

SPECIFICATION SHEET

Product Name: Hexokinase
Catalog # HK01D1-E311H

Product Description: Hexokinase is a diagnostic grade reagent from a microorganism host. This enzyme is useful for enzymatic determination of glucose, adenosine-5'-triphosphate (ATP) and creatine phosphokinase when coupled with glucose-6-phosphate dehydrogenase.

EC 2.7.1.1

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:

D-Hexose + ATP $\xrightarrow{\text{D-Hexose 6-phosphotransferase}}$ D-Hexose 6-phosphate + ADP

Unit Definition	: One unit causes the formation of one micromole of NADH per minute at pH 8.0 at 30°C.	
Appearance	: White amorphous powder, lyophilized	
Activity	: ≥ 150 U/mg solid	
Contaminants	: Phosphoglucose isomerase	$\leq 1.0 \times 10^{-1} \%$
	6-Phosphogluconate dehydrogenase	$\leq 1.0 \times 10^{-2} \%$
	Glucose-6-phosphate dehydrogenase	$\leq 1.0 \times 10^{-2} \%$
	Myokinase	$\leq 1.0 \times 10^{-2} \%$
	Glutathione reductase	$\leq 5.0 \times 10^{-1} \%$
Molecular Weight	: 55.1 kDa	
Isoelectric Point	: 5.8	
Michaelis Constant	: 6.1×10^{-5} M (D-Glucose), 9.6×10^{-5} M (ATP)	
Inhibitors	: Co^{2+} , Fe^{3+} , Ag^{+} , Hg^{2+} , SDS	
Optimum pH	: 8.0 ~ 9.0	(Figure 1)
Optimum Temperature	: 40 ~ 50°C	(Figure 2)
pH Stability	: pH 5.0-9.5 (25°C, 20 hr)	(Figure 3)
Thermal Stability	: Below 40°C (pH 7.5, 15 min)	(Figure 4)
Effect of Various Chemicals	: (Table 1)	

Table 1. Effect of Various Chemicals on Hexokinase

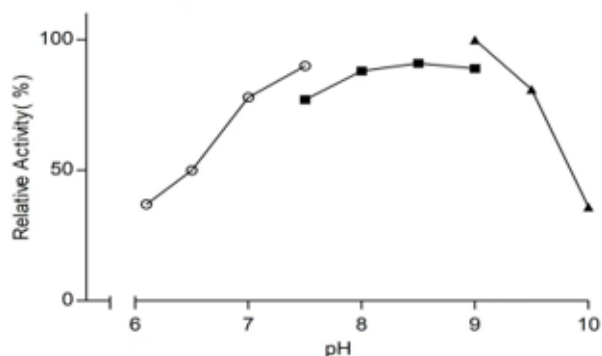
The enzyme solution was dissolved in 50 mM K-phosphate buffer, pH 7.5 containing 0.1% of BSA (10 U/mL) and incubated with each chemical at 25°C for 1 hr.

Chemical	Conc. (mM)	Residual activity (%)	Chemical	Conc. (mM)	Residual activity (%)
None	—	100	BME	2	85
CaCl_2	2	88	Hydroxylamine	2	88
MgSO_4	2	92	EDTA	5	84
ZnSO_4	2	130	NaF	20	85
NiCl_2	2	82	NaN_3	20	84
CoCl_2	2	43	Borate	50	87
MnCl_2	2	87	Proclin-300	0.045% (v/v)	86
FeCl_3	2	23	SDS	0.05% (w/v)	55

Table 1 (Continued)

Chemical	Conc. (mM)	Residual activity (%)	Chemical	Conc. (mM)	Residual activity (%)
CuSO ₄	2	82	Na-Cholate	0.1% (w/v)	87
AgNO ₃	2	32	Tween-20	0.1% (v/v)	85
HgSO ₄	2	0	Triton X-100	0.1% (v/v)	86
NEM	2	83	Span-20	0.1% (v/v)	86
IAA	2	84	Brij-35	0.1% (w/v)	90

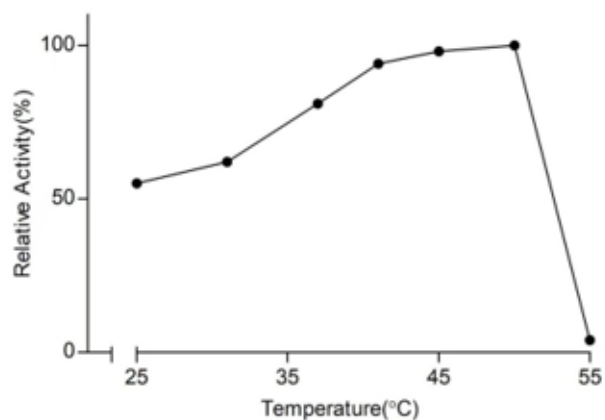
Fig.1. pH Activity



37°C in the following buffer solution:

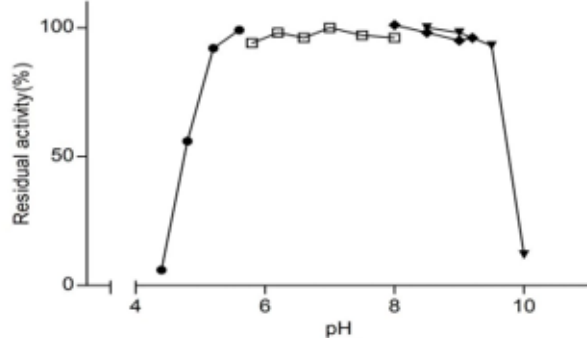
- 50mM PIPES-NaOH buffer
- 50mM Tris-HCl buffer
- ▲ 50mM Glycine-NaOH buffer

Fig.2. Temperature Activity



in 50mM K-phosphate buffer, pH 7.5

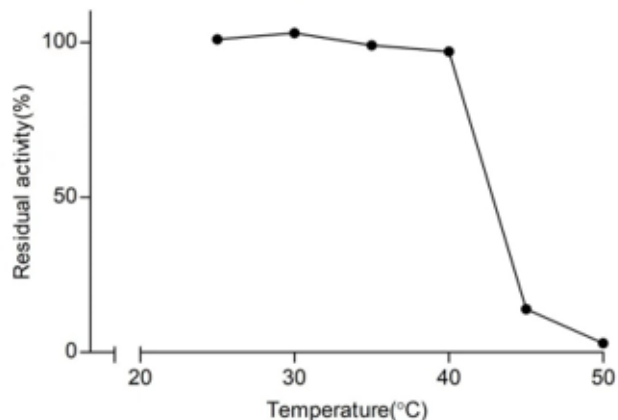
Fig.3. pH Stability



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.4. Thermal Stability



15min- treatment with 50mM K-phosphate buffer, pH7.5