



MATERIAL SAFETY DATA SHEET

Glucose Oxidase (Concentrate 100:1)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Glucose Oxidase (Concentrate 100:1)

Product Number: GLOX-70-4854

Synonym(s): GO; Glucose oxyhydrase; β -D-glucose:oxygen 1-oxidoreductase

Product Use: For In Vitro Diagnostic Use Only.

Description: Aqueous solution containing enzyme (protein) and buffering salt.

Corporate Headquarters

Genzyme Corporation
500 Kendall Street
Cambridge, MA 02142-1108
USA
Phone: +1 617-252-7500

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.): +1 617-562-4555
CHEMTREC: (Transport-related)
--within U.S.: 1-800-424-9300
--outside U.S.: +1 703-527-3887

2. HAZARDS IDENTIFICATION

Emergency Overview:

The chemical, physical and toxicological properties of this preparation, pertaining directly to occupational exposures, have not been thoroughly characterized.

Precautionary Statements:

May be irritating to eyes and skin. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: dark brown to gold liquid.

Routes of Exposure:

Typical occupational exposure routes are eye and skin contact.

Potential Health Effects:

Inhalation	Aerosol inhalation may cause sneezing, coughing or irritation of the nasal passages and throat.
Eye	Eye exposure may cause irritation, redness and watering.
Skin	Skin contact may cause irritation, dryness and redness.
Ingestion	Effects of ingestion are unknown, but may include digestive system irritation nausea, vomiting or diarrhea.
Chronic Effects	Chronic effects from repeated or long-term occupational exposure to this preparation are unknown.
Target Organs	Unknown.

Regulatory Status:

This preparation is not 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. CHIPS 2002 No. 1689; or U.N. GHS ST/SG/AC 10/30.

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.

3. COMPOSITION / INFORMATION ON INGREDIENTS



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Ingredient Name	CAS #	EC #	% (w/w)
Water EC R-Phrases: None	7732-18-5	231-791-2	70 - 80
EC Hazard Class: None			
Sodium chloride EC R-Phrases: R36/38	7647-14-5	231-598-3	15 - 25
EC Hazard Class: Xi			
Glucose oxidase EC R-Phrases: R42	9001-37-0	232-601-0	1 - 5
EC Hazard Class: Xn			
Citric acid EC R-Phrases: None	77-92-9	201-069-1	< 1
EC Hazard Class: None			
Sodium phosphate dibasic, anhydrous EC R-Phrases: R36/38	7558-79-4	231-448-7	< 1
EC Hazard Class: Xi			

NOTE - Glucose oxidase - Enzyme source: Aspergillus niger, Enzyme Commission number: 1.1.3.4

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:

Flush eyes with plenty of tepid water while separating eyelids with fingers, removing contact lenses if worn. Seek medical attention if discomfort develops.

Skin Contact:

In case of contact, flush skin with copious amounts of cool water and remove contaminated clothing. Wash material from skin with soap and water and rinse thoroughly with clean water. Obtain medical attention if needed or if irritation or other symptoms develop.

Ingestion:

In case of ingestion, contact a physician for instructions. If conscious and alert, rinse mouth out with water. Obtain medical attention if needed or instructed to do so.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Aqueous solutions with these components are typically non-flammable.

Suitable Extinguishing Media:

Carbon dioxide, chemical foam, dry chemical or water spray.

Specific Hazards Arising from the Chemical:

None expected.

Standard Protective Equipment and Precautions for Firefighters:

As in any fire, firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Wear Personal Protective Equipment (PPE) as indicated in Section 8. Avoid physical contact with material. Wash hands thoroughly after handling.



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Methods and Materials for Containment and Clean-Up:

Carefully soak up spilled liquid with a non-combustible sorbent. Scoop up spilled material and transfer to an appropriate container for disposal. After material pickup is complete, wash spill site to remove any residual material and dry completely. Dispose of spilled material and contaminated waste 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. Wear proper Personal Protective Equipment (PPE) and employ exposure controls as indicated in Section 8. Avoid physical contact. Wash hands thoroughly after handling.

Storage:

Refer to product label and/or literature for specific storage conditions. The recommended storage temperature(s) at the time of MSDS preparation/revision is: Store refrigerated at 2 to 8°C (35 to 46°F). Do not store with incompatible substances or under avoidable conditions identified in 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:

This preparation is aqueous and non-volatile and is not expected to necessitate special ventilation measures. Facilities storing or utilizing this preparation 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 safety eye wear as described in the ANSI standard 787.1-2003.
Skin	Wear appropriate protective clothing, such as a lab coat or other long-sleeved garment over your clothes, to minimize contact and contamination of clothing. Change into clean clothes promptly if clothing becomes contaminated. Wash contaminated clothing before reuse.
Gloves	Prevent skin exposure by wearing protective gloves impermeable to this material/preparation. Change gloves regularly or immediately if they are contaminated, torn or punctured.
General	Consult your company's safety manager/industrial hygienist or your safety equipment manufacturer/supplier for assistance with your selection of appropriate PPE.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown to gold liquid	pH:	5 - 6 (approx)
Odor:	Not available	Solubility:	Water-soluble
Specific Gravity:	Not available	Vapor Pressure:	Not available
Boiling Point:	Not available	Partition Coefficient (n-octanol/water):	Not available
Melting Point:	Not applicable	Vapor Density:	Not available
Freezing Point:	Not available		



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10. STABILITY AND REACTIVITY

Chemical Stability:

Stable under ordinary conditions of use and storage; (see handling and storage information in Section 7).

Conditions to Avoid:

Avoid prolonged exposure to direct sunlight. Excessive heat may damage the product.

Incompatible Materials:**Physical Properties - Chemical Incompatibilities**

Citric acid	77-92-9	Incompatible with bases, strong oxidizers, amines. Contact with metal nitrates may be explosive. Attacks aluminum, copper, zinc, and their alloys, when wet.
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Hazardous Decomposition Products:

None expected under normal conditions of use.

Possibility of Hazardous Reactions:

Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects:**NIOSH - Selected LD50s and LC50s**

Citric acid	77-92-9	Oral LD50 Rat: 3 g/kg; Oral LD50 Mouse: 5040 mg/kg
Sodium chloride	7647-14-5	Inhalation LC50 Rat: >42 g/m ³ /1H; Oral LD50 Rat: 3 g/kg; Oral LD50 Mouse: 4 g/kg; Dermal LD50 Rabbit: >10 g/kg
Sodium phosphate dibasic, anhydrous	7558-79-4	Oral LD50 Rat: 17 g/kg

Chronic Effects:

Data indicating the presence or absence of chronic effects from repeated or long-term occupational exposure to this preparation is not yet available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:**Ecotoxicity - Microtox Data**

Citric acid	77-92-9	15 min EC50 Photobacterium phosphoreum: 14 mg/L
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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.

Packaging:

Containers of this material may retain product residues. Handle contaminated packaging in the same way as the substance itself, by disposing in accordance with all applicable federal, state, local, and provincial environmental and hazardous waste regulations. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

Waste Classification:

Chemical waste generators must refer to the relevant hazardous waste regulations to ensure complete and accurate classification. Disposal regulations may vary according to geographic location.



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14. TRANSPORT INFORMATION

Basic Shipping Description:

Contact Genzyme for shipping information.

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Sodium phosphate dibasic, anhydrous 7558-79-4 5000 lb final RQ; 2270 kg final RQ

CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances

Sodium phosphate dibasic, anhydrous 7558-79-4 5000 lb RQ

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

Citric acid	77-92-9	Present
Glucose oxidase	9001-37-0	XU
Sodium chloride	7647-14-5	Present
Sodium phosphate dibasic, anhydrous	7558-79-4	Present

US State Regulations:

California - 8 CCR Section 339 - Directors List of Hazardous Substances

Sodium phosphate dibasic, anhydrous 7558-79-4 Present

Massachusetts - Toxics Use Reduction Act

Sodium phosphate dibasic, anhydrous 7558-79-4 CERCLA Only chemical

New Jersey - Right to Know Hazardous Substance List

Glucose oxidase	9001-37-0	sn 0959
Sodium phosphate dibasic, anhydrous	7558-79-4	sn 1723

Pennsylvania - RTK (Right to Know) List

Sodium phosphate dibasic, anhydrous 7558-79-4 Environmental hazard



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International Regulations:

Canada - WHMIS - Classifications of Substances

Citric acid	77-92-9	E
Sodium chloride	7647-14-5	Uncontrolled product according to WHMIS classification criteria
Sodium phosphate dibasic, anhydrous	7558-79-4	D2B

Canada - WHMIS - Ingredient Disclosure List

Citric acid	77-92-9	1 % (English Item 409, French Item 80)
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Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

Citric acid	77-92-9	hazard class 1, low hazard to waters (footnote 14)
Sodium chloride	7647-14-5	hazard class 1, low hazard to waters (footnote 14)
Sodium phosphate dibasic, anhydrous	7558-79-4	hazard class 1, low hazard to waters

Inventory - Australia - Inventory of Chemical Substances (AICS)

Citric acid	77-92-9	Present
Glucose oxidase	9001-37-0	Present
Sodium chloride	7647-14-5	Present
Sodium phosphate dibasic, anhydrous	7558-79-4	Present

Inventory - Canada - Domestic Substances List (DSL)

Citric acid	77-92-9	Present
Sodium chloride	7647-14-5	Present
Sodium phosphate dibasic, anhydrous	7558-79-4	Present

Inventory - Canada - Organisms on the Domestic Substances List (DSL)

Glucose oxidase	9001-37-0	IUB #1.1.3.4
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Inventory - China

Citric acid	77-92-9	Present
Sodium chloride	7647-14-5	Present
Sodium phosphate dibasic, anhydrous	7558-79-4	Present

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

Citric acid	77-92-9	201-069-1
Glucose oxidase	9001-37-0	232-601-0
Sodium chloride	7647-14-5	231-598-3
Sodium phosphate dibasic, anhydrous	7558-79-4	231-448-7

Inventory - Japan Existing and New Chemical Substances (ENCS)

Citric acid	77-92-9	2-1318
Sodium chloride	7647-14-5	1-236
Sodium phosphate dibasic, anhydrous	7558-79-4	1-497

Inventory - Korea - Existing and Evaluated Chemical Substances

Citric acid	77-92-9	KE-20831
Glucose oxidase	9001-37-0	KE-17750
Sodium chloride	7647-14-5	KE-31387
Sodium phosphate dibasic, anhydrous	7558-79-4	KE-12344

Switzerland - Toxic Substances Classification

Citric acid	77-92-9	Class 5
Sodium phosphate dibasic, anhydrous	7558-79-4	Class 5

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



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Recommended Use:

For In Vitro Diagnostic Use Only. Not for human or drug use.

Further Information:

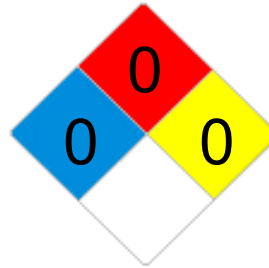
This MSDS has been prepared in accordance with the ANSI Z400.1 format. Every effort has been made to adhere to the hazard criteria and content requirements of the US OSHA Hazard Communication Standard, European Communities Safety Data Sheets Directive, Canadian Controlled Products Regulations, UK Chemical Hazard Information and Packaging Regulations, and UN Globally Harmonized System of Classification and Labelling of Chemicals.

The hazard ratings on this MSDS are for appropriately trained workers using a Hazardous Materials Identification System (HMIS®) or a National Fire Protection Association (NFPA) 704 program. The ratings are estimates and should be treated as such. The hazard rating scales range from (0) minimal hazards to (4) significant hazards or risks. Chronic (long-term) health effects are indicated in the HMIS® by an asterisk (*). HMIS® is a registered trade and service mark of the NPCA. For details on HMIS® ratings visit www.paint.org/hmis. For details on NFPA 704 visit www.nfpa.org.

HMIS® RATINGS

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

NFPA RATINGS



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