

# Product Information

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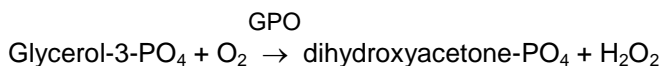
## Glycerol 3-phosphate Oxidase from *Pediococcus* sp.

Catalog Number **G9637**  
Storage Temperature 2–8 °C

CAS RN 9046-28-0  
EC 1.1.3.21  
Synonyms: GPO;  $\alpha$ -Glycerophosphate oxidase;  
sn-glycerol-3-phosphate:oxygen 2-oxidoreductase

### Product Description

Many bacteria and yeast can utilize glycerol as a carbon source. After cellular uptake, glycerol is phosphorylated to  $\alpha$ -glycerol-3-phosphate, which in turn is oxidized to enter the glycolytic pathway.  $\alpha$ -Glycerophosphate oxidase (GPO), a dimeric protein, catalyzes the oxidation of  $\alpha$ -glycerol-3-phosphate to dihydroxyacetone phosphate by the following reaction:



GPO has been used for sensitive metabolite assays of starch and lipid synthesis, pyrophosphate, ATP, ADP, and most glycolytic intermediates in *Arabidopsis* seeds.<sup>1</sup> GPO is part of the dihydroxyacetone phosphate:glycerol-3-phosphate cycle in the bloodstream form of *Trypanosoma brucei*.<sup>2</sup>

Molecular mass:<sup>4</sup> 134 kDa (calculated)

Cofactor:<sup>6</sup> FAD

Optimal pH:<sup>2,6</sup> 7.5–8.0

Optimal temperature:<sup>2</sup> 37 °C

Inhibitors:<sup>6</sup> benzylformic acid, glyoxylic acid, methylglyoxal

This product is purified from a *Pediococcus* species. It is supplied as a lyophilized yellow powder containing proprietary stabilizers.

Specific activity: 40–80 units/mg solid

Unit definition: One unit will oxidize 1.0  $\mu$ mole of L-glycerol-3-phosphate to dihydroxyacetone phosphate with the formation of hydrogen peroxide per minute at pH 8.1 at 37 °C.

GPO is assayed spectrophotometrically in a 1.05 mL reaction mixture containing 60 mM Tris HCl, 5 units peroxidase, 0.06% (v/v) Triton™ X-100, 0.01% (w/v) 4-aminoantipyrine, 0.02% (w/v) phenol, 95 mM DL- $\alpha$ -glycerophosphate, 0.01% bovine serum albumin, and 0.004–0.009 units GPO, at pH 8.1 at 37 °C.

### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

### Preparation Instructions

GPO is soluble (0.45 unit/mL) in cold 20 mM Tris HCl, pH 7.5 at 37 °C, containing 0.2% (w/v) bovine serum albumin. Dissolve immediately before use.

### Storage/Stability

Store the product at 2–8 °C. When stored at 2–8 °C, GPO should retain activity for two years.

### References

1. Gibon, Y. *et al.*, *Plant J.*, **30(2)**, 221-235 (2002).
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3. Esders, T.W., and Michrina, C.A., *J. Biol. Chem.*, **254(8)**, 2710-2715 (1979).
4. Calculation is based on NCBI Protein DataBank sequence WP\_002832952.
5. Krämer, L., and Steckhan, E., *Tetrahedron*, **53(43)**, 14645-14650 (1997).
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7. Jacobs, N.J., and VanDemark, P.J., *Arch. Biochem. Biophys.*, **88(2)**, 250-255 (1960).

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