

Transforming industries through enzymatic innovation



For Sugar Industry

Amsolen

Dextrasol



Protisyp



Amsolen

Thermostable, acid tolerant bacterial α -amylase for starch Hydrolysis

Amsolen is a starch hydrolyzing enzyme specially designed for its use in the sugar industry. The enzyme is produced from a specially selected strain of *Bacillus licheniformis*. The enzyme does not require additional calcium addition for optimization of result in standard conditions of usage. Main activity of the enzyme is based on a thermostable, acid tolerant α -amylase (1, 4- α -D-glucan-glucanohydrolase: EC 3.2.1.1).

As an endo-enzyme Amsolen hydrolyses 1, 4- α -D-glycosidic bonds within the starch molecule. Products formed hereby are α -limit dextrins and oligosaccharides.

Properties

Enzyme characteristics: the activity range of the enzyme is between pH 4.0 and 8.0, the optimum is at pH 5.5-6.0 in the presence of substrate. The temperature range reaches from 70°C to 105 °C (max. 110 °C)

Figures 1 and 2 show the influence of temperature and pH- value on the enzyme activity of Amsolen.

Fig 1 Amsolen Temperature Profile (10% Soluble Starch) at pH 6

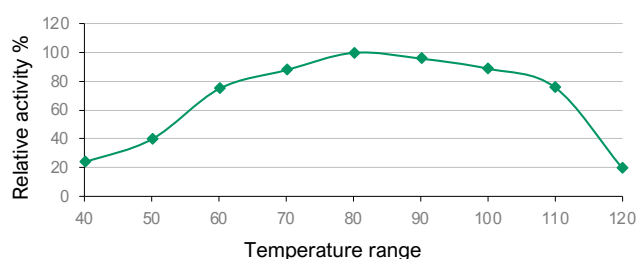
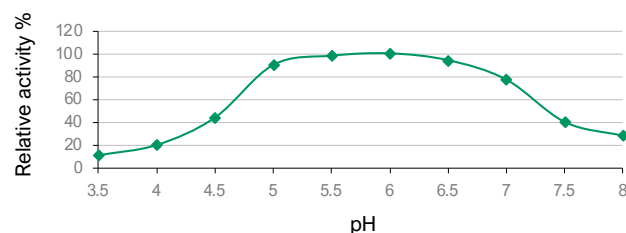


Fig 2 Amsolen pH Profile (10% Soluble Starch) at 80°C



Application

Amsolen eliminates starch in a most effective method in sugar juice processing. Removal of starch in cane sugar processing increases the factory capacity, the product yield and product quality. The elimination of starch in the juice at the evaporators will reduce the content of starch in sugar and as a result decrease the purity and increase the starch content of the final molasses and consequently lead to an increase in the filtration and crystallization rates.

Dosage

Suggested dose of Amsolen is 3-5 PPM divided in at mixed juice and at evaporator's stage. Dosing rate and points may be suitably altered based on the trials for best results depending on the particular mill conditions.

Storage

Amsolen keeps its declared activity up to 12 months if stored optimally <25°C. Higher storage temperatures result in a shorter shelf life. Temperatures above 25°C are to be avoided. Reseal opened packings tightly and use up as soon as possible.

Handling

Amsolen is formulated in a way that gives the highest degree of safety during handling. The product is non-flammable, completely miscible with water and safe when used according to direction. Use normal handling precautions against direct contact. In case of accidental spillage or contact to skin or eyes, rinse with plenty of water.

Safety

MSDS is available on request.

Availability

Amsolen is available in polyethylene drums of 50. Kg HDPE drum.

Benefits

Lower
viscosity

Lowers
ICUMSA colour value

Improves
reducing sugar

Improves
process efficiencies / Brings down cost

Improves
quality

Dextrasol



Fungal Dextranase for Sugar Cane Industry

Dextran is produced by microorganisms which infect the cane and feed on the sucrose; therefore, the presence of dextran immediately indicates lost sugar. The bacteria are mainly *Leuconostoc* species and are ubiquitous in the soil. They enter the cane at places of exposed tissue caused by machine harvesting, cutting, burning, growth, freezing, disease and pests.

Any delay in the cut to crushing time allows the bacteria to proliferate and the dextran levels to soar, especially in wet muddy cane. In sugar production, dextrans are undesirable compounds increasing the viscosity of the flow and reducing industrial recovery, bringing about significant losses. The use of the dextranase enzyme is the most efficient method for hydrolyzing the dextrans at sugar mills.

Effect of Dextrans in Sugar production

Summary of the detrimental effects of dextran in terms of the resulting losses:

- Production losses
- Sucrose losses
- Direct financial losses
- Increased viscosity leads to reduced throughput due to:
 - Poor filterability
 - Reduced evaporation rate
 - Reduced flocculation rate
 - Slow mud settling
 - Poor crystallization (elongation)

Dextrasol is a dextranase which (EC 3.2.1.11, α -1,6 glucan-6-glucanohydrolase) hydrolyze the α (1,6) glucosidic bond contained in dextran to release either glucose or isomaltose

(exodextranases) or isomalt oligosaccharides (endodextranases) Dextrasol is produced by the controlled fermentation of Non GMO fungal strain.

Properties

- | | | |
|--------------|---|-------------------------|
| • Activity | : | > 6000 du/ml |
| • Form | : | Viscous liquid |
| • Colour | : | Amber to light brown |
| • Odour | : | Characteristic |
| • Solubility | : | Highly soluble in water |

Activators and Cofactors

No activators or cofactors are necessary for the complete activity of Dextrasol. Dextrasol is inhibited by some metal ions such as copper and mercury.

Specifications

Dextrasol complies with the current recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

Storage

In sealed containers, under cool, dry conditions. It should be used within 12 months beyond which loss of activity starts which may accelerate in the case of improper storage.

Safety

Contact or Inhalation of enzymes in any form may cause allergic reactions and should be avoided. In case of contact with the skin or eyes, promptly rinse with water for at least 15 minutes. Please refer Material Safety Data Sheet (available on request) for all safety instructions.

Benefits

Reduction
in final molasses purity

Reduction
in final molasses to
sugar cane ratio

Reduction
in steam % of cane

Reduction
in boiling house losses
and total losses

Improvement
in filterability

Reduction
in viscosity in syrup
and massecuites

Improvement
purgeability at
centrifugal

Reduction
in foaming in
molasses storage

Improvement
in boiling rate

Improvement
in clarity of juice in
clarifier

Improvement
in quality of sugar

Increase
in capacity utilization of
boiling house

Protisyp

Optimized Proteases Blend for Sugar Syrup Preservation

Protisyp is a blend of optimized protease for preservation of sugar cane juice. It inhibits growth of filamentous bacteria by opening a sheath that surrounds the filamentous bacteria. Protisyp prevents the proliferation of undesirable bacterial cells by disruption of cellular membrane lipid bilayer causing death of organism.

The advantages of the Protisyp enzyme blend composition over the use of biocides to control bacteria are that the biocides constitute toxicants in the system and pollution problems are ever present whereas Protisyp is nontoxic and is environment friendly.

Protisyp controls both inversion and microbial contamination. This dual action helps to reduce the losses during processing and preservation of cane syrup.

Application

Product dosing can be decided depending upon the origin of bacterial contamination. It is recommended to use split dosing @ 2ppm each at

- Milling station
- Clear Juice

- Syrup tank

Dosing

6-10 ppm depending upon contamination.

Packing

Available in 50 kg HDPE drums.

Storage

Below 25°C Minimum shelf life is 12 months. At higher temperature the shelf life will decrease and may lead to high dose requirement. Protisyp should be stored in a cool dry location. The packs should be kept closed when not in use.

Safety

Contact or Inhalation of biological products in any form may cause allergic reactions and should be avoided. In case of contact with the skin or eyes, promptly rinse with water for at least 15 minutes. Please refer Material Safety Data Sheet (available on request) for all safety instructions.

Benefits

Easy

to use as in liquid form

Effective

on variety of feed stocks like juice, syrup

Helps

in controlling VA

Effective

and safe over conventional biocides

Prevent

quality deterioration of cane juice syrup and helps in restoring TRS during storage period

Preserves

the syrup up to 15-20 hrs

Synergistic

effect of optimized blending



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