



MATERIAL SAFETY DATA SHEET

Glucose Dehydrogenase Ex. Bacillus sp

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Glucose Dehydrogenase Ex. Bacillus sp

Product Number: 70-1191-00; GLDE-70-1191

Synonym(s): Glucose dehydrogenase - NAD dependent

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

Distributor

Genzyme Diagnostics

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

Phone: 44 (0) 1732 220022

Distributor

Genzyme Diagnostics

31 New York Avenue
Framingham, MA 01701-9322
USA

Phone: 800-332-1042

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 Australia, Canada, New Zealand or 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 powder.

Routes of Exposure:

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

Potential Health Effects:

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.
Eye	No data available. Eye exposure may cause irritation, redness and itching.
Skin	No data available. Skin contact may cause irritation, dryness and redness.
Ingestion	No data available.
Chronic Effects	No data available. Repeated inhalation may result in respiratory sensitization.
Target Organs	Unknown.



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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.

Potential Environmental Effects:

No data available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS #	EC #	% (wt/wt)
Bovine serum albumin, fraction V EC R-Phrases: None	9048-46-8 EC Hazard Class: None	232-936-2	35 - 45
Sodium chloride EC R-Phrases: None	7647-14-5 EC Hazard Class: None	231-598-3	30 - 40
Glucose dehydrogenase EC R-Phrases: None	9028-53-9 EC Hazard Class: None	232-836-9	15 - 25
Potassium phosphate, monobasic EC R-Phrases: None	7778-77-0 EC Hazard Class: None	231-913-4	1 - 10

NOTE - Glucose dehydrogenase - Enzyme source: Bacillus sp., Enzyme Commission number: 1.1.1.47

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.



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Specific Hazards Arising from the Chemical:

Toxic gases may be generated by combustion, including, carbon monoxide (CO), carbon dioxide (CO₂), disodium oxide (Na₂O), hydrogen chloride (HCl), phosphorus oxides (PO_x) and potassium oxides (KO_x).

Standard Protective Equipment and Precautions for Firefighters:

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

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):

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White powder	pH:	Not applicable
Odor:	Odorless	Solubility:	Water-soluble



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Boiling Point:	Not applicable	Evaporation Rate:	Not applicable
Melting Point:	Not available	Density:	Not available
Freezing Point:	Not applicable	Vapor Pressure:	Not available
		Partition Coefficient (n-octanol/water):	Not available
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:

Unknown.

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

Potassium phosphate, monobasic
Sodium chloride

7778-77-0
7647-14-5

Dermal LD50 Rabbit: >4640 mg/kg
Inhalation LC50 Rat: >42 g/m³/1H; Oral LD50 Rat: 3 g/kg;
Dermal LD50 Rabbit: >10 g/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.



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12. ECOLOGICAL INFORMATION

Ecotoxicity:

Ecotoxicity - Freshwater Fish Species Data

Sodium chloride	7647-14-5	96 Hr LC50 Lepomis macrochirus: 9675 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 12946 mg/L [static]; 96 Hr LC50 Pimephales promelas: 7650 mg/L [static]
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Ecotoxicity - Water Flea Data

Sodium chloride	7647-14-5	48 Hr EC50 Daphnia magna: 1000 mg/L
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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.

14. TRANSPORT INFORMATION

Basic Shipping Description:

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

15. REGULATORY INFORMATION

US Federal Regulations:

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

Bovine serum albumin, fraction V	9048-46-8	XU
Glucose dehydrogenase	9028-53-9	XU
Potassium phosphate, monobasic	7778-77-0	Present
Sodium chloride	7647-14-5	Present



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International Regulations:

Canada - WHMIS - Classifications of Substances

Potassium phosphate, monobasic	7778-77-0	Uncontrolled product according to WHMIS classification criteria
Sodium chloride	7647-14-5	Uncontrolled product according to WHMIS classification criteria

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

Sodium chloride	7647-14-5	ID Number 270, hazard class 1 - low hazard to waters
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Inventory - Australia - Inventory of Chemical Substances (AICS)

Bovine serum albumin, fraction V	9048-46-8	Present
Potassium phosphate, monobasic	7778-77-0	Present
Sodium chloride	7647-14-5	Present

Inventory - Canada - Domestic Substances List (DSL)

Bovine serum albumin, fraction V	9048-46-8	Present
Potassium phosphate, monobasic	7778-77-0	Present
Sodium chloride	7647-14-5	Present

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

Glucose dehydrogenase	9028-53-9	IUB #1.1.1.47
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Inventory - China

Bovine serum albumin, fraction V	9048-46-8	Present
Potassium phosphate, monobasic	7778-77-0	Present
Sodium chloride	7647-14-5	Present

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

Bovine serum albumin, fraction V	9048-46-8	232-936-2
Glucose dehydrogenase	9028-53-9	232-836-9
Potassium phosphate, monobasic	7778-77-0	231-913-4
Sodium chloride	7647-14-5	231-598-3

Inventory - Japan Existing and New Chemical Substances (ENCS)

Potassium phosphate, monobasic	7778-77-0	1-452
Sodium chloride	7647-14-5	1-236

Inventory - Korea - Existing and Evaluated Chemical Substances

Bovine serum albumin, fraction V	9048-46-8	KE-05-0011
Glucose dehydrogenase	9028-53-9	KE-17732
Potassium phosphate, monobasic	7778-77-0	KE-28622
Sodium chloride	7647-14-5	KE-31387

Canadian Hazardous Products:

WHMIS Status 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.



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MSDS Origination Date: June 30, 2005

Version #: 2

Revision Date: November 05, 2008

Disclaimer:

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