

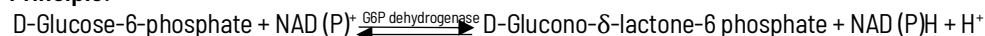
SPECIFICATION SHEET

Product Name: Glucose-6-Phosphate Dehydrogenase
Catalog # GD03D1-E311H

Product Description: Glucose-6-phosphate dehydrogenase is a diagnostic grade reagent from a microorganism host. This enzyme is useful for enzymatic determination of NAD⁺ (NADP⁺) and G-6-P, and activities of phosphoglucose isomerase, phosphoglucomutase, and hexokinase. The enzyme is also used for enzymatic determination of glucose and creatine phosphokinase activity when coupled with hexokinase.

EC 1.1.1.49

Storage and Stability: Product can be stored at 2~8°C for transportation process up to ten days but long-term storage should be at -20°C.

Principle:


Unit Definition	: One unit causes the formation of one micromole of NADH per minute at pH 7.8 at 30°C	
Appearance	: White amorphous powder, lyophilized	
Activity	: 280 U/mg solid or more (NAD ⁺)	
Contaminants	: Creatine phosphokinase & Phosphoglucomutase	all $\leq 1.0 \times 10^{-3}$ %
	6-Phosphogluconate dehydrogenase	$\leq 5.0 \times 10^{-3}$ %
	Phosphoglucose isomerase	$\leq 1.0 \times 10^{-2}$ %
	Glutathione reductase	$\leq 1.0 \times 10^{-3}$ %
	Hexokinase & Myokinase	all $\leq 1.0 \times 10^{-2}$ %
	NADH oxidase & NADPH oxidase	all $\leq 1.0 \times 10^{-2}$ %
Molecular Weight	: 55 kDa	
Isoelectric Point	: 5.1	
Michaelis Constant	: 1.1×10^{-4} M (G6P), 2.0×10^{-4} M (NAD ⁺)	
Inhibitors	: Fe ³⁺ , Ni ²⁺ , Hg ²⁺ , SDS	
Optimum pH	: 7.0 ~ 8.0	(Figure 1)
Optimum Temperature	: 55°C	(Figure 2)
pH Stability	: pH 4.4~10.5 (25°C, 20 hr)	(Figure 3)
Thermal Stability	: Below 45°C (pH 7.5, 15 min)	(Figure 4)
Substrate Specificity	: (Table 1)	
Effect of Various Chemicals	: (Table 2)	

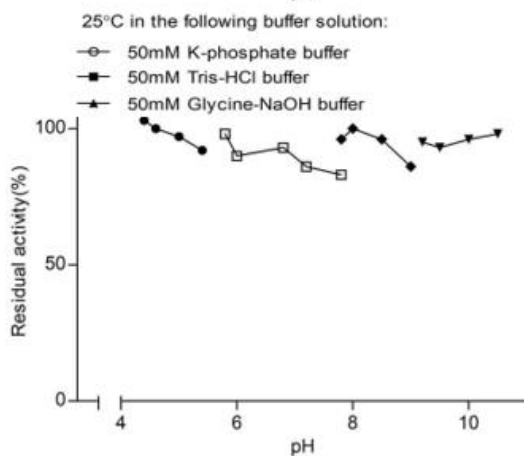
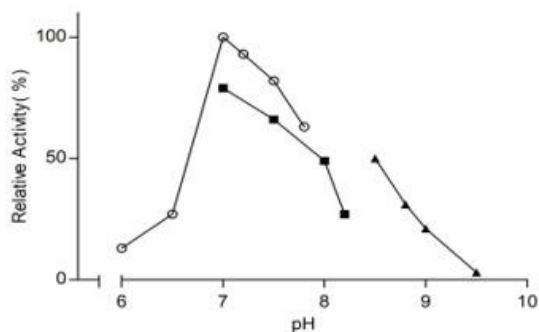
Table 1. Substrate Specificity of Glucose-6-Phosphate Dehydrogenase

Substrate (0.1 mM)	Relative activity (%)	Substrate (0.1 mM)	Relative activity (%)
Glucose-6-phosphate	100	Fructose-6-phosphate	0
Glucose-1-phosphate	0	Gluconate-6-phosphate	0

Table 2. Effect of Various Chemicals on Glucose-6-Phosphate Dehydrogenase

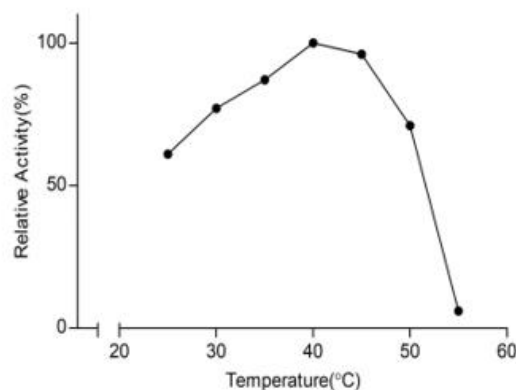
The enzyme was dissolved in 50mM Tris-HCl buffer, pH 7.5 containing 0.1% of BSA(30 U/mL) was incubated with each chemical at 25°C for 1 hr.

Chemical	Conc. (mM)	Residual activity (%)	Chemical	Conc. (mM)	Residual activity (%)
None	—	100	BME	2	100
CaCl ₂	2	96	Hydroxylamine	2	100
MgSO ₄	2	102	EDTA	5	95
ZnSO ₄	2	101	NaF	20	98
NiCl ₂	2	73	NaN ₃	20	98
CoCl ₂	2	85	Borate	50	99
MnCl ₂	2	104	Proclin-300	0.045% (v/v)	98
FeCl ₃	2	1	SDS	0.05%	0
CuSO ₄	2	115	Na-Cholate	0.1%	102
AgNO ₃	2	99	Tween-20	0.1% (v/v)	99
HgSO ₄	2	0	Triton X-100	0.1% (v/v)	102
NEM	2	98	Span-20	0.1% (v/v)	100
IAA	2	99	Brij-35	0.1%	100

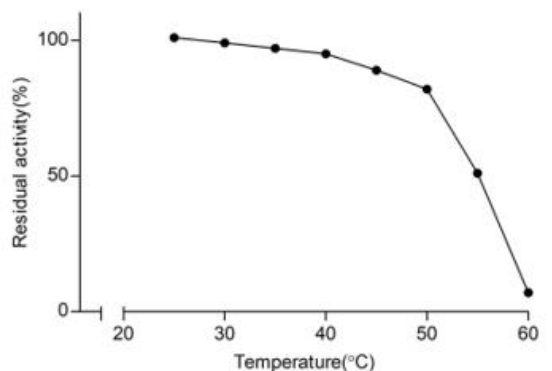
Fig.1. pH Activity

25°C, 20hr-treatment with following buffer solution:

- 0.1M Acetate buffer
- 0.1M K-phosphate buffer
- ◆ 0.1M Tris-HCl buffer
- ▼ 0.1M Glycine-NaOH buffer

Fig.2. Temperature Activity

in 50mM K-phosphate buffer, pH 7.5
Fig.4. Thermal Stability



15min- treatment with 50mM K-phosphate buffer, pH7.0