

ENZYMES  
CAT# GLDE-70-1191  
EC# 1.1.1.47

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# Glucose Dehydrogenase (NAD Dependent)

ORIGIN *Bacillus sp.*

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### ► SPECIFICATIONS

Appearance	Freeze dried powder
Activity	>30 U/mg powder at 25°C
Contaminants	Lactate dehydrogenase (Pyruvate) ≤0.002% Lactate dehydrogenase (Lactate) ≤0.002% NADH oxidase ≤0.002%

### ► APPLICATION

Used in the formulation of glucose testing reagents or the use in Point-of-Care testing devices, due to its enhanced specificity for glucose.

### ► UNIT DEFINITION

One unit of activity is defined as the amount of enzyme that will catalyse the reduction of 1.0 micromole of NAD<sup>+</sup> per minute at 25°C under the standard assay method conditions.

### ► ASSAY PRINCIPLE

Glucose Dehydrogenase (GDH) catalyses the following reaction:



The appearance of NADH is measured at 340nm by spectrophotometry.

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## CHARACTERISTICS

<b>Molecular Weight:</b>	105kDa (gel filtration)	
<b>Isoelectric point:</b>	4.5	
<b>K<sub>m</sub> values:</b>	Glucose	0.8 x 10 <sup>-2</sup> M
	NAD	1.5 x 10 <sup>-4</sup> M
	NADP	4.3 x 10 <sup>-5</sup> M
<b>Optimum pH (Fig. 1):</b>	8.0 (phosphate buffer)	
<b>Optimum Temperature (Fig. 2):</b>	Above 50°C	
<b>pH Stability (Fig. 3):</b>	5.0 to 8.0 (40°C for 90 minutes)	
<b>Thermal Stability (Fig. 4):</b>	Below 80°C (pH 7.0 for 50 minutes)	
<b>Inhibitors:</b>	Ag <sup>+</sup> , Hg <sup>2+</sup>	
<b>Stabilisers:</b>	Inorganic salts	
<b>Substrate Specificity:</b>	See Table 1	

FIG. 1 OPTIMUM pH

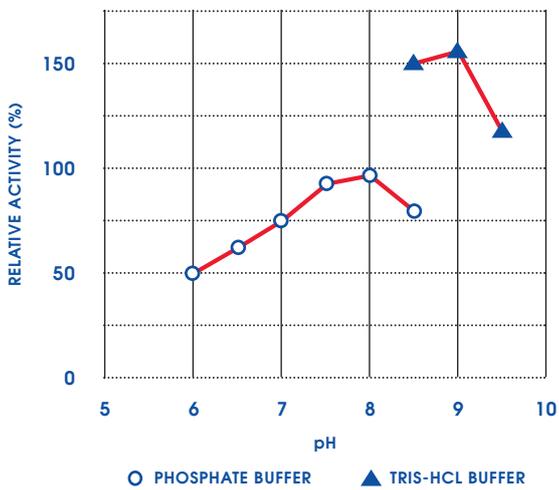
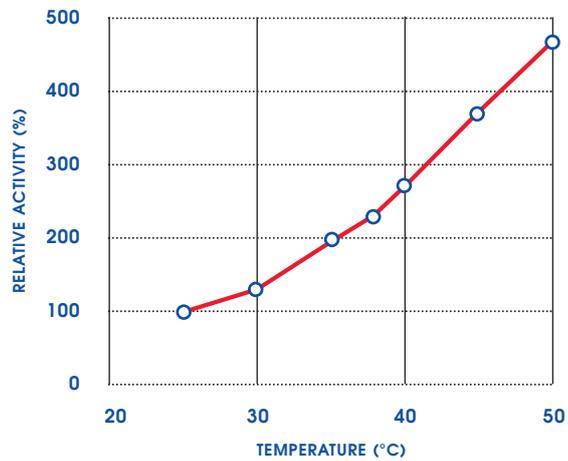
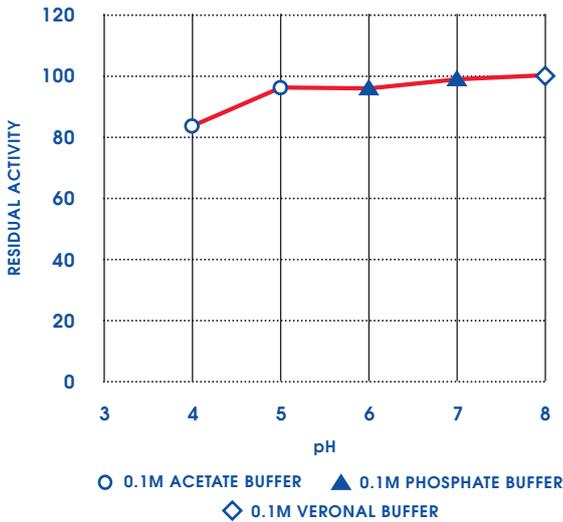


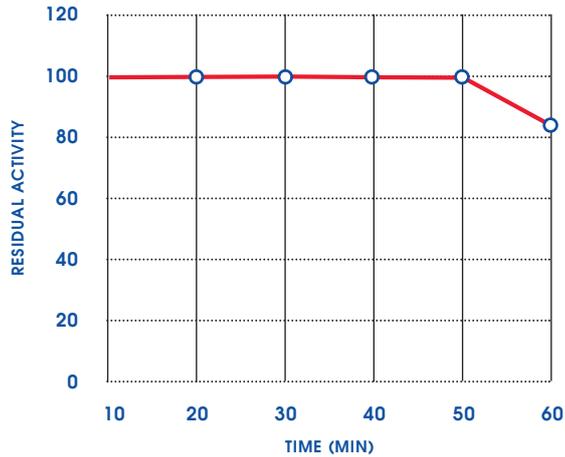
FIG. 2 OPTIMUM TEMPERATURE



**FIG. 3 pH STABILITY**  
**(40°C FOR 90 MINS)**



**FIG. 4 THERMAL STABILITY**  
**(pH 7.0 FOR 80 MINS)**



**TABLE 1: SUBSTRATE SPECIFICITY OF GLUCOSE DEHYDROGENASE**  
**(30MM SUGAR CONCENTRATION)**

SUBSTRATE	% OF D-GLUCOSE ACTIVITY	SUBSTRATE	% OF D-GLUCOSE ACTIVITY
D-Glucose	100%	D-Sorbitol	<0.1%
D-Xylose	3%	D-Sucrose	<0.1%
D-Mannose	1%	D-Ribose	<0.1%
D-Galactose	0.5%	D-Trehalose	<0.1%
D-Maltose	0.5%	D-Mannitol	<0.1%
D-Lactose	0.3%	L-Glucose	<0.1%
D-Fructose	0.3%		

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