

Enzymation Panzym® AG XXL

Efficient Degradation of Starch for Fruit and Vegetable Processing

Panzym AG XXL enzyme is an amyloglucosidase produced through submerge fermentation. The main activity of Panzym AG XXL enzyme is an amyloglucosidase that degrades alpha 1.4 and alpha 1.6 compounds into solute starch and dextrin. Amylase AG XXL enzyme additionally hydrolyzes great quantities of alpha 1.4 glycoside compounds of amylose and amylopectin.

Apple and pear juices produced in the fruit juice trade can contain large quantities of starch, particularly during the beginning of the harvest. In order to produce clear fruit juices, this starch must be hydrolyzed to prevent secondary hazing in the concentrate.

The specific advantages of Panzym AG XXL enzyme:

- Acid-stable fungal amylase for effective starch degradation
- High glucoamylase activity at a low pH value
- Very high resistance to heat at 158 °F (70 °C) over a period of several hours
- Optimum temperature at 149 °F (65 °C)
- Lower dosage

Application and Effect

Panzym AG XXL enzyme is dosed according to the starch concentration level in the fruits, which varies depending on the season. Starch causes problems clarifying and filtering juices and can lead to secondary hazing in the finished product. Any starch must be degraded prior to storage in order to produce clear juice or concentrate. The largely crystalline starch contained in the fruit is dissolved (gelatinized) during the heat treatment (at temperatures exceeding 131 – 140 °F (55 – 60 °C) in an aroma system during the pasteurizing and concentrating processes). Dissolved starch can be degraded enzymatically (with Panzym AG XXL enzyme for example). An iodine test should be used to track starch identification and degradation.

- Determining the total starch: Heat 2.7 fl dr (10 ml) of juice to more than 176 °F (80 °C) (not necessary if the sample is removed directly from the aroma system) and cool to room temperature.

- Determining the collidally dissolved starch: In order to determine the enzymatically degradable, collidally dissolved starch in unheated juice, the sample must be filtered to remove gelatinized grains of starch.
- Carefully pour approximately 0.27 fl dr (1 ml) of an iodine solution on the surface of the juice without mixing and determine the color by the boundary layer (reaction zone).
(Iodine solution: Solution of 0.56 dr (1 g) of iodine and 5.6 dr (10 g) potassium iodide in 33.81 fl oz (1 l) of water)

Evaluation

1. No change in the color of the iodine solution (red brown)
= no starch
2. The color of the iodine solution turns brown.
= partially hydrolyzed starch
3. The color of the iodine solution turns blue, dark blue, or black.
= starch

Recommended Dosage

Application	Dosage
Juice after the aroma system or heat treatment	0.26 – 3.84 fl oz/1,000 gal (0.2 – 3 ml/100 l)

Activity and Stability

pH value range and temperature profile of Panzym AG XXL enzyme:

- pH value range: 3.0 – 4.0, optimum at 4.0
- Temperature range: 50 – 158 °F (10 – 70 °C) over a period of several hours, optimum 149 °F (65 °C)

Enzyme Application

The Panzym AG XXL enzyme product should be mixed in cold, clean water at a ratio of 1:5 to 1:10. It can then be added in the enzymation tank while it is being filled or to the flow of product by means of a dosing system.

Temperature

Due to the diminished enzymic activity, avoid temperatures below 50 °F (10 °C).

Safety and Purity

Panzym AG XXL complies with the FAO/WHO (JECFA and FCC) specifications for enzymes in the food industry.

Panzym AG XXL enzyme is produced with the aid of microorganisms, which are characterized as self-cloned according to EU definition. The microorganism is classified as not genetically modified based on

- EU Directive 2001/18/EC (the version currently in effect)
- The German Genetic Engineering Act (GenTG).

The national legislation for other countries must be adhered to accordingly.

Irrespective of the classification of the production organism, the Panzym AG XXL enzyme is **not genetically modified**.

Panzym AG XXL enzyme is filled aseptically following sterile filtration and is therefore virtually germ-free. Panzym AG XXL enzyme is a brownish, liquid enzyme preparation that has the typical odor of fermented products.

Panzym AG XXL enzyme is characterized as follows:

- Production organism: *Aspergillus niger*
- Specified activity: 400 AGU/g (glucoamylase).

When used as directed and handled correctly, there are no known unfavorable effects associated with this product.

Further information on safety can be found in the Material Safety Data Sheet, which is available for download from our website.

Storage

The product should be stored with the packaging intact away from sunlight at a temperature of 32 to 50 °F (0 to 10°C).

Unfavorable storage conditions (exposure to direct sunlight, higher storage temperatures) may require a higher dosage.

Once opened, the product should be used up as soon as possible.

Delivery Information

Panzym AG XXL enzyme is sold under article no. 95.255 and is available in the following package size:

44 lb (20 kg) PE canister

Certified Quality

Panzym AG XXL enzyme is inspected regularly during the production process to ensure consistently high product quality.

Strict controls also take place immediately before and during final packaging.

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