MATERIAL SAFETY DATA SHEET

Beta-Lactamase - II

Section 1: Product and Company Identification

Material name	**Beta-Lactamase - II**
Synonyms	70-1431-01; BELA-70-1431
Product No.	β-Lactamase II Ex. Bacillus cereus 569/H9
Product description	Enzyme reagent for laboratory use.
Product use	Lyophilized powder containing enzyme (protein), buffering salts and bovine serum albumin (BSA).

Emergency Telephone Numbers
Americas: +1-760-476-3962
Europe, Middle East
& Africa: +1-760-476-3961
Asia Pacific: +1-760-476-3960
Access code: 333512

Manufacturer/Distributor
Sekisui Diagnostics (UK) Ltd
50 Gibson Drive
Kings Hill, West Malling
Kent ME19 4AF UK
Phone: 44 (0) 1732 220022

Corporate Headquarters/Distributor
Sekisui Diagnostics LLC
31 New York Avenue
Framingham, MA 01701
USA
Phone: 508-661-1835

Section 2: Hazards Identification

OSHA 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.

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.

Potential health effects:

Routes of exposure	Occupational exposure routes may include eye contact, skin contact and inhalation.
Eyes	No data available. Eye exposure may cause irritation, redness and itching.
Skin	No data available. Skin contact may cause irritation, dryness and redness.
Inhalation	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.
Ingestion	No data available.
Chronic effects	No data available. Repeated inhalation may result in respiratory sensitization.
Target organs	Unknown.

Potential environmental effects No data available.

Section 3: Composition / Information on Ingredients

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

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

Section 4: First Aid Measures

First aid procedures:

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.
Inhalation	If inhaled, move from exposure area to fresh air. Seek medical attention if breathing becomes difficult or if cough or other symptoms develop.
Ingestion	In case of ingestion, contact a poison control centre or physician for instructions.

Section 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_2) and nitrogen oxides (NOx).
Standard protective equipment and precautions for firefighters	Firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

Section 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.

Section 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.

Section 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:

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

Section 9: Physical and Chemical Properties

Appearance	White to off-white powder
Odor	Not available
pH	Not applicable
Melting point/Freezing point	Not available / Not applicable
Boiling point	Not applicable
Flash point	Not applicable
Flammability/explosivity limits in air, upper	Not applicable
Flammability/explosivity limits in air, lower	Not applicable
Vapor pressure	Not available
Density	Not available
Evaporation rate	Not applicable
Solubility	Water-soluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available

Section 10: Chemical Stability and Reactivity Information

Possibility of hazardous reactions	Hazardous polymerization will not occur.
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.

Section 11: Toxicological Information

Acute effects:

Toxicological 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.
Sensitization	No data available.
Carcinogenicity	No data available.
Mutagenicity	No data available.
Reproductive effects	No data available.
Teratogenicity	No data available.

Section 12: Ecological Information

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.
Bioaccumulation potential	No data available.
Mobility in environmental media	No data available.

Section 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

Section 14: Transport Information

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

Section 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)

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

WHMIS Status	Non-controlled

European Communities Dangerous Substances/Preparations

EC Hazard Class	None
Risk Phrases	None
Safety Phrases	None

Section 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 - II

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