



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. Bacillus cereus 569/H9

#### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:**  $\beta$ -Lactamase Ex. Bacillus cereus 569/H9

**Product Number:** BELA-70-1401

**Synonym(s):** beta-Lactamase

**Product Use:** Enzyme reagent for laboratory use.

**Description:** Lyophilized powder containing enzyme (protein), buffering salts and bovine serum albumin (BSA).

**Corporate Headquarters**

**Genzyme Corporation**

500 Kendall Street  
Cambridge, MA 02142  
USA

**Phone:** 617-252-7500

**Manufacturer/Distributor**

**Genzyme Diagnostics**

50 Gibson Drive  
Kings Hill, West Malling  
Kent, ME19 4AF

UK

**Phone:** 44 (0) 1732 220022

**Emergency Telephone Numbers**

**Genzyme (U.S.):** 617-562-4555

**CHEMTREC (U.S.):** 800-424-9300

**CHEMTREC (Outside U.S.):** 703-527-3887

#### 2. HAZARDS IDENTIFICATION

**Precautionary Statements:**

CAUTION! The chemical, physical and toxicological properties of this preparation have not been thoroughly characterized. The bovine serum albumin (BSA) in this product is of US origin and meets the current standards for reduction of TSE (Transmissible Spongiform Encephalopathy) risk. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: white to off-white powder.

**Routes of Exposure:**

Occupational exposure routes may include eye contact, skin contact and inhalation.

**Potential Health Effects:**

<b>Inhalation</b>	No data available. Although there is no evidence that the enzyme(s) in this preparation induces specific respiratory hypersensitivity, all proteins are potential respiratory allergens and may result in respiratory sensitization in certain individuals after repeated and/or prolonged inhalation exposure, producing mild to severe symptoms similar to pollen allergy or asthma, including mucous membrane or eye irritation, itching of the skin or eyes, sneezing, nasal or sinus congestion, coughing, and tightness in the chest. These symptoms may develop as late as 12 hours after exposure.
<b>Eye</b>	No data available. Eye exposure may cause irritation, redness and itching.
<b>Skin</b>	No data available. Skin contact may cause irritation, dryness and redness.
<b>Ingestion</b>	No data available.
<b>Chronic Effects</b>	No data available. Repeated inhalation may result in respiratory sensitization.
<b>Target Organs</b>	Unknown.

**Regulatory Status:**

This preparation is classified as hazardous under U.S. OSHA 29 CFR 1910.1200; E.C. Directive 1999/45/EC; Canadian R.S. 1985, c. H-3; U.K. CHIP 2002 No. 1689; and/or U.N. GHS ST/SG/AC 10/30. Refer to Sec. 15, Regulatory Information, for details regarding hazard classification.

None of the components present in this preparation at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. Bacillus cereus 569/H9

#### Potential Environmental Effects:

No data available.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS #	EC #	% (wt/wt)
Tris hydrochloride	1185-53-1	214-684-5	55 - 60
<b>EC R-Phrases:</b> None	<b>EC Hazard Class:</b> None		
beta-Lactamase	9073-60-3	232-970-8	35 - 40
<b>EC R-Phrases:</b> None	<b>EC Hazard Class:</b> None		
Bovine serum albumin, fraction V	9048-46-8	232-936-2	1 - 5
<b>EC R-Phrases:</b> None	<b>EC Hazard Class:</b> None		
Zinc sulfate	7733-02-0	231-793-3	< 1
<b>EC R-Phrases:</b> R22, R41, R50, R53	<b>EC Hazard Class:</b> Xn, N		

NOTE - beta-Lactamase - Enzyme source: Bacillus cereus, Enzyme Commission number: 3.5.2.6

### 4. FIRST AID MEASURES

#### Inhalation:

If inhaled, move from exposure area to fresh air. Seek medical attention if breathing becomes difficult or if cough or other symptoms develop.

#### Eye Contact:

Immediately flush eyes with plenty of tepid water for 15 minutes while separating eyelids with fingers. Remove contact lenses if worn. Obtain medical attention if needed or if symptoms, such as redness or irritation persist.

#### Skin Contact:

In case of contact, flush skin with cool water and remove contaminated clothing. Obtain medical attention if needed or if irritation or other symptoms develop.

#### Ingestion:

In case of ingestion, contact a poison control center or physician for instructions.

### 5. FIRE FIGHTING MEASURES

#### Flammable Properties:

Material may burn when exposed to sufficient heat.

#### Suitable Extinguishing Media:

Use extinguishing media suitable for surrounding fire, such as carbon dioxide, chemical foam, dry chemical or water spray.

#### Unsuitable Extinguishing Media:

Unknown.

#### Specific Hazards Arising from the Chemical:

Toxic gases may be generated by combustion, including carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>).

#### Standard Protective Equipment and Precautions for Firefighters:

Firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. *Bacillus cereus* 569/H9

#### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**

Avoid physical contact with material and avoid generating or inhaling dust. Ensure adequate ventilation. Wear Personal Protective Equipment (PPE) as indicated in Section 8. Wash hands thoroughly after handling.

**Environmental Precautions:**

No information available.

**Methods and Materials for Containment and Clean-Up:**

Do not dry sweep powder. Use HEPA-filtered vacuum, if available, otherwise wet mop to clean up a powder spill. Decontaminate the spill site following standard procedures. Dispose of materials in accordance with all applicable federal, state, local and provincial environmental regulations, per Section 13.

#### 7. HANDLING AND STORAGE

**Handling:**

Follow good laboratory hygiene practices. See Section 8, Engineering Controls. Minimize contact and contamination of personal clothing and skin. Wash hands thoroughly after handling.

**Storage:**

Store desiccated at -20°C (-4°F). Do not store with incompatible substances; see Section 10.

#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Guidelines:**

There are no ACGIH, NIOSH, OSHA or country-specific occupational exposure limits currently established for components present in this preparation at concentrations equal to or greater than 1% (0.1% if carcinogen).

**Engineering Controls:**

Use in well ventilated areas. If handling large quantities or there is a potential for dust or aerosol generation, use local exhaust ventilation. Facilities storing or using this material should be equipped with an eyewash fountain and a safety shower.

**Personal Protective Equipment (PPE):**

<b>Respiratory</b>	A respirator is not required under normal conditions of use.
<b>Eye/Face</b>	Wear appropriate protective chemical safety glasses.
<b>Skin</b>	Wear lab coat or other protective garments. Remove contaminated clothing promptly.
<b>Gloves</b>	Wear chemical resistant protective gloves.
<b>General</b>	Follow company-specific safety procedures.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	White to off-white powder	<b>pH:</b>	Not applicable
<b>Odor:</b>	Not available	<b>Solubility:</b>	Water-soluble
<b>Boiling Point:</b>	Not applicable	<b>Evaporation Rate:</b>	Not applicable
<b>Melting Point:</b>	Not available	<b>Density:</b>	Not available
<b>Freezing Point:</b>	Not applicable	<b>Vapor Pressure:</b>	Not available
		<b>Partition Coefficient (n-octanol/water):</b>	Not available



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. *Bacillus cereus* 569/H9

**Flammability/Explosivity Limits in Air, Lower:** Not applicable  
**Flammability/Explosivity Limits in Air, Upper:** Not applicable  
**Auto-Ignition Temperature:** Not available  
**Flash Point:** Not applicable

## 10. STABILITY AND REACTIVITY

### Chemical Stability:

Stable under ordinary conditions of use and storage. See Section 7.

### Conditions to Avoid:

Unknown.

### Incompatible Materials:

#### Physical Properties - Chemical Incompatibilities

Zinc sulfate 7733-02-0 Incompatible with strong bases.

### Hazardous Decomposition Products:

Thermal decomposition may lead to release of irritating gases and vapors.

### Possibility of Hazardous Reactions:

Hazardous polymerization will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Acute Effects:

#### Toxicology Data - Selected LD50s and LC50s

Zinc sulfate 7733-02-0 Oral LD50 Rat: 500 mg/kg

### Local Effects:

No data available.

### Chronic Effects:

No data available.

### Carcinogenicity:

No data available.

### Mutagenicity:

No data available.

### Teratogenicity:

No data available.

### Reproductive Effects:

No data available.

### Sensitization:

No data available.

## 12. ECOLOGICAL INFORMATION



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. *Bacillus cereus* 569/H9

#### Ecotoxicity:

##### Ecotoxicity - Freshwater Algae Data

Zinc sulfate 7733-02-0 72 Hr EC50 *Chlorella vulgaris*: 64.8 mg/L; 96 Hr EC50 *Chlorella vulgaris*: 2.4 mg/L

##### Ecotoxicity - Freshwater Fish Species Data

Zinc sulfate 7733-02-0 96 Hr LC50 *Oncorhynchus mykiss*: 24-26 mg/L [flow-through]; 96 Hr LC50 *Pimephales promelas*: 0.6 mg/L [flow-through]; 96 Hr LC50 *Pimephales promelas*: 17 mg/L [static]

##### Ecotoxicity - Microtox Data

Zinc sulfate 7733-02-0 30 min EC50 *Photobacterium phosphoreum*: 40.5 mg/L; 5 min EC50 *Photobacterium phosphoreum*: 476 mg/L; 15 min EC50 *Photobacterium phosphoreum*: 3.45 mg/L; 16 Hr EC50 *Pseudomonas putida*: >700 mg/L

##### Ecotoxicity - Water Flea Data

Zinc sulfate 7733-02-0 48 Hr EC50 *Daphnia magna*: 0.75 mg/L

#### Persistence and Degradability:

No data available.

#### Bioaccumulative Potential:

No data available.

#### Mobility in Environmental Media:

No data available.

### 13. DISPOSAL CONSIDERATIONS

#### Methods of Disposal:

Dispose of unused product, spilled material and waste in accordance with all applicable federal, state, local and provincial environmental and hazardous waste regulations.

#### Waste Classification:

##### U.S. - California - 22 CCR - Presumed Hazardous Wastes

Zinc sulfate 7733-02-0 Toxic

### 14. TRANSPORT INFORMATION

#### Basic Shipping Description:

Not classified as dangerous goods. Not regulated per IATA and DOT regulations.



**MATERIAL SAFETY DATA SHEET**  
**β-Lactamase Ex. Bacillus cereus 569/H9**

**15. REGULATORY INFORMATION**

**US Federal Regulations:**

**SARA Title III Rules:**

**Section 313 - Toxic Release Inventory Reporting** Yes

**Inventory - United States - Section 8(b) Inventory (TSCA)**

Bovine serum albumin, fraction V	9048-46-8	XU
Tris hydrochloride	1185-53-1	Present
Zinc sulfate	7733-02-0	Present

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

Zinc sulfate	7733-02-0	1000 lb final RQ; 454 kg final RQ
--------------	-----------	-----------------------------------

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

Zinc sulfate	7733-02-0	form R reporting required for 1.0% de minimis concentration; Chemical Category N982
--------------	-----------	--

**U.S. - CWA (Clean Water Act) - Priority Pollutants**

Zinc sulfate	7733-02-0	[present]
--------------	-----------	-----------

**U.S. - EPA - ATSDR - CERCLA Priority List**

Zinc sulfate	7733-02-0	Rank (of 275): 073
--------------	-----------	--------------------

**U.S. - TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification**

Zinc sulfate	7733-02-0	6a/12b
--------------	-----------	--------

**US State Regulations:**

**U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances**

Zinc sulfate	7733-02-0	Present (listed under Zinc compounds)
--------------	-----------	---------------------------------------



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. Bacillus cereus 569/H9

#### International Regulations:

##### Canada - WHMIS - Classifications of Substances

Zinc sulfate	7733-02-0	Uncontrolled product according to WHMIS classification criteria
--------------	-----------	---

##### Canada - WHMIS - Ingredient Disclosure List

Zinc sulfate	7733-02-0	1 %
--------------	-----------	-----

##### EU - Dangerous Substances Directive (67/548/EEC) - Annex I - Classification

Zinc sulfate	7733-02-0	Xn;R22 R41 N;R50-53
--------------	-----------	---------------------

##### EU - Dangerous Substances Directive (67/548/EEC) - Annex I - Safety Phrases

Zinc sulfate	7733-02-0	S:2-22-26-39-46-60-61
--------------	-----------	-----------------------

##### Inventory - Australia - Inventory of Chemical Substances (AICS)

Bovine serum albumin, fraction V	9048-46-8	Present
----------------------------------	-----------	---------

Tris hydrochloride	1185-53-1	Present
--------------------	-----------	---------

Zinc sulfate	7733-02-0	Present
--------------	-----------	---------

##### Inventory - Canada - Domestic Substances List (DSL)

Bovine serum albumin, fraction V	9048-46-8	Present
----------------------------------	-----------	---------

Tris hydrochloride	1185-53-1	Present
--------------------	-----------	---------

Zinc sulfate	7733-02-0	Present
--------------	-----------	---------

##### Inventory - Canada - Organisms on the Non-Domestic Substances List (NDSL)

beta-Lactamase	9073-60-3	IUB #3.5.2.6
----------------	-----------	--------------

##### Inventory - China

Bovine serum albumin, fraction V	9048-46-8	Present
----------------------------------	-----------	---------

Tris hydrochloride	1185-53-1	Present
--------------------	-----------	---------

Zinc sulfate	7733-02-0	Present
--------------	-----------	---------

##### Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

beta-Lactamase	9073-60-3	232-970-8
----------------	-----------	-----------

Bovine serum albumin, fraction V	9048-46-8	232-936-2
----------------------------------	-----------	-----------

Tris hydrochloride	1185-53-1	214-684-5
--------------------	-----------	-----------

Zinc sulfate	7733-02-0	231-793-3
--------------	-----------	-----------

##### Inventory - Japan Existing and New Chemical Substances (ENCS)

Zinc sulfate	7733-02-0	1-542
--------------	-----------	-------

##### Inventory - Korea - Existing and Evaluated Chemical Substances

Bovine serum albumin, fraction V	9048-46-8	KE-05-0011
----------------------------------	-----------	------------

Tris hydrochloride	1185-53-1	KE-34819
--------------------	-----------	----------

Zinc sulfate	7733-02-0	KE-35582
--------------	-----------	----------

#### Canadian Hazardous Products:

<b>WHMIS Status</b>	Non-controlled
---------------------	----------------

#### European Communities Dangerous Substances/Preparations:

**EC Hazard Class** None

**Risk Phrases** None

**Safety Phrases** None

## 16. OTHER INFORMATION

#### Further Information:

This MSDS has been prepared in accordance with the ANSI Z400.1 format. Every effort has been made to adhere to the hazard criteria and content requirements of the U.S. OSHA Hazard Communication Standard, Canadian Controlled Products Regulation (CPR), UK Chemical Hazard Information and Packaging Regulations, European Communities REACH Regulation, and UN Globally Harmonized System of Classification and Labelling of Chemicals.



## MATERIAL SAFETY DATA SHEET

### $\beta$ -Lactamase Ex. *Bacillus cereus* 569/H9

---

**MSDS Origination Date:** January 12, 2005

**Version #:** 2

**Revision Date:** November 05, 2008

**Disclaimer:**

The information above is provided in good faith. It is believed to be accurate and represents the best information currently available to us. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER TYPE, EXPRESSED OR IMPLIED, WITH RESPECT TO PRODUCTS DESCRIBED OR DATA OR INFORMATION PROVIDED, AND WE ASSUME NO LIABILITY RESULTING FROM THE USE OF SUCH PRODUCTS, DATA OR INFORMATION. Users should make their own investigations to determine the suitability of the information for their particular purposes, and the user assumes all risk arising from their use of the material. The user is required to comply with all laws and regulations relating to the purchase, use, storage and disposal of the material, and must be familiar with and follow generally accepted safe handling procedures. In no event shall Genzyme be liable for any claims, losses, or damages of any individual or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Genzyme has been advised of the possibility of such damages.