

# MATERIAL SAFETY DATA SHEET

## Glycerol Phosphate Oxidase

### Section 1: Product and Company Identification

<b>Material name</b>	<b>Glycerol Phosphate Oxidase</b>	
<b>Synonyms</b>	Glycerol phosphate oxidase - SP	
<b>Product No.</b>	70-4875-01; 70-4875-02	
<b>Product description</b>	Lyophilized powder containing enzyme (protein), carbohydrate and buffering salt.	
<b>Product use</b>	Enzyme reagent for laboratory use.	
<b>Emergency Telephone Numbers</b>	<b>Manufacturer/Distributor</b>	<b>Corporate Headquarters</b>
Americas: +1-760-476-3962	Sekisui Diagnostics LLC	Sekisui Diagnostics LLC
Europe, Middle East	31 New York Avenue	31 New York Avenue
& Africa: +1-760-476-3961	Framingham, MA 01701	Framingham, MA 01701
Asia Pacific: +1-760-476-3960	USA	USA
Access code: 333512	Phone: 508-661-1835	Phone: 508-661-1835

### Section 2: Hazards Identification

<b>OSHA regulatory status</b>	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.
<b>Precautionary statements</b>	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. CAUTION! The chemical, physical and toxicological properties of this preparation have not been thoroughly characterized. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: yellow powder.
<b>Potential health effects:</b>	
<b>Routes of exposure</b>	Occupational exposure routes may include eye contact, skin contact and inhalation.
<b>Eyes</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>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>Ingestion</b>	No data available.
<b>Chronic effects</b>	No data available. Repeated inhalation may result in respiratory sensitization.
<b>Target organs</b>	Unknown.
<b>Potential environmental effects</b>	No data available.

### Section 3: Composition / Information on Ingredients

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

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

### Section 4: First Aid Measures

<b>First aid procedures:</b>	
<b>Eye contact</b>	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.
<b>Skin contact</b>	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.
<b>Inhalation</b>	If inhaled, move from exposure area to fresh air. Seek medical attention if breathing becomes difficult or if cough or other symptoms develop.
<b>Ingestion</b>	In case of ingestion, contact a poison control center or physician for instructions.

# MATERIAL SAFETY DATA SHEET

## Glycerol Phosphate Oxidase

### Section 5: Fire Fighting Measures

<b>Flammable properties</b>	Material may burn when exposed to sufficient heat.
<b>Suitable extinguishing media</b>	Use extinguishing media suitable for surrounding fire, such as carbon dioxide, chemical foam, dry chemical or water spray.
<b>Unsuitable extinguishing media</b>	Unknown.
<b>Specific hazards arising from the chemical</b>	Toxic gases may be generated by combustion, including carbon monoxide (CO), carbon dioxide (CO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ) and phosphorus oxides (PO <sub>x</sub> ).
<b>Standard protective equipment and precautions for firefighters</b>	Firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

### Section 6: Accidental Release Measures

<b>Personal precautions</b>	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.
<b>Environmental precautions</b>	No information available.
<b>Methods and materials for containment and clean-up</b>	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

<b>Handling</b>	Follow good laboratory hygiene practices. See Section 8, Engineering Controls. Minimize contact and contamination of personal clothing and skin. Wash hands thoroughly after handling.
<b>Storage</b>	Store desiccated at -20°C (-4°F). Do not store with incompatible substances; see Section 10.

### Section 8: Exposure Controls / Personal Protection

#### Exposure guidelines:

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

Sucrose 57-50-1 10 mg/m<sup>3</sup> TWA

##### Australia - Occupational Exposure Standards – TWAs

Sucrose 57-50-1 10 mg/m<sup>3</sup> TWA

##### Canada - Quebec - Occupational Exposure Limits – TWAEVs

Sucrose 57-50-1 10 mg/m<sup>3</sup> TWAEV

##### Israel - Occupational Exposure Limits – TWAs

Sucrose 57-50-1 10 mg/m<sup>3</sup> TWA

##### Korea - Occupational Exposure Limits – TWAs

Sucrose 57-50-1 10 mg/m<sup>3</sup> TWA

##### U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)

Sucrose 57-50-1 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

<b>Engineering controls</b>	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:

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

# MATERIAL SAFETY DATA SHEET

## Glycerol Phosphate Oxidase

### Section 9: Physical and Chemical Properties

Appearance	Yellow powder
Odor	Not available
pH	Not applicable
Melting point/Freezing point	Not available / Not applicable
Boiling point	Not applicable
Flash point	Not applicable
Evaporation rate	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
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	Unknown.
Hazardous decomposition products	Thermal decomposition may lead to release of irritating gases and vapors.

### Section 11: Toxicological Information

<b>Acute effects:</b>		
<b>Toxicological data - Selected LD50s and LC50s</b>		
Sucrose	57-50-1	Oral LD50 Rat: 29700 mg/kg
<b>Local effects</b>	No data available.	
<b>Chronic effects</b>	No data available.	
<b>Sensitization</b>	No data available.	
<b>Carcinogenicity</b>		
<b>ACGIH - Threshold Limits Values - Carcinogens</b>		
Sucrose	57-50-1	A4 - Not Classifiable as a Human Carcinogen
<b>Mutagenicity</b>	No data available.	
<b>Reproductive effects</b>	No data available.	
<b>Teratogenicity</b>	No data available.	

### Section 12: Ecological Information

Ecotoxicity	No data available.
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.
---------------------	---

### 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:

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

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

#### 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	146-14-5	Present
disodium salt dehydrate (FAD)		

##### 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	146-14-5	205-663-1
disodium salt dehydrate (FAD)		
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	146-14-5	9-1170
disodium salt dehydrate (FAD)		

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

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

##### 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.

**MSDS Origination Date:** 30 June, 2005

**Version #:** 3

**Revision Date:** 30 November, 2012

**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 Sekisui 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 Sekisui has been advised of the possibility of such damages.