Description
BAN 480 L - Bacterial Amylase Novo - is an alpha-amylase produced by submerged fermentation of a selected strain of Bacillus amyloliquefaciens. The systematic name is 1,4-alpha-D-glucan glucano-hydrolase (EC 3.2.1.1).

Product Properties

Appearance
BAN 480 L is a brown liquid with a density of approx. 1.2 g/ml.

Product types
BAN 480 L is available with a standard strength of 480 KNU/g. See the Analytical Method for further information.

Food-grade status
BAN 480 L complies with FAO/WHO JECFA and FCC recommended purity specifications.

Standard Packaging
See the standard Packaging List for more packaging information.

Application
BAN 480 L is an endo-amylase. It hydrolyzes 1,4-alpha-glucosidic linkages in amylose and amyllopectin at random, which results in a rapid reduction of the viscosity of gelatinized starch. The breakdown products are dextrins of differing chain lengths, and oligosaccharides. BAN 480 L is a conventional alpha-amylase operating in the relatively high temperature range of 70-90°C (158-194°F).
Reaction Parameters

**Activity and stability**

BAN 480 L is active over a wide temperature range as shown in Figures 1 and 2.

![Graph showing the effect of temperature on the activity of BAN 480 L.](image)

*Fig. 1. The effect of temperature on the activity of BAN 480 L.*

Novozymes method used at various temperatures.

![Graph showing the effect of temperature on the stability of BAN 480 L.](image)

*Fig. 2. The effect of temperature on the stability of BAN 480 L.*

Residual activity measured after incubation at pH 7.0 (Tris-maleate buffer) in a solution containing 0.5 g CaCl₂ + 6.0 g NaCl per litre.
BAN 480 L is also active over a wide pH range as shown in Figures 3 and 4.

Fig. 3. The effect of pH on the activity of BAN 480 L.
Novozymes method used at various pH values (Tris-maleate buffer).

Fig. 4. The effect of pH on the stability of BAN 480 L.
Residual activity measured after incubation at 70°C (158°F) for 60 min. in a solution containing 0.5 g CaCl₂ + 6.0 g NaCl per litre.
The stability of BAN 480 L is also depending upon the dry substance and the calcium content as can be seen in Figures 5 and 6.

Fig. 5. The effect of D.S. on the stability of BAN 480 L. 
Residual activity measured after incubation at 80°C (176°F) for 60 min. at various starch concentrations.

Fig. 6. The effect of calcium on the stability of BAN 480 L. 
Residual activity measured after incubation at 70°C (158°F) for 60 min. at pH 7.0 (Tris-maleate buffer) at various concentrations of CaCl₂.

Safety
Enzymes are proteins and inhalation of dust or aerosols may induce sensitization and may cause allergic reactions in sensitized individuals. Some enzymes may irritate the skin, eyes and mucous membranes upon prolonged contact. The product may create easily inhaled aerosols if splashed or vigorously stirred. Spilled product may dry out and create dust. Spilled material should be flushed away with water (avoid splashing). Left-over material may dry out and create dust. A Material Safety Data Sheet is supplied with all products. See the Safety Manual for further information regarding how to handle the product safely.
Storage

Enzymes gradually lose activity over time depending on storage temperature and humidity. It is recommended to store the product under cool and dry conditions in closed containers at 0-10°C (32-50°F). Extended storage and/or adverse conditions including higher temperature or high humidity, may lead to a higher dosage requirement. Further information on product stability is available on request.