



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Glycerol Phosphate Oxidase - SP

Product Number: 70-4875-01; 70-4875-02

Synonym(s): L-alpha-Glycerol phosphate oxidase; Glycerol-3-phosphate oxidase; GPO-SP

Product Use: For In Vitro Diagnostic Use Only.

Description: Lyophilized powder containing enzyme (protein) and stabilizers.

Corporate Headquarters

Genzyme Corporation

500 Kendall Street

Cambridge, MA 02142-1108

USA

Phone: +1 617-252-7500

Distributor

Genzyme Diagnostics

One Kendall Square

Cambridge, MA 02139

USA

Phone: 1-800-332-1042

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:

WARNING! May be irritating to eyes, respiratory system and skin. May cause sensitization by inhalation. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: yellow powder.

Routes of Exposure:

Typical occupational exposure routes are inhalation and skin contact.

Potential Health Effects:

Inhalation	Inhalation may be irritating to the nasal passages and throat. Respiratory sensitization may develop in certain individuals after repeated 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, wheezing and tightness in the chest. These symptoms may develop as late as 12 hours after exposure.
Eye	Eye exposure may cause irritation, redness and watering.
Skin	As with all enzymes, skin irritation is possible, particularly at high enzyme concentrations, with prolonged enzyme contact, and under moist conditions. Skin contact may cause irritation, dryness, redness and itching.
Ingestion	Effects of ingestion are unknown, but may include digestive system irritation nausea, vomiting or diarrhea.
Chronic Effects	Repeated and/or prolonged inhalation by certain individuals may result in respiratory sensitization and possibly permanent decreases in lung function.
Medical Conditions Aggravated By Exposure	Individuals with preexisting allergies to enzyme products may be more susceptible to health effects from accidental exposure and should be evaluated for their suitability for working with this product. Medical supervision for all employees who handle or come in contact with respiratory sensitizers is recommended.
Target Organs	Respiratory system



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

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. CHIPS 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.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS #	EC #	% (w/w)
Glycerol phosphate oxidase EC R-Phrases: R42	9046-28-0	232-932-0	50 - 98
EC Hazard Class: Xn			
Flavin adenine dinucleotide disodium salt dihydrate (FAD) EC R-Phrases: None	146-14-5	205-663-1	1 - 50
EC Hazard Class: None			
Sucrose EC R-Phrases: None	57-50-1	200-334-9	1 - 50
EC Hazard Class: None			

NOTE - Glycerol phosphate oxidase - Enzyme source: Streptococcus sp., Enzyme Commission number: 1.1.3.21

4. FIRST AID MEASURES

Inhalation:

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

Eye Contact:

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

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, drink 4 to 8 ounces (120 to 240 mL) of water to dilute. Seek medical attention if symptoms of digestive irritation or discomfort occur.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Like most organic solids, material will burn when exposed to sufficient heat or upon contact with an ignition source.

Suitable Extinguishing Media:

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

Specific Hazards Arising from the Chemical:

Irritating or highly toxic gases may be generated by combustion, including carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x) and phosphorus oxides (PO_x).



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

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. Ensure adequate ventilation. Avoid physical contact with material and avoid generating or inhaling dust. Wash hands thoroughly after handling.

Methods and Materials for Containment and Clean-Up:

Carefully vacuum up powdered spill with a HEPA-filtered vacuum and transfer into an appropriate clean, dry container. (If vacuuming is not possible lightly mist the spill to keep the dust down, taking care to avoid slipping, and scoop up.) 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. Minimize dust generation during use. 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 desiccated at -20°C (-4°F). Keep container tightly closed. Do not store with incompatible substances or under avoidable conditions identified in Section 10.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

Exposure Guidelines:

ACGIH - Threshold Limits Values - Time Weighted Averages (TLV-TWA)

Sucrose 57-50-1 10 mg/m³ TWA

ACGIH - Threshold Limits Values - TLV Basis - Critical Effects

Sucrose 57-50-1 lung

Australia - Occupational Exposure Standards - TWAs

Sucrose 57-50-1 10 mg/m³ TWA

Belgium - Occupational Exposure Limits - TWAs

Sucrose 57-50-1 10 mg/m³ VLE

Canada - Quebec - Occupational Exposure Limits - TWAEVs

Sucrose 57-50-1 10 mg/m³ TWAEV

France - Occupational Exposure Limits - TWAs (VMEs)

Sucrose 57-50-1 10 mg/m³ VME

Ireland - Occupational Exposure Limits - STELs

Sucrose 57-50-1 20 mg/m³ STEL

Ireland - Occupational Exposure Limits - TWAs

Sucrose 57-50-1 10 mg/m³ TWA

Israel - Occupational Exposure Limits - TWAs

Sucrose 57-50-1 10 mg/m³ TWA

Korea - Occupational Exposure Limits - TWAs

Sucrose 57-50-1 10 mg/m³ TWA

Netherlands - Occupational Exposure Limits - TWAs (MACs)

Sucrose 57-50-1 10 mg/m³ MAC

NIOSH - Pocket Guide - TWAs

Sucrose 57-50-1 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)

OSHA - Final PELs - Time Weighted Averages (TWAs)

Sucrose 57-50-1 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Spain - Occupational Exposure Limits - TWAs (VLA-ED)

Sucrose 57-50-1 10 mg/m³ VLA-ED

United Kingdom - Occupational Exposure Standards (OES) - TWAs

Sucrose 57-50-1 10 mg/m³ TWA

Engineering Controls:

Provide adequate ventilation by means of mechanical exhaust, to keep airborne concentrations low. Local exhaust is preferred, because it can control the emissions of the contaminant at its source, preventing dispersion into the general work area. Ventilation systems should be fitted with High Efficiency Particulate Air (HEPA) filters or other proper exhaust control at mixing and filling sites and where operations can create dust or aerosols. Facilities storing or utilizing this preparation should be equipped with an eyewash fountain and a safety shower.

Personal Protective Equipment (PPE):

Respiratory	A respiratory protection program that meets U.S. Federal OSHA 29 CFR 1910.134 and ANSI Z99.2, Canadian CSA Standard Z94.4-93, European Standard CR 529, or other applicable regulatory standards must be followed whenever exposure limits are exceeded and engineering controls are not feasible, or if insufficient ventilation or workplace conditions warrant a respirator's use. In such cases an air purifying respirator equipped with particulate filter cartridges, (42 CFR 84 - NIOSH Part 84 particulate filter, EN 141/143 particulate "P" filter), selected to provide a filtration efficiency appropriate to your workplace is recommended.
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.



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow powder	pH:	Not available
Odor:	Unknown	Solubility:	Water-soluble
Boiling Point:	Not applicable	Vapor Pressure:	Not applicable
Melting Point:	Not available	Partition Coefficient (n-octanol/water):	Not available
Freezing Point:	Not applicable	Other:	Minimum Ignition Energy (MIE) for dust not available
		Other:	Minimum Ignition Temperature (MIT) for dust not available
		Vapor Density:	Not applicable

Chemical Family: Protein mixture

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 heat, flames, sparks and ignition sources. Avoid prolonged exposure to direct sunlight. Excessive heat may damage the product.

Incompatible Materials:

Avoid strong oxidizing agents, strong acids and bases.

Physical Properties - Chemical Incompatibilities

Sucrose	57-50-1	Reacts with potassium hydroxide, strong acids, strong oxidizers.
---------	---------	--

Hazardous Decomposition Products:

None expected under normal conditions of use.

Possibility of Hazardous Reactions:

Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects:

May be irritating to the eyes, skin and respiratory system.

NIOSH - Selected LD50s and LC50s

Sucrose	57-50-1	Oral LD50 Rat: 29700 mg/kg
---------	---------	----------------------------

Chronic Effects:

Chronic respiratory exposures in sensitized individuals may result in permanent decrease in lung function.

Carcinogenicity:

Argentina - Occupational Exposure Limits - Carcinogens

Sucrose	57-50-1	A4 - Not classifiable as a human carcinogen
---------	---------	---

Canada - New Brunswick - Occupational Exposure Limits - Carcinogens

Sucrose	57-50-1	A4 - Not Classifiable as a Human Carcinogen
---------	---------	---

Sensitization:

May cause sensitization by inhalation.



MATERIAL SAFETY DATA SHEET
Glycerol Phosphate Oxidase - SP

12. ECOLOGICAL INFORMATION

Ecotoxicity:

No information available for product.

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.

14. TRANSPORT INFORMATION

Basic Shipping Description:

Contact Genzyme for shipping information.

15. REGULATORY INFORMATION

US Federal Regulations:

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

Flavin adenine dinucleotide disodium salt dihydrate (FAD)	146-14-5	Present
Sucrose	57-50-1	Present

US State Regulations:

Pennsylvania - RTK (Right to Know) List

Sucrose	57-50-1	Present
---------	---------	---------

MATERIAL SAFETY DATA SHEET
Glycerol Phosphate Oxidase - SP

International Regulations:

Canada - WHMIS - Classifications of Substances

Sucrose	57-50-1	Uncontrolled product according to WHMIS classification criteria
---------	---------	---

Inventory - Australia - Inventory of Chemical Substances (AICS)

Glycerol phosphate oxidase	9046-28-0	Present
Sucrose	57-50-1	Present

Inventory - Canada - Domestic Substances List (DSL)

Sucrose	57-50-1	Present
---------	---------	---------

Inventory - Canada - Non-Domestic Substances List (NDSL)

Flavin adenine dinucleotide disodium salt dihydrate (FAD)	146-14-5	Present
---	----------	---------

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

Glycerol phosphate oxidase	9046-28-0	IUB #1.1.3.21
----------------------------	-----------	---------------

Inventory - China

Glycerol phosphate oxidase	9046-28-0	Present
Sucrose	57-50-1	Present

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

Flavin adenine dinucleotide disodium salt dihydrate (FAD)	146-14-5	205-663-1
Glycerol phosphate oxidase	9046-28-0	232-932-0
Sucrose	57-50-1	200-334-9

Inventory - Japan Existing and New Chemical Substances (ENCS)

Flavin adenine dinucleotide disodium salt dihydrate (FAD)	146-14-5	9-1170
---	----------	--------

Inventory - Korea - Existing and Evaluated Chemical Substances

Flavin adenine dinucleotide disodium salt dihydrate (FAD)	146-14-5	KE-30337
Glycerol phosphate oxidase	9046-28-0	KE-18027
Sucrose	57-50-1	KE-17258

Canadian Hazardous Products:

WHMIS Status Controlled

Classification

D2B - Other Toxic Effects-TOXIC



European Communities Dangerous Substances/Preparations:

EC Hazard Class Xn - Harmful

Symbols



Risk Phrases

R42 May cause sensitization by inhalation.

Safety Phrases

S22 Do not breathe dust.
 S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16. OTHER INFORMATION



MATERIAL SAFETY DATA SHEET

Glycerol Phosphate Oxidase - SP

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.

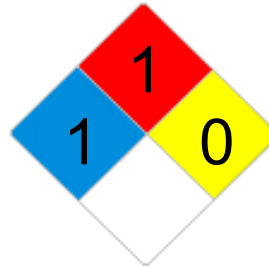
HMIS® RATINGS

HEALTH	*	2
FLAMMABILITY		1
PHYSICAL HAZARD		0

Target Organ(s):

Respiratory system

NFPA RATINGS



MSDS Origination Date: June 30, 2005

Version #: 1

Revision Date: Not Applicable

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.