

Product Information

Glucose-6-phosphate Dehydrogenase from baker's yeast (*S. cerevisiae*)

Catalog Number **G7877**
Storage Temperature 2–8 °C

CAS RN 9001-40-5
EC 1.1.1.49
Synonyms: G-6-P-DH, Zwischenferment

Product Description

Glucose 6-phosphate dehydrogenase (G-6-P-DH) is a key regulatory enzyme in the first step of the pentose phosphate pathway. G-6-P-DH oxidizes glucose-6-phosphate in the presence of NADP⁺ to yield 6-phosphogluconate. For G-6-P-DH from yeast, the K_M values for glucose-6-phosphate and NADP⁺ are 2.0 × 10⁻⁵ M and 2.0 × 10⁻⁶ M, respectively, in Tris buffer, pH 8.0, containing 0.01 M MgCl₂ at 38 °C.¹

G-6-P-DH is a glycoprotein² with a molecular mass of 128 kDa (gel filtration).³

This product is a 3.2 M ammonium sulfate suspension, pH 7.0. The method of preparation of this enzyme was developed by Sigma and the details are proprietary. The following is a general description of the preparation: yeast are autolysed with toluene, the enzyme is extracted using an affinity resin, the enzyme is then washed, and crystallized from ammonium sulfate. The material is washed with ammonium sulfate to lower the A₂₆₀ value due to NADP.

Specific activity: ≥200 units/mg protein

Unit definition: One unit will oxidize 1.0 μmole of D-glucose 6-phosphate to 6-phospho-D-gluconate per minute in the presence of NADP at pH 7.4 at 25 °C.

Precautions and Disclaimer

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

Preparation Instructions

To ensure maximum stability, the recommended diluent is 5 mM sodium citrate, pH 7.4. Phosphate buffer will inhibit the enzyme and should not be used.⁴

Storage/Stability

Store the product at 2–8 °C. It is best to store the enzyme in suspension, as supplied, where it is the most stable and to remove aliquots for use as needed. This product remains active for 8 months at 45 °C or 2–8 °C.

References

1. Barman, T.E., Enzyme Handbook, Vol. I, Springer-Verlag (New York, NY: 1969), pp. 73-74.
2. Reilly, K.E., and Allred, J.B., Glucose-6-phosphate Dehydrogenase from *Saccharomyces cerevisiae* is a Glycoprotein. *Biochem. Biophys. Res. Commun.*, **216(3)**, 993-998 (1995).
3. Andrews, P., The Gel-Filtration Behaviour of Proteins Related to their Molecular Weights over a Wide Range. *Biochem. J.*, **96(3)**, 595-606 (1965).
4. Domagk, G.F., and Chilla, R., Glucose-6-phosphate Dehydrogenase from *Candida utilis*. *Methods in Enzymology*, **XLI-B**, 205-208 (1975).

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