Product description
Distizym® BA-N is a special enzyme for liquefying starchy mash. The enzyme is obtained from a specially selected strain of Bacillus subtilis. The principal enzyme activity is based on a α-amylase, (1,4-α-D-glucan- glucanohydrolase: EC.3.2.1.1).

Distizym® BA-N liquefies and dextrinises gelatinised, digested starches in distilling mashs in a temperature range of 30 - 90 °C.

Dosage
The enzyme’s field of activity extends from pH 4.0 - 8.0, the optimum being around pH 5.8 - 6.0 in the presence of substrate and calcium. The temperature range is 30 - 90 °C, the optimum temperature is 70 - 80 °C in the presence of substrate, calcium and the optimum pH value.

Dosage for barley, wheat, rye and corn: 120 mL/t starch
Dosage for potatoes or other farinaceous raw materials: 280 mL/t starch

A higher or lower dosage may be necessary in the event of deviations from standard conditions.

Classic starch digestion without pressure:
Distizym® BA-N is added to the mash tun first, or added to the mash tune at the time of, or after the raw material has been doughed or ground in, in the latter case before or at the start of the heating phase. The enzyme should be diluted with cold water at a ratio of 1:1 before addition. Distizym® BA-N exhibits good liquefaction from 30 °C, and strong liquefaction from 50 °C, depending on the raw material. For a mash temperature of 70 - 80 °C, the liquefaction rest - of varying length depending on the speed of heating - must be taken before the final temperature is attained. The addition of calcium (as Ca(OH)2, CaCl2, etc.) at a level of 75 - 150 ppm, based on pure calcium, is recommended to first activate the enzyme and then have a stabilising effect at temperatures above 60 °C. Adjustment of the pH to 6.0 is recommended for mashs with pH values below 5.0. The advised calcium enrichment is achieved simultaneously if calcium hydroxide is used to raise the pH value.

Special pressure/thermo process (high-pressure cooking process according to Michurin, etc.):
Distizym® BA-N can also be used in the high pressure steam process if there is no need to or possibility of complying with a liquefaction rest at high temperatures (90 - 95 °C). This is the case for the high-pressure cooking process (HPCP or “hard” starch digestion process at 5 - 6 bar or 150 - 160 °C), for example when, after after pressure is released in the steam separator, the mash feed is cooled directly to temperatures below 70 °C by continuous mash cooling and transferred to the saccharification vat. In other high-pressure cooking processes, such as the jet cooker process, with continuous mash cooling Distizym® BA-N reduces the application rate for the thermostable amylase (Distizym® BA-TS) that is always necessary initially, in that it is added for further liquefaction at temperatures above 80 °C. In both cases the addition of calcium (as Ca(OH)2, CaCl2, etc.) at a level of 75 - 150 ppm, based on pure calcium, is recommended to stabilise and protect the enzyme against deactivation by the initial high temperatures.
Distizym® BA-N
Bacterial α-amylase for starch liquefaction

Figures 1 and 2 show the influence of temperature and pH value on Distizym® BA-N’s enzyme activity

**Fig. 1:** Influence of temperature on activity (16 % starch; pH 6.0).

**Fig. 2:** Influence of pH value on activity (16 % starch; 70 °C).

**Storage**
Optimum storage is at 0 - 10 °C. Higher storage temperatures reduce shelf life. Temperatures above 25 °C should be avoided. Opened containers should be tightly sealed and used as soon as possible.