

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

Responsible Name MSDS Administrator

## ? Section 1. Chemical Product and Company Identification

**Product Name** Micro BCA Reagent C (MC)

**Product no.** 0023234 1859068

<b>Supplier</b>	<i>In USA:</i> Pierce P.O. Box 117 Rockford, IL 61105 USA 815.968.0747 or 1.800.874.3723	<i>In Europe:</i> Perbio Science Industriezone III Industrielaan 27 9320 Erembodegem-Aalst Belgium Tel:+32 53 83 44 04 Fax:+32 53 83 76 38	<b>Manufacturer</b>	Pierce Biotechnology P.O. Box 117 Rockford, IL 61105 USA 815.968.0747 or 1.800.874.3723
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**In case of emergency** CHEMTREC:  
800.424.9300  
OUTSIDE US:  
202.483.7616

**Print date** 12/2/2005  
**Validation date** 10/26/2005  
**MSDS#** 1422

**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

Ingredient name	CAS number	%	EC number	Classification
COPPER (II) SULFATE PENTAHYDRATE	7758-99-8	3 - 5	231-847-6	Xn; R22 Xi; R36/38 N; R50/53

## ! 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:  
BLOOD, KIDNEYS, LIVER.  
MAY BE HARMFUL IF SWALLOWED.

Do not ingest. 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: blood, kidneys, liver.

**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** Harmful if swallowed.

### Potential chronic health effects

**Carcinogenic effects**

**CARCINOGENIC EFFECTS:** Not available.

**MUTAGENIC EFFECTS:** Classified SUSPECTED for human [COPPER (II) SULFATE PENTAHYDRATE].

**TERATOGENIC EFFECTS:** Classified POSSIBLE for human [COPPER (II) SULFATE PENTAHYDRATE].

**Medical conditions aggravated by overexposure**

Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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Over-exposure signs/symptoms Not available.

**Europe**

**Classification** ; R51/53

**Physical/chemical hazards** Not applicable.

**Human health hazards** Not applicable.

**Environmental hazards**  Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

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).

**Ingestion** Hazardous in case of ingestion.

**Skin contact** Sensitization of the product: Not available.

Slightly hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

**Eye contact** Slightly hazardous in case of eye contact (irritant).

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

**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** Non-flammable.

**Flash Points** Not applicable.

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

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

 This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Protective clothing (fire)** Not applicable.

**Hazardous thermal decomposition products** Not applicable.

## Section 6. Accidental release measures

**Personal precautions** Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Environmental precautions and clean-up methods** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**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.

## Section 7. Handling and storage

**Handling** Avoid contact of spilled material and runoff with soil and surface waterways.

**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.

### Exposure Limit Values

#### Ingredient Name

#### Occupational Exposure Limits

##### United States

COPPER (II) SULFATE PENTAHYDRATE

**ACGIH TLV (United States).**  
TWA: 0.2 mg/m<sup>3</sup> 8 hour(s).  
**OSHA PEL 1989 (United States).**  
TWA: 0.1 mg/m<sup>3</sup>  
**NIOSH REL (United States).**  
TWA: 1 mg/m<sup>3</sup>

##### Sweden

COPPER (II) SULFATE PENTAHYDRATE

**AFS (Sweden).**  
NGV: 0.2 mg/m<sup>3</sup>  
(Sweden).  
NGV: 1 mg/m<sup>3</sup>

##### Denmark

COPPER (II) SULFATE PENTAHYDRATE

**DK-Arbejdstilsynet (Denmark).**  
GV: 0.1 mg/m<sup>3</sup>

##### Norway

COPPER (II) SULFATE PENTAHYDRATE

AN: 0.1 mg/m<sup>3</sup>

##### France

COPPER (II) SULFATE PENTAHYDRATE

VLE: 2 mg/m<sup>3</sup>  
VME: 1 mg/m<sup>3</sup>

##### Netherlands

COPPER (II) SULFATE PENTAHYDRATE

MAC-TGG: 1 mg/m<sup>3</sup>

##### Germany

COPPER (II) SULFATE PENTAHYDRATE

TWA: 1 mg/m<sup>3</sup>

##### Finland

COPPER (II) SULFATE PENTAHYDRATE

TWA: 1 mg/m<sup>3</sup>

##### United Kingdom (UK)

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<input checked="" type="checkbox"/> COPPER (II) SULFATE PENTAHYDRATE	<b>EH40 (United Kingdom (UK)).</b> TWA: 0.2 mg/m <sup>3</sup> (United Kingdom (UK)). STEL: 3 mg/m <sup>3</sup>
<b>Austria</b>	
<input checked="" type="checkbox"/> COPPER (II) SULFATE PENTAHYDRATE	MAK: 1 mg/m <sup>3</sup>
<b>Switzerland</b>	
<input checked="" type="checkbox"/> COPPER (II) SULFATE PENTAHYDRATE	MAK-W: 0.1 mg/m <sup>3</sup> KZG-W: 1 mg/m <sup>3</sup>
<b>Belgium</b>	
<input checked="" type="checkbox"/> COPPER (II) SULFATE PENTAHYDRATE	TWA: 1 mg/m <sup>3</sup>
<b>Turkey</b>	
<input checked="" type="checkbox"/> COPPER (II) SULFATE PENTAHYDRATE	<b>NIOSH REL (United States).</b> TWA: 1 mg/m <sup>3</sup>

**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.

Protective Clothing  
(Pictograms)



**Section 9. Physical and chemical properties**

**Physical State and Appearance**  Liquid. (Clear sparkling liquid.)

**Color** Blue. (Light.)

**Odor**  Not available.

**Molecular Weight** Not applicable.

**Taste** Not available.

**pH (1% Soln/Water)**  Neutral.

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

**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: 1.02 (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 cold water, hot water, methanol, acetone.



**Section 10. Stability and reactivity**

**Stability and Reactivity** The product is stable.

**Conditions to avoid** Not available.

**Materials to avoid** Slightly reactive to reactive with metals.

**Hazardous Polymerization** Will not occur.

**Hazardous Decomposition Products** Not available.

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## Section 11. Toxicological information

### Toxicity to Animals

**Water:**

ORAL (LD50): Acute: >90000 mg/kg [ Rat].

**COPPER (II) SULFATE PENTAHYDRATE:**

ORAL (LD50): Acute: 300 mg/kg [Rat]. 43 mg/kg [Mouse]. 470 mg/kg [Mammal].

DERMAL (LD50): Acute: >2000 mg/kg [Rat].

**Chronic Effects on Humans** **MUTAGENIC EFFECTS:** Classified SUSPECTED for human [COPPER (II) SULFATE PENTAHYDRATE].

**TERATOGENIC EFFECTS:** Classified POSSIBLE for human [COPPER (II) SULFATE PENTAHYDRATE].

Contains material which causes damage to the following organs: blood, kidneys, liver.

**Other Toxic Effects on Humans** Hazardous in case of ingestion, .

Slightly hazardous in case of eye contact (irritant), of inhalation (lung irritant).

**Special Remarks on Toxicity to Animals** Not available.

**Special Remarks on Chronic Effects on Humans** May cause allergic skin reactions with repeated exposure. (COPPER (II) SULFATE PENTAHYDRATE)

**Special Remarks on Other Toxic Effects on Humans** Exposure can cause nausea, headache and vomiting. Material is irritating to mucous membranes and upper respiratory tract. Prolonged contact can cause severe irritation or even burns. (COPPER (II) SULFATE PENTAHYDRATE)

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

**Mutagenicity** No known significant effects or critical hazards.

**Reproductive toxicity** No known significant effects or critical hazards.

### 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: blood, kidneys, liver.



## 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

COPPER (II) SULFATE PENTAHYDRATE

#### Species

Fish (LC50)  
Daphnia magna (EC50)  
Goldfish (LC50)

#### Period

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

#### Result

1 to 2.5 mg/l  
0.024 mg/l  
0.1 to 2.5 mg/l

### Other ecological information

#### Persistence/degradability

#### Ingredient name

#### BOD<sub>5</sub>

#### COD

#### Ingredient name

#### Aquatic half-life

#### Photolysis

#### Bioaccumulative potential

#### Ingredient name

#### LogP<sub>ow</sub>

#### BCF

Continued on Next Page

Mobility : Not available.

Other adverse effects : Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.



### 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.

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.

### Section 14. Transport information

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



### Section 15. Regulatory information

#### Label Requirements (Europe)

R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S29- Do not empty into drains. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.



Dangerous for the environment.

HCS Classification Irritating material  
Target organ effects

U.S. Federal Regulations HCSA 8(b) inventory: water

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: COPPER (II) SULFATE PENTAHYDRATE  
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: COPPER (II) SULFATE PENTAHYDRATE: Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard  
 Clean Water Act (CWA) 307: No products were found.  
 Clean Water Act (CWA) 311: No products were found.  
 Clean air act (CAA) 112 accidental release prevention: No products were found.  
 Clean air act (CAA) 112 regulated flammable substances: No products were found.  
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

**SARA 313**

<b>Form R - Reporting requirements</b>	<b>Product name</b>	<b>CAS number</b>	<b>Concentration</b>
	: COPPER (II) SULFATE PENTAHYDRATE	7758-99-8	3 - 5

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** Pennsylvania RTK: COPPER (II) SULFATE PENTAHYDRATE

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

EPA DSL: water

*International Regulations*

**EINECS** Not available.

**DSCL (EEC)** R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**International Lists** Australia (NICNAS): COPPER (II) SULFATE PENTAHYDRATE

Germany water class: COPPER (II) SULFATE PENTAHYDRATE

Japan (METI): water; COPPER (II) SULFATE PENTAHYDRATE

Philippines (RA6969): COPPER (II) SULFATE PENTAHYDRATE

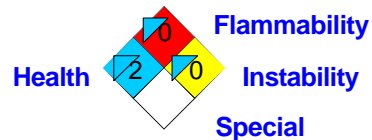
**State Regulations** Pennsylvania RTK: COPPER (II) SULFATE PENTAHYDRATE

**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**  
 R22- Harmful if swallowed.  
 R36/38- Irritating to eyes and skin.  
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
 R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Full text of classifications referred to in sections 2 and 3 - Europe**  
 Xn - Harmful  
 Xi - Irritant  
 N - Dangerous for the environment.

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

Validated by MSDS Administrator on 10/26/2005.

Verified by MSDS Administrator.

Date of Previous Issue No Previous Validation

Printed 12/2/2005.

Version 0.04

**Notice to Reader**

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## **Micro BCA Reagent C (MC)**

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*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.*