



## **$\alpha$ -AMYLASE (Thermostable) (*Bacillus* sp.) (Lot 161202a)**

### **E-BSTAA**

06/19

(EC 3.2.1.1) alpha-amylase; 4-alpha-D-glucan glucanohydrolase

CAZy Family: GH13

CAS: 9000-90-2/9000-85-5

### **PROPERTIES**

#### **1. ELECTROPHORETIC PURITY:**

- Major band (pI = 7.4) and minor band (PI = 6.5) on isoelectric focusing
- Single major band on SDS-gel electrophoresis (MW = 58,000)

#### **2. SPECIFIC ACTIVITY:**

**170 U/mg protein (on Ceralpha Reagent) at pH 6.5 and 40°C**

**One Unit** of  $\alpha$ -amylase activity is defined as the amount of enzyme required to release one  $\mu$ mole of *p*-nitrophenol from blocked *p*-nitrophenyl-maltoheptaoside per minute (in the presence of excess  $\alpha$ -glucosidase) at pH 6.5 and 40°C.

#### **3. SPECIFICITY:**

Hydrolysis of  $\alpha$ -1,4 glucosidic linkages in linear  $\alpha$ -1,4 glucan (e.g. amylose regions in starch).

#### **5. PHYSICOCHEMICAL PROPERTIES:**

Recommended conditions of use are at pH 5.0-7.5 at up to 100°C

pH Optima: 7.0

pH Stability: 5.0-9.0 (> 75% control activity after 24 h at 4°C)

Temperature Optima: 100°C (10 min reaction)

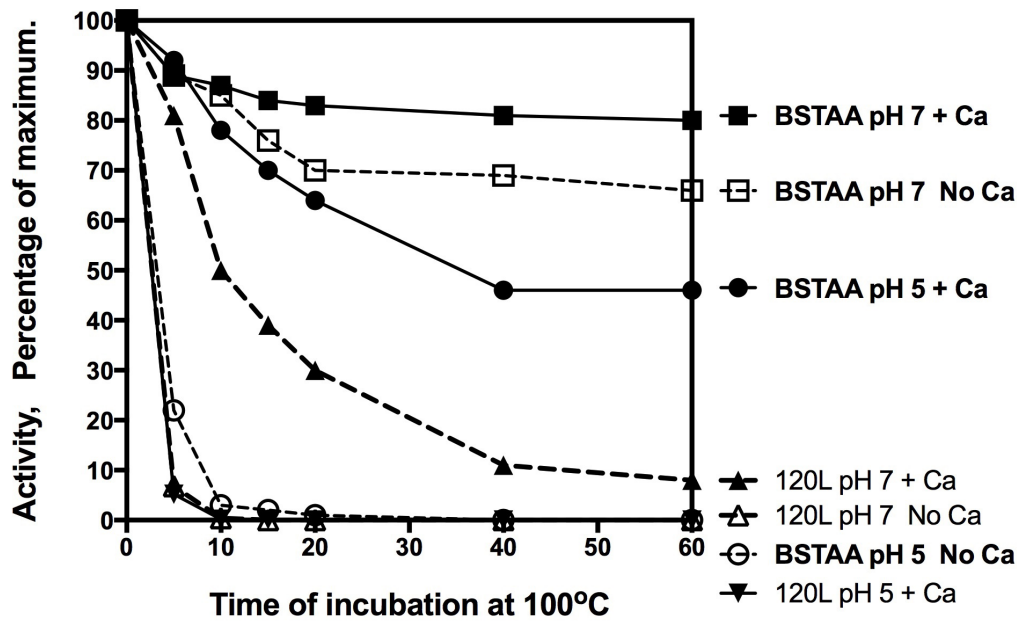
Temperature Stability: up to 100°C (> 65% control activity after 60 min incubation at temperature)

#### **6. STORAGE CONDITIONS:**

The enzyme is supplied as a solution containing 50% glycerol and 0.02% (w/v) sodium azide and should be stored below -10°C.

#### **7. SPECIAL CONSIDERATIONS:**

The stability of the enzyme is significantly enhanced in the presence of calcium chloride. Figure 1 below shows a comparison between thermostable  $\alpha$ -amylase (E-BSTAA) and heat stable  $\alpha$ -amylase (Novozymes I20 L) in the presence or absence of calcium chloride at pH 5.0 and 7.0.



**Figure 1.** Thermostable  $\alpha$ -amylase (**E-BSTAA**) and heat stable  $\alpha$ -amylase (Novozymes 120 L) in the presence or absence of 5 mM calcium chloride at pH 5.0 (100 mM sodium acetate) and 7.0 (50 mM MOPS buffer).

**8. REFERENCES:**

McCleary, B.V., Charmier, M.J. & McKie, V.A. (2019). Measurement of Starch: Critical Evaluation of Current Methodology. *Starch*, 71(1-2), 1800146.