ENZYMES
CAT# GLOX-70-6457
EC# 1.1.3.4

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Glucose Oxidase HPS150

ORIGIN *Aspergillus niger*

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SPECIFICATIONS

Appearance	Yellow to orange freeze dried powder	
Powder Activity	>180 U/mg powder at 25°C	
Specific Activity	>250 U/mg protein at 25°C	
Solubility	Dissolves readily at 10 mg/mL in water to give a clear yellow solution essentially free from particulate matter	
Contaminants	GO: Catalase Ratio	> 100:1
	Invertase	< 0.05%
	Amylase	< 0.05%
	α-Glucosidase	< 0.05%

APPLICATION

Used in the determination of D-glucose in blood or urine.

UNIT DEFINITION

One unit of activity is defined as the amount of enzyme that will catalyse the oxidation of one micromole of glucose per minute at 25°C under the standard assay method conditions

ASSAY PRINCIPLE

Glucose Oxidase catalyses the following reaction:

$$\text{ß-D-Glucose} + O_2 + H_2O \xrightarrow{\text{Glucose Oxidase}} \text{D-Glucono-∂-lactone} + H_2O_2$$

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CHARACTERISTICS

HPS150 is a freeze dried glucose oxidase suitable for use in colorimetric applications. Table 1 below shows properties of the Glucose Oxidase HPS150 product:

Molecular Weight[1]:	160kD
Structure[1]:	Glycoprotein with 2 equal subunits and 2 moles of FAD
Isoelectric point[2]:	4.2
Km (Calculated in-house):	2.8 x 10^{-2} M
Optimum pH (Fig. 1):	pH 5.5 to 7.0
Optimum Temperature (Fig. 2):	30°C to 45°C
pH Stability (Fig. 3):	pH 4.0 to 8.0 (25°C for 20 hours)
Thermal Stability (Fig. 4):	Stable up to 50°C (pH 7.0 for 15 minutes)

TABLE 1: SUBSTRATE SPECIFICITY

Substrate specificity was tested in-house by substituting different sugars for glucose in the standard glucose oxidase assay procedure. Assays were based on a sugar concentration of 30mM.

SUBSTRATE	% OF D-(+)-GLUCOSE ACTIVITY	SUBSTRATE	% OF D-(+)-GLUCOSE ACTIVITY	SUBSTRATE	% OF D-(+)-GLUCOSE ACTIVITY
D-(+)-Glucose	100	D-(+)-Maltose	0.017	D-(+)-Trehalose	0.0004
2-Deoxy-D-Glucose	9.2	Sucrose	0.0033	D-Ribose	0.0001
D-(+)-Mannose	0.23	D-(+)-Gluconic acid ∂-lactone	0.0028	D-(+)-Lactose	<0.0001
D-(+)-Galactose	0.091	D-(-)-Fructose	0.0024	L-(-)-Glucose	<0.0001
D-(+)-Xylose	0.035	D-Sorbitol	0.0009	D-Mannitol	<0.0001

FIGURE 1: OPTIMUM pH

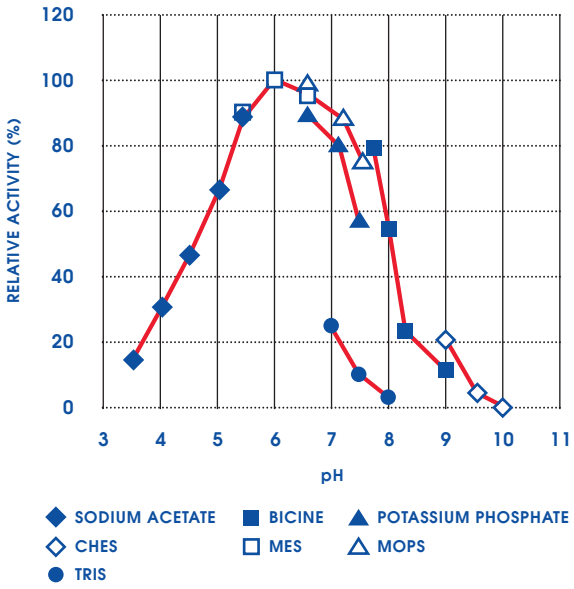


FIGURE 2: OPTIMUM TEMPERATURE

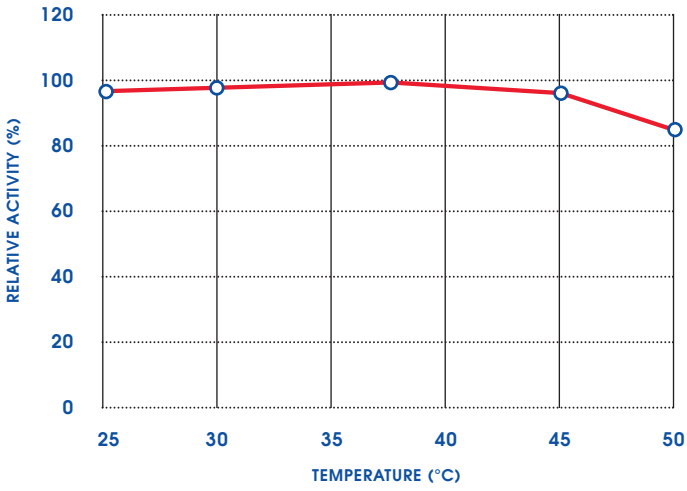


FIGURE 3: pH STABILITY (25°C FOR 20 HOURS)

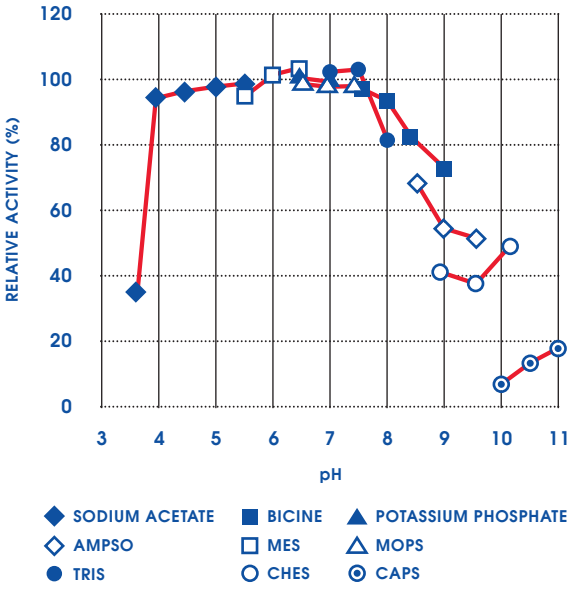
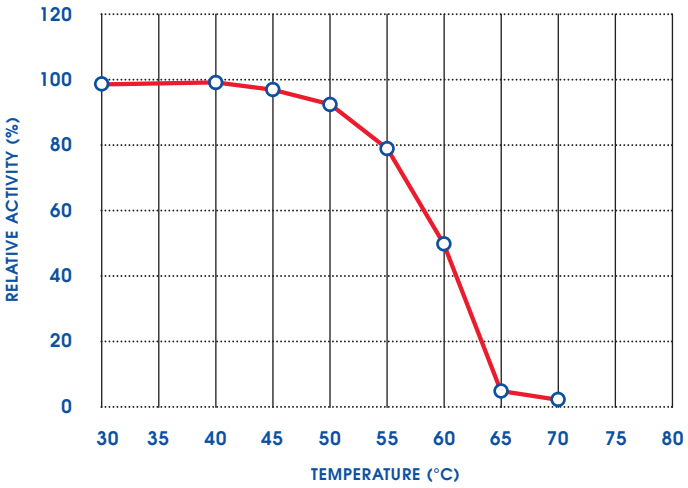


FIGURE 4: THERMAL STABILITY (pH 7.0 FOR 15 MINUTES)



(1) Tsuge, H.J., et al. Purification, properties, and molecular features of glucose oxidase from Aspergillus niger. J. Biochem., 78, 835-843 (1975).
(2) Pazar, J.H. and Kleppe, K. The oxidation of glucose and related compounds by the glucose oxidase from Aspergillus niger. Biochemistry 3: 578 – 583(1964).

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