

PRODUCT DESCRIPTION - PD 271337-1.6EN

AMYLEX® 5T

Description

AMYLEX® 5T is a thermostable alpha-amylase enzyme preparation derived from *Bacillus licheniformis*.

Application areas

Brewing
Potable alcohol production.

Potential benefits

- Provides fast and efficient viscosity reduction during adjunct liquefaction
- Allows for the use of low water to grist ratio
- Excellent adjunct liquefaction performance
- Reduce process cost

Usage levels

Typical dosage rate:
in the cereal cooker 0.1 – 0.60 kg/MT adjunct
in the mash 0.05 – 0.20 kg/MT cereal

Directions for use

It is recommended to add AMYLEX® 5T to the cereal cooker before cooking or into the mash to prevent the occurrence of starch positive wort.

For potable alcohol production it is recommended to add AMYLEX® 5T before cooking and/or at liquefaction dependent on the process

Composition

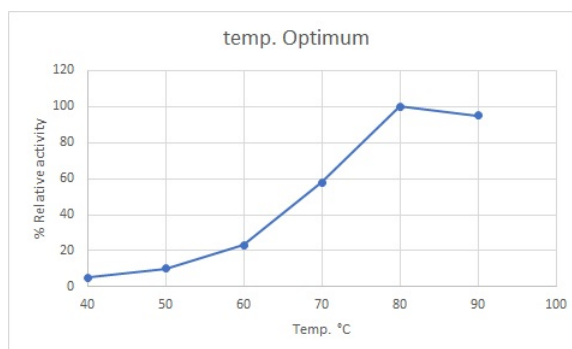
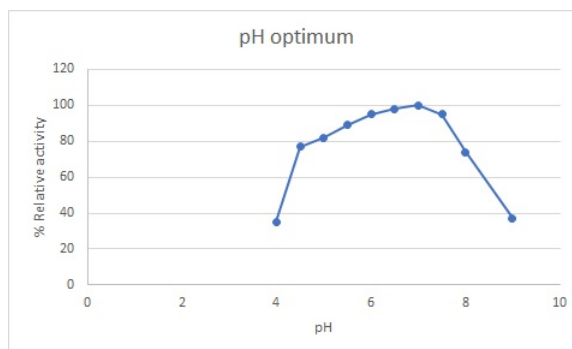
AMYLEX® 5T is composed of:

- | | |
|---------------------|---------------------|
| • Water | 50 - 62 % (w/w) |
| • Glycerol | 27 - 33 % (w/w) |
| • Sodium chloride | 9 - 11 % (w/w) |
| • Alpha-amylase | 1 - 5 % (w/w) |
| • Potassium sorbate | 0.90 - 1.20 % (w/w) |

Physical/chemical specifications

Physical form	liquid
Colour*	dark brown
Specific gravity	1.15 - 1.19 kg /l
Alpha-amylase	min. 13775 AAU/g

*Colour may vary from batch to batch.



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Microbiological specifications

Total viable count	less than 10000 /ml
Coliforms	less than 30 /ml
E. coli	absent in 25 ml
Salmonella species	absent in 25 ml
Yeast	less than 100 /ml
Mould	less than 100 /ml
Antibiotic activity	negative by test

Heavy metal specifications

Arsenic	less than 3 mg/kg
Lead	less than 5 mg/kg

Nutritional data

Calculated values per 100 g

Energy	132/550 kcal/kJ
Protein	less than 5 g
Fat	less than 1 g
Carbohydrates	27-33 g
Moisture	50-62 g
Ash	5-10 g

Storage

AMYLEX® 5T should be stored dry and cool (max. 10°C/50°F), preferably refrigerated and sheltered against direct sunlight.

Packaging

28 kg pail
1125 kg container

Purity and legal status

AMYLEX® 5T meets the specifications laid down by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemicals Codex (FCC) and is GRAS (Generally Recognized as Safe) in the US. When used as a processing aid under 21 CFR 101.00, it may exempt from FDA labelling requirements and is typically not labelled.

AMYLEX® 5T is approved by most countries for use in food. However, as legislation regarding its use in food may vary from country to country, local food regulations should always be consulted concerning the status of this product. Advice regarding the legal status of this product may be obtained on request.

Safety and handling

Enzymes are proteins. Enzyme exposure may cause respiratory allergy upon repeated exposure, use enzyme products under ventilation and/or closed processes. Respiratory protective equipment is recommended during open applications. Refer to the safety data sheet (SDS) or contact DuPont for more information on enzyme safety and handling practices.

Kosher status

AMYLEX® 5T is certified kosher pareve by Union of Orthodox Jewish Congregations of America (OU).

Modern Biotechnology

The enzymes are manufactured by fermentation of microorganisms that are not present in the final product. The microorganisms have been optimized by means of modern biotechnology. This product does not contain genetically engineered material from the microorganisms.

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Allergens

The table below indicates the presence (as added component) of the following allergens and products thereof (according to US Food Allergen and Consumer Protection act (FALCPA), 2004 and Directive 2000/13/EU as amended).

Yes	No	Allergens	Description of components
	(X)	Wheat	Glucose (used in fermentation)* Glucose. This level was below quantification level of 5 ppm, based on ELISA analysis. This component is exempted from allergen labeling in the EU.
	X	Other cereals containing gluten	
	X	Crustaceans	
	X	Eggs	
	X	Fish	
	X	Peanuts	
	(X)	Soybeans	Soy (used in fermentation)*
	X	Milk (incl. lactose)	
	X	Nuts includes: almond, Hazelnut, Cashew-nut, Brazilian-nut, Macadamia, Walnuts, Pecan, Pistachio, Pinoli and Chestnuts	
	X	Celery	
	X	Mustard	
	X	Sesame seeds	
	X	Sulphur dioxide and sulphites (>10mg/kg)	
	X	Lupin	
	X	Molluscs	
	X	Natural Latex	

*Danisco has determined that fermentation nutrients are outside the scope of US and EU food allergen labeling requirements ¹, ².
¹ Position paper sent by ETA to the FDA on September 12, 2005 (www.enzymetechnicalassoc.org/Allergen%20psn%20paper-2.pdf).

² Summarized in the position paper of the Association of Manufacturers and Formulators of Enzyme products:
http://www.amfep.org/documents/AmfepstatementScopeAllergyLabellingDirfinal_000.pdf