

# ENZYMES

BY

# SORACHIM

## Glucoamylase from *Rhizopus* sp.

### GLA-111

#### SPECIFICATIONS

Name	1,4- $\alpha$ -D-Glucan glucohydrolase
EC	3.2.1.3
Appearance	White amorphous powder, lyophilized
Activity	Grade I, 30 U/mg-solid or more
Stability	Stable at - 20°C for at least 12 months
Molecular weight	Approx. 70,000
Michaelis constants	11 $\pm$ 1.1 $\times$ 10 <sup>-4</sup> M (Maltose), 3.6 $\pm$ 0.51 $\times$ 10 <sup>-4</sup> M (Maltotriose), 2.5 $\pm$ 0.33 $\times$ 10 <sup>-4</sup> M (Maltotetraose), 1.6 $\pm$ 0.02 $\times$ 10 <sup>-4</sup> M (Maltopentaose)
Optimum pH	4.5-5.0
Optimum temperature	60°C
pH Stability	pH 4.0-8.5 (25°C, 20hr)
Thermal stability	Below 45°C (pH 5.5, 10min)
Substrate specificity	This enzyme completely hydrolyzes soluble starch amylopectin, glycogen, $\alpha$ -or $\beta$ -limit dextrin, amylose, maltooligosaccharides and panose.

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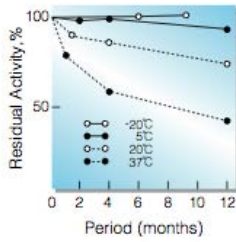


Fig.1. Stability (Powder form)  
(kept under dry conditions)

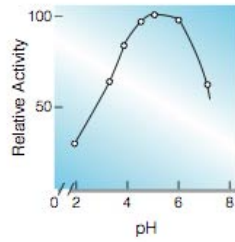


Fig.2. pH-Activity  
[40°C, 15min-reaction in 50mM buffer solution: pH2.0, sodium acetate-HCl; pH3.0-6.0, acetate; pH6.0-7.0, phosphate]

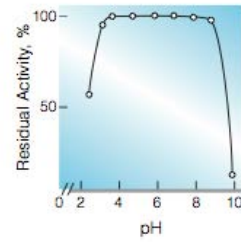


Fig.4. pH-Stability  
[25°C, 20hr-treatment with 50mM buffer solution: pH3.0-6.0 acetate; pH6.0-9.0, phosphate; pH9.0-10.0, borate]

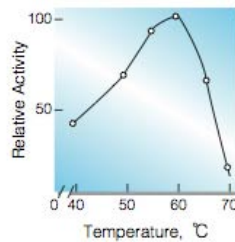


Fig.3. Temperature activity  
[15min-reaction in 50mM acetate buffer, pH4.5]

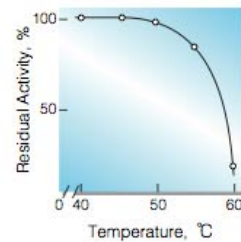


Fig.5. Thermal stability  
[10min-treatment with 50mM acetate buffer, pH5.5]