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VARUNA
BIO TECHNOLOGY

Transforming industries through enzymatic innovation

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For Textile Industry

- Tex-DSF
- Descor BBL
- Laccel
- Faden
- Niscor
- Scorex
- Cellulase Enzyme
- Mannanase
- Pectinase Enzyme
- Xylanase Enzyme

Tex-DSF

Desizing Enzyme Formulation

Tex-DSF is a desizing agent based on bacterial alpha amylase. It is a mixture of highly concentrated alpha-amylase, wetting agent and lubricant to convert starch, and starch derivatives, into water soluble products.

Tex-DSF has three different types of actions. The built-in wetting agent ensures proper penetration of enzyme into the textile material. The enzyme then converts the starch sizes in to soluble dextrin products, which can be easily removed in the subsequent washings. This unique combination prevents the formation of all unwanted creases, streaks, lines and crack marks during desizing process.

Typical usage conditions for Tex-DSF for desizing denim garments are:

Process condition

Parameter	Jigger or Winch	Pad-Roll Pit	J-Box or continuous
Dosage	1% of the fabric weight		
TempOC	60-90	60-90	60-90
pH	6.5 - 7.5	6.5 - 7.5	6.5 - 7.5

* Soft water - Demineralized

Process condition for denims

Parameters	:	Operational Range
Temperature	:	60 - 90°C
pH	:	6-6.5
Dosage	:	1% of fabric weight
Other additives	:	Wetting agent (Optional)
Time	:	20 to 30 min
M/L ratio	:	1:8 to 1:15
Other	:	Cold rinse

If desizing is carried out at a lower temperature, a higher dosage of the Tex-DSF should be tried. In case of highly sized and thick denim, a lubricant can be used during pre-wetting. A non-ionic softener can be a lubricant.

Denim washing machine should not rotate continuously before a temperature reaches >50°C.

Properties

Appearance	:	Viscous liquid
Solubility	:	Soluble in water
Optimum pH	:	6.5
Operating Temp	:	60 - 90°C

Compatibility with

Non-ionic surfactant	:	Generally, very good
Anionic surfactant	:	Selective, some reduce the efficacy of the enzyme
Solvent based surfactant	:	Selective, some reduce the efficacy of the enzyme
Organic sequestrants	:	Generally good
Reducing/ oxidizing agent	:	Reduce the efficacy of enzyme
Metal ions	:	Iron and copper ions are enzymes toxins

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 to the Material Safety Data Sheet (available on request) for all safety instructions.

Descor-BBL

Integrated enzyme formula for desizing, scouring and bleaching

Descor-BBL is a research based single integrated cotton pretreatment enzymatic formula for combined desizing, scouring and bleaching of cotton textiles. It is very useful in process house for integrated and simultaneous desizing, scouring, bleaching and mercerization of the fabrics.

Descor-BBL has three different types of actions. It has a blend of bio-desizing, bioscouring and a bio-agent to recycle small amount of hydrogen peroxides to be added separately.

The built-in wetting agent ensures proper penetration of enzyme into the textile material.

Typical usage conditions for Descor-BBL for cotton pretreatment are:

Usage	:	1.5 to 2% of Fabric weight
pH	:	pH 5-6
Temperature	:	50-60

Properties

Appearance	:	Brown Liquid
Solubility	:	Soluble in water
Optimum pH	:	5
Operating Temp	:	60°C

Compatibility with

Non-ionic surfactant	:	Generally, very good
Anionic surfactant	:	Selective, some reduce the efficacy of the enzyme
Solvent based surfactant	:	Selective, some reduce the efficacy of the enzyme
Organic sequestrants	:	Generally good
Reducing/ oxidizing agent	:	Reduce the efficacy of enzyme
Metal ions	:	Iron and copper ions are enzymes toxins

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

Low energy need

No desizing chemicals required

No strength loss of fabrics

Reduced water requirement

No harsh bleaching chemicals

Half quantity of neutralization acid required as compared with convectional system

Mercerization of fabric without machine and caustic

Low Pressure steam is required

Overall process benefit

No use of caustic soda

Environment friendly

Reduced requirement of oxygen based bleaching agents like Hydrogen peroxide

Greater absorbency on fabrics which leads to almost 20- 30% on dye cost

Lesser process time is required as compared to conventional process

Laccel

Advanced Bio-stone wash formula

Laccel is a new generation modified Cellulase / Laccase based preparation which gives good wash down effect on denim garments. It can be used with stone / perlite / emery balls.

Properties

Appearance	:	Laccel is available in off-white powder (Note that color does not affect or reflect activity.)
Odor	:	Slight fermentation odor

Product benefits

Laccel is used in bio-stoning process. The use of Laccel allows the denim garment washing procedure to be carried out under mild conditions in the absence of pumice stones and harsh chemical agents. Laccel gives a more uniform aged look for denim garment. Laccel also helps in preventing back staining.

Processing Conditions

Laccel functions at a wide pH and temperature range, optimum is pH 5.0 and temp 45-50°C the recommended liquor to goods ratio is 6.25:1 for stone wash applications.

Recommendation for usage

- Follow normal desizing and rinse procedures that are currently in use. Ensure that the bath and garments are at about pH 5.0 before starting the low liquor ratio (cellulase) stoning cycle. (This is especially important if an alkaline desizing has been used.)
- Laccel functions at concentrations from 0.8%to 1.2%OWG.
- Laccel is recommended for use in specialty denim processing in combination with pumice stones.

A typical processing example

- Load the garments into the washing machine and add the required amount of pumice stones. Garment load will vary from 30 to 50 percent of washer capacity. Normally the garments are not reversed.
- Desize the garments with your normal procedure. Drain balance and rinse with warm water at least once.
- Add water for Laccel step at a liquor ratio of 6.25:1 and be below the wheel rib. The water level should be just enough to cover the garments. Maintain the water temperature at 45°C – 50°C. Run for 2 minutes.
- Check the pH of the water. It should be about 5.0. Adjust as necessary with acetic acid, citric acid/sodium citrate. Run for 2 minutes.
- Recheck the pH of the water and adjust as necessary.
- Add Laccel at 0.8% to 1.2% OWG. Percentage will vary depending on the desired end result. Add 2% Hydrogen Peroxide (of the weight of garment).
- Wash for 15, 20, 30, 45 minutes. Time varies as required for end result. If time required is greater than 45 minutes it is preferred to do two Laccel baths. For example, if 60 minutes is required, do two 30 minutes baths.

Caution

Do not use live steam on enzyme baths. Temperatures above 60°C will significantly reduce the enzyme activity and may eventually destroy them.

Inactivation

For inactivation of Laccel either raise the temperature >80°C or raise pH to >9.

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.

Faden

Advanced Denim fading enzyme formula

Faden is latest technology product designed for fading of denim fabric and garments without effecting fabrics' special properties especially in finishing treatment of denim fabric containing Elastane.

Faden replaces Sodium hypochlorite bleaching of denim which is undesirable due to its undesired effects on the fabric and safety & environmental problems. Faden with the help of its specially developed enzyme complex imparts controlled fading of denim fabric with following advantages:

Typical usage conditions for Faden for Denim fading effect are

Process condition:

Liquor ratio	:	1 : 3 to 1 :5
Usage	:	1 -7% of Fabric weight
pH	:	pH 5 pH can be maintained by acetic acid
Temperature	:	60°C
Time	:	20-45 minutes depending on finish requirement
Termination	:	Increase the pH to 9 with the help of Sodium Hydroxide

Properties

Appearance	:	Off white powder
Solubility	:	Soluble in water
Optimum pH	:	5
Operating Temp	:	60°C

Compatibility with

Non-ionic surfactant	:	Generally, very good
Anionic surfactant	:	Selective, some reduce the efficacy of the enzyme
Solvent based surfactant	:	Selective, some reduce the efficacy of the enzyme
Organic sequestrants	:	Generally good
Reducing/ oxidizing agent	:	Reduce the efficacy of enzyme
Metal ions	:	Iron and copper ions are enzymes toxins
Chlorin	:	Chlorine has degrading effect on enzymes

Storage

In sealed containers, under cool, dry conditions. It should be used within 6 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

Only affects
the indigo dye without affecting other ingredients

Safely
used on Lycra containing denim without changing the fabric properties

Fine
fade effect

Eco-friendly
bleaching

Niscor

Integrated enzyme formula for scouring and bleaching

Niscor is a research based single integrated cotton pretreatment enzymatic formula for combined scouring and bleaching of knitted cotton fabric. It is very useful in process house for integrated and simultaneous scouring and bleaching of knitted fabrics under process.

Niscor has three different types of actions. It has a blend of bioscouring and a bio-agent to recycle small amount of hydrogen peroxides to be added separately.

The built-in wetting agent ensures proper penetration of enzyme into the textile material.

Typical usage conditions for Niscor for cotton pretreatment are

Process condition:

Usage	:	1 % of Fabric weight
pH	:	pH 6-7
Temperature	:	50-60°C

After hot wash of fabric, dose Niscor. Allow 60 minutes after which add Hydrogen Peroxide 50% @ 1% of Fabric weight. Allow 60 minutes and thereafter raise temperature to 90 C for deactivation of enzymes.

Properties

Appearance	:	Brown Liquid
Solubility	:	Soluble in water
Optimum pH	:	5
Operating Temp	:	60°C

Compatibility with

Non-ionic surfactant	:	Generally, very good
Anionic surfactant	:	Selective, some reduce the efficacy of the enzyme
Solvent based surfactant	:	Selective, some reduce the efficacy of the enzyme
Organic sequestrants	:	Generally good
Reducing/ oxidizing agent	:	Reduce the efficacy of enzyme
Metal ions	:	Iron and copper ions are enzymes toxins

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

No harsh bleaching chemicals

No strength loss of fabrics

Reduced water requirement

Reduced requirement of oxygen based bleaching agents like Hydrogen peroxide

Greater absorbency on fabrics which leads to almost 20- 30% on dye cost

Lesser process time is required as compared to conventional process

Low Pressure steam is required

Overall process benefit

No use of Caustic soda

Environment friendly

Scorex

Pectinase formula for bio-scouring of cotton fabrics

Scorex is a research based single integrated cotton pretreatment enzymatic formula for scouring of cotton textiles. It is very useful in process house for scouring of cotton fabrics or threads under process.

Typical usage conditions for Scorex for cotton pretreatment are

Process condition:

Usage	:	0.05 to 1 % of Fabric weight
pH	:	pH 7.5 to 9
Temperature	:	50-60°C

After hot wash of fabric, use non-ionic 1-2% with sequestering agent (STPP or Zeolites) and dose Scorex allow 30 minutes.

Properties

Appearance	:	Brownish Liquid
Solubility	:	Soluble in water
Optimum pH	:	7
Operating Temp	:	60°C

Compatibility with

Non-ionic surfactant	:	Generally, very good
Anionic surfactant	:	Selective, some reduce the efficacy of the enzyme
Solvent based surfactant	:	Selective, some reduce the efficacy of the enzyme
Organic sequestrants	:	Generally good
Reducing/ oxidizing agent	:	Reduce the efficacy of enzyme
Metal ions	:	Iron and copper ions are enzymes toxins

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 to the Material Safety Data Sheet (available on request) for all safety instructions.

Benefits

Low energy need

No strength loss of fabrics

Reduced water requirement

Half quantity of neutralization acid required as compared with convectional system

Greater absorbency on fabrics which leads to almost 20- 30% on dye cost

Lesser process time is required as compared to conventional process

Low Pressure steam is required

Overall process benefit

No use of Caustic soda

Environment friendly

Cellulase Enzyme

Industrial grade cellulase. Eco-efficient Biomass conversion for textile industry.

Cellulases are enzymes that hydrolyze β-1,4-glycosidic bonds in cellulose to release glucose and cello oligosaccharide. Cellulases are a group of hydrolytic enzymes that break down cellulose, the major structural component of plant cell walls, into simpler sugars like glucose.

Applications

- Biopolishing of cotton fabrics
- Bio-stoning of denim
- Fuzz & pilling removal for softness

Properties

Form	:	Liquid/Powder (as per need)
Enzyme Activity	:	≥30,000 U/g (customizable)
Optimal pH Range	:	4.5 – 6.0
Optimal Temperature	:	45°C – 60°C
Stability	:	Stable under feed & textile process conditions
Compatibility	:	Compatible with protease, xylanase, amylase
Source organism	:	Trichoderma reesei

Packing

Available in 50 Kg drums.

Storage

In sealed containers, under cool, dry conditions below 25°C. It shelf life is 12 months in sealed conditions.

Benefits

Smooth
and shiny fabric finish

Uniform
fading effect without pumice stones

Enhanced
fabric softness and lustre

Reduced
water, energy & chemical usage

Mannanase

Industrial grade. Eco-efficient Mannan breakdown for industrial excellence.

Mannanase is a hydrolytic enzyme that specifically breaks down mannans, a group of complex polysaccharides found abundantly in plant cell walls, especially in legumes, palm kernel, guar gum, and copra meal. Classified primarily as endo-β-1,4-mannanase, it cleaves the internal β-1,4-mannosidic linkages in the backbone of mannans, glucomannans, and galactomannans.

This enzyme plays a vital role in various industries by improving process efficiency, enhancing nutrient availability, and reducing anti-nutritional factors in feed and food matrices. Its use contributes to clean-label, sustainable processing solutions.

Application

Works alongside other hemicellulases and cellulases in bio-scouring and degumming processes.

Properties

Appearance	:	Light brown liquid / off-white powder
Enzyme Activity	:	25000 U/g (customizable)
pH Range	:	4.5 – 7.5 (optimum ~6.0)
Temperature Range	:	30°C – 60°C (optimum ~50°C)
Solubility	:	Completely soluble in water (liquid)
Shelf Life	:	12 months at 25°C (sealed, dry state)

Packing

50 kg HDPE drum

Storage

- Store in a cool, dry place away from direct sunlight.
- Keep container tightly closed when not in use.
- Use personal protective equipment (PPE) during handling.

Regulatory & Quality

- Non-GMO production strain
- Compliant with ISO 9001, FSSAI, and GMP standards
- Halal and Kosher certification available (on request)
- Safety Data Sheet (SDS) available upon request

Benefits

Enhances
fabric softness and wettability

Removes
non-cellulosic impurities from cotton and ramie

Eco-friendly
alternative to harsh chemicals

Pectinase Enzyme

Industrial grade. Efficient Pectin breakdown for textile industry.

Pectinases are a group of enzymes that catalyze the degradation of pectic substances, particularly pectin, a structural polysaccharide found in the middle lamella and primary cell walls of plants. Pectinases include polygalacturonase, pectin lyase, and pectin esterase, and are essential in industries requiring the clarification, extraction, and processing of plant-based materials.

Applications

- Bio-scouring of cotton and bast fibers
- Removal of pectic substances to improve dyeability

Properties

Form	:	Liquid / Powder
Activity	;	≥10,000 PGU/g (customizable)
Source	:	Aspergillus sp.
Optimal pH Range	:	4.0 – 6.5
Optimal Temperature	:	40°C – 55°C
Stability	:	Stable under fruit, textile, and wine processing conditions
Compatibility	:	Compatible with cellulase, amylase, hemicellulase

Packing

Available in 50 Kg drums.

Storage

- Store in a cool, dry place below 25°C
- Shelf Life: 12 months (in sealed condition)

Benefits

Eco-friendly
alternative to chemical scouring

Enhanced
wettability and dye uptake

Softer
cleaner fabric finish

Reduced
water and energy consumption

Xylanase Enzyme

Industrial grade. Eco-efficient Hemicellulose degradation for textiles.

Xylanase is a class of hydrolytic enzymes that catalyze the degradation of xylan, a major hemicellulosic component of plant cell walls, into xylose and xylo-oligosaccharides. Xylanases enhance process efficiency and product quality in a wide range of industries by enabling better fiber modification, improved digestibility, and cleaner processing.

Application

- Biopolishing of cellulosic fabrics
- Removal of hemicellulosic residues in bast fibers like flax, hemp

Properties

Form	:	Liquid / Powder
Activity	:	≥30,000 U/g (customizable)
Source	:	Aspergillus sp.
Optimal pH Range	:	5.0 – 7.0
Optimal Temperature	:	45°C – 60°C
Stability	:	Stable under baking, feed & pulp conditions
Compatibility	:	Compatible with cellulase, amylase, protease

Packing

Available in 50 Kg drums.

Storage

- Store in a cool, dry place below 25°C
- Shelf Life: 12 months (in sealed condition)

Benefits

Cleaner
softer fiber finish

Enhanced
dye uptake and uniformity

Eco-friendly
processing with reduced chemical inputs

Improved
texture and appearance of fabrics


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Ravindrapuri Extn,
Varanasi - 221005 (India)

orders@varunabiotech.com
hello@varunabiotech.com

www.varunabiotech.com