

## Glycogen branching enzyme from *Bacteroides fragilis*, Recombinant

Cat. No. NATE-1209

Lot. No. (See product label)

### Introduction

**Description** Glycogen branching enzyme is an enzyme that adds branches to the growing glycogen molecule during the synthesis of glycogen, a storage form of glucose. More specifically, during glycogen synthesis, a glucose 1-phosphate molecule reacts with uridine triphosphate (UTP) to become UDP-glucose, an activated form of glucose. The activated glucosyl unit of UDP-glucose is then transferred to the hydroxyl group at the C-4 of a terminal residue of glycogen to form an  $\alpha$ -1,4-glycosidic linkage, a reaction catalyzed by glycogen synthase. Importantly, glycogen synthase can only catalyze the synthesis of  $\alpha$ -1,4-glycosidic linkages. Since glycogen is a readily mobilized storage form of glucose, the extended glycogen polymer is branched by glycogen branching enzyme to provide glycogen breakdown enzymes, such as glycogen phosphorylase, with a large number of terminal residues for rapid degradation. Branching also importantly increases the solubility and decreases the osmotic strength of glycogen.

**Synonyms** Branching enzyme, amylo-(1,4 $\rightarrow$ 1,6)-transglycosylase; Q-enzyme;  $\alpha$ -glucan-branching glycosyltransferase; amylose isomerase; enzymatic branching factor; branching glycosyltransferase; enzyme Q; glucosan transglycosylase; glycogen branching enzyme; plant branching enzyme;  $\alpha$ -1,4-glucan: $\alpha$ -1,4-glucan-6-glycosyltransferase; starch branching enzyme; 1,4- $\alpha$ -D-glucan:1,4- $\alpha$ -D-glucan 6- $\alpha$ -D-(1,4- $\alpha$ -D-glucano)-transferase

### Product Information

<b>Source</b>	Bacteroides fragilis NCTC 9343
<b>Form</b>	Supplied in 3.2 M ammonium sulphate, containing 0.5 M imidazole and 0.5 M NaCl, pH ~ 6.8.
<b>EC Number</b>	EC 2.4.1.18
<b>CAS No.</b>	9001-97-2
<b>Molecular Weight</b>	81104.6 Da
<b>Purity</b>	> 95 % as judged by SDS-PAGE
<b>Activity</b>	50.88 U/mg (pH 7.0; 3.3 mg/mL starch)
<b>Concentration</b>	330.14 U/ml
<b>Optimum pH</b>	~ 7.0
<b>Optimum temperature</b>	> 37°C
<b>Unit Definition</b>	One unit is defined as the amount of enzyme required to cause a fall of 1.0 absorbance unit per minute, where the reaction mixture comprises 3.33 mg/mL starch (boiled for 5 min prior to use to fully solubilise) in 41.7 mM sodium phosphate buffer, pH 7.5, containing 0.69 mg/mL BSA and 173.6 mM sodium chloride, and where 0.050 mL of the reaction mixture (boiled for 5 min to inactivate the enzyme) is mixed with 1.0 mL iodine reagent (0.5 mg/mL iodine and 1 mg/mL potassium iodide in water) prior to reading at 660 nm.

### ***Usage and Packaging***

***Preparation Instructions***      Agitate vial sufficiently to fully homogenise enzyme precipitate before use.

### ***Storage and Shipping Information***

***Storage***      Store at 4°C (shipped at room temperature)