

Product Information

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

Catalog Number **G4134**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

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 $2.0 \times 10^{-5}\text{ M}$ and $2.0 \times 10^{-6}\text{ M}$, respectively, in Tris buffer, pH 8.0, containing 0.01 M MgCl_2 at $38\text{ }^{\circ}\text{C}$.¹

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

This product is an essentially sulfate-free lyophilized powder containing ~20% sodium citrate.

This product is for the recycling microassay of $\beta\text{-NADP}$ and $\beta\text{-NADPH}$.^{4,5} It contains ≤ 10 nmoles of $\beta\text{-NADP}$ and $\beta\text{-NADPH}$ per mole of G-6-P-DH.

Specific activity: 200–400 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 $25\text{ }^{\circ}\text{C}$.

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

G-6-P-DH is soluble in water (5 mg/ml), yielding a clear, colorless solution. To ensure maximum stability and recovery of activity, reconstitution with 5 mM sodium citrate, pH 7.4, is recommended. Phosphate buffer will inhibit the enzyme and should not be used.⁶

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$. It remains active for at least 2 years at $25\text{ }^{\circ}\text{C}$.

G-6-P-DH solutions dissolved in deionized water at 1 mg/ml can be aliquoted and stored frozen for at least 2 months. However, it is best to subject the aliquots to no more than one freeze/thaw cycle.

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. Bernofsky, C., and Swan, M., An improved cycling assay for nicotinamide adenine dinucleotide. Anal. Biochem., **53(2)**, 452-458 (1973).
5. Nisselbaum, J.S., and Green, S., A simple ultramicro method for determination of pyridine nucleotides in tissues. Anal. Biochem., **27(2)**, 212-217 (1969).
6. Domagk, G.F., and Chilla, R., Glucose-6-phosphate Dehydrogenase from *Candida utilis*. Methods in Enzymology, **XLI-B**, 205-208 (1975).

CS,MAM 07/10-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.