. Meridian Road  
P.O. Box 117  
Rockford, IL 61105  
USA  
815.968.0747 or  
1.800.874.3723  
(815)968-7316 fax  
www.thermo.com**In case of emergency** CHEMTREC:  
800.424.9300  
OUTSIDE US:  
703.527.3887**Print date** 10/25/2007**Validation date** 10/25/2007**MSDS#** 3749**Use of the substance/preparation** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.**Section 2. Composition, Information on Ingredients****Substance/preparation** : Preparation

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>	<u>EC number</u>	<u>Classification</u>
Boric Acid	10043-35-3	1 - 3	233-139-2	Repr. Cat. 2; R60, 61

**Section 3. Hazards identification****United States** Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.**Emergency overview** Warning!CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:  
REPRODUCTIVE SYSTEM, RESPIRATORY TRACT, SKIN, EYES, TESTES.

Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

**Target organs** Contains material which causes damage to the following organs: the reproductive system, upper respiratory tract, skin, eyes, testes.**Routes of entry** Dermal contact. Eye contact. Inhalation. Ingestion.**Potential acute health effects****Eyes** Irritating to eyes.**Skin** Irritating to skin.**Inhalation** Irritating to respiratory system.**Ingestion** No known significant effects or critical hazards.**Potential chronic health effects****Carcinogenic effects****CARCINOGENIC EFFECTS:** Classified None. by OSHA, None. by NIOSH [boric acid]. Classified A4 (Not classifiable for human or animal.) by ACGIH [boric acid]. Classified None. by NIOSH [sodium hydroxide].**MUTAGENIC EFFECTS:** Mutagenic for bacteria and/or yeast. [boric acid]. Classified POSSIBLE for human [sodium hydroxide].**TERATOGENIC EFFECTS:** Classified POSSIBLE for human [boric acid].**Medical conditions aggravated by overexposure****Continued on Next Page**

*Over-exposure signs/symptoms*

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.  
Not available.

**Europe**

**Classification** Repr. Cat. 2; R60, 61

*Physical/chemical hazards* Not applicable.

*Human health hazards* May impair fertility.  
May cause harm to the unborn child.

*Environmental hazards* Not applicable.

See toxicological Information (section 11)

**+ Section 4. First aid measures**

**Notice to reader** Get immediate medical attention.

**Effects and symptoms**

*Inhalation* Slightly hazardous in case of inhalation (lung irritant, lung corrosive). Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Over-exposure by inhalation may cause respiratory irritation.

*Ingestion* May be fatal if swallowed. May cause burns to mouth, throat and stomach.

*Skin contact* Sensitization of the product: Not available.  
Hazardous in case of skin contact (corrosive). Skin contact may produce burns.

*Eye contact* Hazardous in case of eye contact (corrosive).

*Aggravating conditions* Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**First-Aid measures**

*Inhalation* If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

*Ingestion* 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 appear.

*Skin contact* In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

*Eye contact* In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

*Notes to physician* Not available.

*Protection of first-aiders* Not available.

** Section 5. Fire fighting measures**

*Flammability of the product* May be combustible at high temperature.

*Flash Points* Not available.

*Fire hazards in presence of various substances* Not available.

*Fire fighting media and instructions* Use an extinguishing agent suitable for surrounding fires.

*Protective clothing (fire)* Be sure to use an approved/certified respirator or equivalent.

*Hazardous thermal decomposition products* Some metallic oxides.

## Section 6. Accidental release measures

**Personal precautions** Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

**Environmental precautions and clean-up methods** Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. **Neutralize the residue with a dilute solution of sodium carbonate.**

**Small spill and leak** Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: **Neutralize the residue with a dilute solution of sodium carbonate.**

## ◇ Section 7. Handling and storage

**Handling** Wash thoroughly after handling.

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

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

**Packaging materials**

**Suitable / Not suitable** Use original container.

## Section 8. Exposure Controls, Personal Protection

**Engineering Controls** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the workstation location.

### Exposure Limit Values

#### Ingredient Name

#### Occupational Exposure Limits

#### United States

Boric Acid

ACGIH TLV (United States).  
 STEL: 6 mg/m<sup>3</sup>  
 TWA: 2 mg/m<sup>3</sup>  
 STEL: 6 mg/m<sup>3</sup> 15 minute(s).  
 TWA: 2 mg/m<sup>3</sup> 8 hour(s).

#### Personal Protection

**Eyes** Splash goggles.

**Body** Lab coat.

**Hands** Gloves.

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

**Feet** Boots.

Protective Clothing  
(Pictograms)



## Section 9. Physical and chemical properties

**Physical State** Liquid.

**Color** Not available.

**Odor** Not available.

**Molecular weight** Not applicable.

**Taste** Not available.

**pH** Acidic.

**Boiling/condensation point** The lowest known value is 100°C (212°F) (water).

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- Melting/freezing point** May start to solidify at 0°C (32°F) based on data for: water.
- Critical temperature** The lowest known value is 374.2°C (705.6°F) (water).
- Specific Gravity** Weighted average: 1 (Water = 1)
- Vapor pressure** The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (water).
- Vapor density** The highest known value is 0.62 (Air = 1) (water).
- Evaporation rate** 0.36 (water) compared to (n-BUTYL ACETATE=1)
- Viscosity** Dynamic: The highest known value is 1 cP (water)
- Dispersion properties** See solubility in water, methanol, acetone.
- Solubility** Easily soluble in methanol, acetone.  
Soluble in cold water, hot water.

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 **Section 10. Stability and reactivity**

- Stability and Reactivity** The product is stable.
- Conditions to avoid** Sodium azide may react with lead or copper plumbing to form highly explosive metal azides. (sodium azide)
- Materials to avoid** Not available.
- Hazardous polymerization** Will not occur.
- Hazardous Decomposition Products** Not available.

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 **Section 11. Toxicological information**

- Toxicity to Animals**
- |                         |  |
|-------------------------|--|
| <b>water:</b>           |  |
| ORAL (LD50):            | Acute: >90000 mg/kg [ Rat].                                    |
| <b>boric acid:</b>      |  |
| ORAL (LD50):            | Acute: 2500 mg/kg [Rat]. 2660 mg/kg [Rat]. 3450 mg/kg [Mouse]. |
| <b>sodium hydroxide</b> |  |
| LD50: Not available.    |  |
| LC50: Not available.    |  |
| <b>sodium azide:</b>    |  |
| ORAL (LD50):            | Acute: 27 mg/kg [Rat]. 27 mg/kg [Mouse]. 23.7 mg/kg [Birds.].  |
| DERMAL (LD50):          | Acute: 20 mg/kg [Rabbit]. 50 mg/kg [Rat].                      |
- Chronic Effects on Humans** **CARCINOGENIC EFFECTS:** Classified None. by OSHA, None. by NIOSH [boric acid]. Classified A4 (Not classifiable for human or animal.) by ACGIH [boric acid]. Classified None. by NIOSH [sodium hydroxide].  
**MUTAGENIC EFFECTS:** Mutagenic for bacteria and/or yeast. [boric acid]. Classified POSSIBLE for human [sodium hydroxide].  
**TERATOGENIC EFFECTS:** Classified POSSIBLE for human [boric acid].  
**DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female, Reproductive system/toxin/male [POSSIBLE] [boric acid].  
Contains material which causes damage to the following organs: the reproductive system, upper respiratory tract, skin, eyes, testes.
- Other Toxic Effects on Humans** Slightly hazardous in case of eye contact (irritant), of ingestion, of inhalation (lung irritant).
- Special Remarks on Toxicity to Animals** Not available.
- Special Remarks on Chronic Effects on Humans** Exposure can cause stomach pains, vomiting and diarrhea. May cause convulsions. Can cause CNS depression. Laboratory experiments have shown mutagenic effects. Testicular damage in animal. (boric acid)
- Special Remarks on Other Toxic Effects on Humans** Exposure can cause nausea, headache and vomiting. May cause convulsions. Material is irritating to mucous membranes and upper respiratory tract. (boric acid)
- Carcinogenicity** No known significant effects or critical hazards.
- Mutagenicity** No known significant effects or critical hazards.
- Reproductive toxicity** Contains material which may cause birth defects based on animal data.

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Over-exposure signs/symptoms

*Inhalation* No known significant effects or critical hazards.

*Ingestion* No known significant effects or critical hazards.

*Skin* No known significant effects or critical hazards.

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



**Section 12. Ecological information**

*Mobility* Not available.

*Persistence/degradability* Not available.

*Bioaccumulative potential* Not available.

*Ecotoxicity* Not available.

*Germany water class* VCI WGK: No products were found.

Ecotoxicity data

Ingredient name

Boric Acid

Species

Daphnia magna (EC50)  
Daphnia magna (EC50)  
Daphnia magna (EC50)  
Oncorhynchus mykiss (LC50)  
Lepomis macrochirus (LC50)  
Oncorhynchus mykiss (LC50)

Period

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

Result

133 mg/l  
226 mg/l  
777 mg/l  
>800 mg/l  
>1021 mg/l  
>1100 mg/l

Other ecological information

Persistence/degradability

Ingredient name

BOD<sub>5</sub>

COD

Ingredient name

Aquatic half-life

Photolysis

Bioaccumulative potential

Ingredient name

boric acid

LogP<sub>ow</sub>

0.175

BCF

-

low

*Mobility* : Not available.

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



**Section 13. Disposal considerations**

*Waste Stream* Not available.

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

*European waste catalogue (EWC)* Not available.

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

*Denmark – Carcinogenic waste* Not available.

*Denmark - Waste card number* Not available.

*Denmark - Waste group* Not available.

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Sweden - thermoset plastic waste Not available.

Sweden - Waste group Not available.

Austria - Waste catalogue Not available.

Norway - Waste number Not available.

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

Switzerland - Waste code Not available.

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## Section 14. Transport information

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

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## Section 15. Regulatory information

### Label Requirements (Europe)

R60- May impair fertility.  
R61- May cause harm to the unborn child.  
S53- Avoid exposure - obtain special instructions before use. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).



**Toxic**

### HCS Classification

**Irritating material**  
**Target organ effects**

**U.S. Federal Regulations** TSCA 8(b) inventory: water; boric acid; sodium hydroxide; sodium azide

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: boric acid

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: boric acid: Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: sodium hydroxide

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.

**State regulations** Pennsylvania RTK: sodium hydroxide: (environmental hazard, generic environmental hazard); sodium azide: (environmental hazard, generic environmental hazard)

Florida: sodium azide

Minnesota: sodium hydroxide; sodium azide

Massachusetts RTK: sodium hydroxide; sodium azide

Massachusetts spill list: sodium hydroxide

New Jersey: sodium hydroxide; sodium azide

New Jersey spill list: sodium hydroxide

New Jersey toxic catastrophe prevention act: sodium hydroxide

**WHMIS (Canada)** Class D-2A: Material causing other toxic effects (VERY TOXIC).

CEPA DSL: water; boric acid; sodium hydroxide; sodium azide

**EINECS** Not available.

**DSCL (EEC)** R60- May impair fertility.  
R61- May cause harm to the unborn child.

**International Lists** Australia (NICNAS): water; boric acid; sodium hydroxide; sodium azide  
  
China: water; boric acid; sodium hydroxide; sodium azide  
  
Germany water class: boric acid; sodium hydroxide; sodium azide  
  
Japan (METI): water; boric acid; sodium hydroxide; sodium azide  
  
Korea (TCCL): water; boric acid; sodium hydroxide; sodium azide

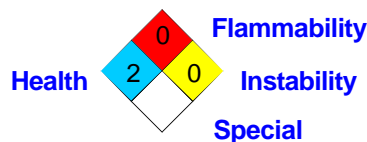
**State Regulations** Philippines (RA6969): water; boric acid; sodium hydroxide; sodium azide  
Pennsylvania RTK: sodium hydroxide: (environmental hazard, generic environmental hazard); sodium azide: (environmental hazard, generic environmental hazard)  
Florida: sodium azide  
Minnesota: sodium hydroxide; sodium azide  
Massachusetts RTK: sodium hydroxide; sodium azide  
Massachusetts spill list: sodium hydroxide  
New Jersey: sodium hydroxide; sodium azide  
New Jersey spill list: sodium hydroxide  
New Jersey toxic catastrophe prevention act: sodium hydroxide

## Section 16. Other information

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

Health	*	1
Fire hazard		0
Reactivity		0
Personal protection		C

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



**References** Not available.

**History of Document Changes** Any information changes since last document version are marked with a triangle symbol.

**Full text of R phrases referred to in sections 2 and 3 - Europe** R60- May impair fertility.  
R61- May cause harm to the unborn child.

**Full text of classifications referred to in sections 2 and 3 - Europe** Repr. Cat.2 - Toxic for reproduction Category 2

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

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**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.*