



JUICEZYME[®]

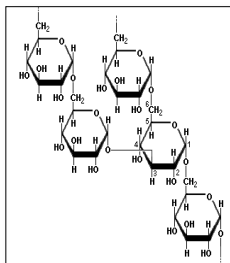
Improving Sugar Process Efficacy

Why JUICEZYME

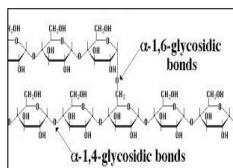
Cane or beet juice contains two polysaccharides - Dextran and Starch. Presence of polysaccharides develops high viscosity when Juice is processed at high temperatures in the Sugar mill (Juice heating, clarification, Evaporation, Crystallization). Viscosity thus developed –

- Hampers efficacy of clarification, crystallization and Sugar recovery.
- Adversely affects the quality parameters like purity of Sugar.

Dextran is a polymer of glucose having interlinking of α -1,6 linkages with branch points of α -1,3 linkages. It is produced by *Leuconostoc* bacteria, which originate from cane and soil environment, using Sucrose / Glucose from juice. The typical concentration in juice ranges between 500 to 1000 ppm which gets concentrated in syrup.



Starch is a polymer of glucose having α -1,4 linkages with branch points of α -1,6 linkages. Starch occurs naturally in cane and concentration ranges from 400 to 1000 ppm in juice.



To improve process efficiency and quality of sugar, hydrolysis of the Dextran and Starch during is essential. Often this is a complex and expensive challenge.

JUICEZYME effectively controls this high viscosity challenge. **JUICEZYME** effectively hydrolyzes both Dextran and Starch, and avoids is no need to procure different enzymes like Dextranase and Amylase. This helps Sugar mills to reduce operating cost.



Benefits of JUICEZYME in Sugar Mills:

1. Improves quality of raw / white Sugar by reducing starch content.
2. Increases sugar process efficiency by reducing viscosity.
3. Helps in running Sugar mills at high capacity by reducing viscosity challenges.
4. Improves the clarification, evaporation and crystallization process performance.
5. Helps in overcoming the processing challenges in the Sugar mills having burnt cane with mechanical harvesting.

JUICEZYME is manufactured in Praj's Bioproducts factory with KOSHER, HALAL, FDA & ISO 9001-2008 certifications.

Product Specifications:

| | |
|---------------------|----------------------------|
| Appearance | Light brown colored liquid |
| Dextranase activity | 590,000 to 600,000 IU /mg |
| Amylase activity | 425 to 475 IU / mg |
| Specific Gravity | 1.14 to 1.18 |
| Temperature range | 60 -75° C |
| pH range | 5 - 6 |
| Salmonella & E.coli | Not detected |
| Heavy metals | Below 25 ppm |

Units Definitions:

DU: Dextranase unit - Defined as that liberate 1.0 µmole of isomaltose (measured as maltose) per minute at pH 6.0 at 37°C, using dextran as substrate.

AAU: Alfa amylase unit –One AAU of α-amylase activity is the amount of enzyme required to hydrolyze 10 mg of starch per minute under specified conditions. (Determined by the rate of starch hydrolysis as reflected in the rate of decrease in iodine-staining capacity)

(Methods of analysis available upon request)

GM Status: The product is not manufactured or does not contain genetically modified microbes. Product is not GMO.

Dose: Juicezyme is recommended at 3 to 5 PPM on mixed juice quantity. (It is assumed that mixed juice is generated 1:1 on cane / beet weight basis). Dose may be optimized based on Dextran and starch contents.

Method of Application: Before application Juicezyme is diluted with clean filtered water. Recommended points of applications are (a) Mixed juice tank after milling (b) Clarified syrup tank. Technical services are provided to identify method and point of application.

Applications conditions for Juicezyme: Juicezyme is active over a wide range of pH and Temperature. Temperature range is 60 to 80 Deg C whereas pH range is 5.3 to 6.80.

Packing: Available in 20 / 50 Liter drums and in 1000 Liter tots.

Storage & handling: It is recommended to store at cool and dry place (25 Deg. C) away from sun light. No special handling equipment is required. Use of normal PPE's recommended.

Shelf life: When stored at recommended conditions, the product is stable for 12 months in original container.

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Seller warrants that this product formulation confirms to its description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. The conformance of product performance will be done strictly by the analytical protocols given by the seller. All risks on account of use of the product not in accordance with the directions will be with the buyer. Seller makes no other warranty or

representation of any kind, express or implied, about the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS for purposes other than specified by the seller. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty. The exclusive and maximum possible remedy against the seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of contract/warranty. Any dispute, controversy or claim arising out of this contract or breach thereof, shall be settled by arbitration in accordance with the provision of Indian arbitration and reconciliation act 1996 and shall be governed by Indian laws and shall have exclusive jurisdiction of Pune Maharashtra Court.



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