

Glucose-6-phosphate isomerase (EC 5.3.1.9), *Escherichia coli*

Catalogue number:

AE00101, 5000 U (4.1 mg)

Description

Glucose-6-phosphate isomerase (GPI), alternatively known as phosphoglucose isomerase or phosphohexose isomerase, is a dimeric enzyme that catalyzes the reversible isomerization of D-glucose-6-phosphate and D-fructose-6-phosphate. GPI also catalyzes the anomerization of D-glucose-6-phosphate. This enzyme is responsible for the second step of glycolysis and is involved in gluconeogenesis. Besides functioning as an isomerase, GPI serves as a neuroleukin, autocrine motility factor, and a differentiation and maturation mediator. Thus, GPI is one protein with several unique functions. It is thought that each of these functions is controlled by a unique active site. This makes GPI a classic example of a moonlighting protein, a protein that has more than one independent function. The enzyme is provided in 3.2 M ammonium sulphate. Swirl the enzyme mix immediately prior to use.

Purity

Glucose-6-P isomerase has been determined to be >95% pure, according to SDS polyacrylamide gel electrophoresis (PAGE), followed by Coomassie blue staining (Figure 1).

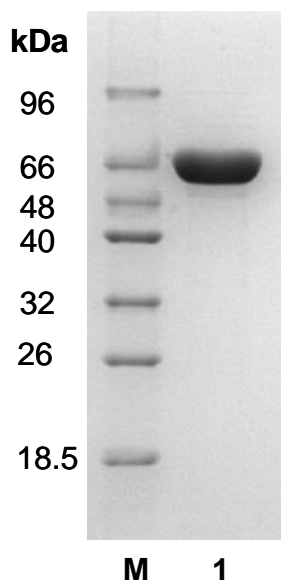


Figure 1. SDS-PAGE analysis of *E. coli* glucose-6-P isomerase. Electrophoresis was performed using a 10% polyacrylamide gel. Lane M, molecular weight marker; Lane 1, purified glucose-6-P isomerase from *E. coli* K12 (63 kDa).

Storage temperature

Glucose-6-P isomerase should be stored at 2 °C to 8 °C.

Temperature and pH optimum

The optimum pH and temperature are 7.5 and 40 °C, respectively.

Specific activity

1220 U/mg, 2440 U/ml.

Substrate specificity

Under the reaction conditions specified the enzyme may present a residual phosphomannose isomerase activity.

Unit definition

One unit is defined as the amount of enzyme required to produce 1 μmol of NADH from NAD^+ in a reaction mixture containing 50 mM Tris-HCl, pH 7.5, 5 mM MgCl_2 , 0.5 mg/ml BSA, 0.55 mM NAD^+ , 1.5 mM D-fructose-6-phosphate and 2.3 U/mL of glucose-6-phosphate dehydrogenase, at 40 °C.

Reference

Kim JW, Dang CV (2005) Trends Biochem. Sci. 30(3), 142-50.

Certificate of Analysis

Test	Criteria	Result
Protein purity	Purity in line with the stated value	Meets specification
Protein concentration	Concentration in line with the stated value	Meets specification
Catalytic activity	Activity in line with the stated value	Meets specification
Blank assay variability	Absorbance values with less than 10% of variability	Meets specification

Approved by:



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