Technical – Information

AVCO-ZIM UNDP

ENZYMATIC DE-SIZING AGENT

AVCO-ZIM UNDP is an alpha amylase enzyme used for de-sizing of fabrics sized with starch and starch derivatives. The starch chains are degraded by AVCO-ZIM UNDP to water soluble products that can be eliminated from the fabric by washing-off.

SPECIFICATION:

Chemical nature	Bacterial alpha amylases in aqueous preparation.
Appearance	Brown liquid with a characteristic odor.
pH (10% solution)	6.2 – 6.8
Solubility	Readily soluble in cold water.
Water hardness	Effective in hard and soft water, AVCO-ZIM UNDP contains added Ca salts which stabilizes and activates the enzyme.
Compatibility:	Copper, zinc and their salts as well as chlorine and other oxidizing agents impair the effectiveness of AVCO-ZIM UNDP. Some anionic surface active substances used as wetting agent hinder the enzymatic degradation of starch.
Storage stability	Store the product in closed containers in cool place. Once the container has been opened, the contents should be used immediately. Storage for prolonged periods at temperatures of over 30^0 causes loss of activity. When stored in suitable conditions shelf life is at least 6 months.

PROPERTIES & USES:

1. AVCO-ZIM UNDP is a bacterial alpha-amylase with a high enzymatic activity.
2. Optimum activity is in the temperature range of 40-80º and pH range of 7-8.8. In lower temperatures longer treatment time is needed.
3. The strong amylolytic action of AVCO-ZIM UNDP allows rapid conversion of the starch size into dextrins, which are easily removed by hot washing-off process.
4. AVCO-ZIM UNDP is suitable for high liquor ratio batch machines such as jet, jiggers and rotary washing machines, and for the semi-continuous pad batch methods.
5. AVCO-ZIM UNDP can be used together with slightly acidic complexing agents to obtain one step demineralization and desizing process.

6. AVCO-ZIM UNDP is an excellent desizing enzyme for removing starch from denim garments before the "Stone-washing" process.

APPLICATION:

1. The quantities and treatment time depend on the type of fabric and de-sizing method.

   General suggestions are:

   a. For batch treatments (high L.R.) use 1 – 3 g/l.
   b. For jig (low L.R.) use 2 – 4 g/l.
   c. For pad-roll treatment use 3 – 6 g/l.

2. The pH of the de-sizing solution must be 7-8.8
3. The treatment temperature should be 40-80^{o}C.
4. Treatment time recommendation is for high liquor ratio methods 45-90 minutes and for continuous (pad roll) 4-8 hrs. dwell time.
5. The efficient de-sizing is only possible if the fabric is adequately wetted and if sufficient swelling water applied to the size. This can be achieved by adding a detregents or wetting agents such as AVCO-BIOPAL LFB and AVCO-BIOLIT 2090L.
6. Usually continuous de-sizing is linked to singing machine and the speed of the singing reaches up to 150 m/min. At the stage of de-sizing it is desirable to remove all additives incorporated in the sizing such as waxes, paraffins and all soiling and staining results from fabric weaving. It is therefore important to add an emulsifying and dispersing agent with high wetting power and compatibility with enzymes. Such products are AVCO-PAL SFN, AVCO-BIOPAL LFB and AVCO-BIOLIT 2090.
7. The solubilized size must be washed out before the cloth is transfered to bleaching and dyeing. Best results are achieved by alkaline boiling (3-5 cc/l Caustic Soda -50%). Addition of AVCO-POLYQUEST PDK (1-2 g/l) will help to eliminate water hardness and other metal precipitates from the fabric.

TYPICAL DESIZING PROCEDURES

1. Jigger

AVCO-TEX CAN	0.5	g/l
AVCO-BIOPAL LFB	1.0 - 3	g/l
AVCO-ZIM UNDP	2.0 - 4	g/l

Adjust pH to 7 – 8

Run 4-6 ends at 60-90^{o}C.

Remove degraded starch by hot washing at 95^{o} C for 2 ends. Use of 3-5 cc/l soda caustic (50%) and 1-2 g/l AVCO-POLYQUEST PDK will improve results.
Neutralize and rinse well.

2. Pad roll batching-up method

AVCO-BLANK HB LF	3.0 - 6	g/l
AVCO-ZIM UNDP	4.0 - 8	g/l
AVCO-TRYL HPH	0.5 - 2	g/l

Adjust pH to 7 – 8.8

Pad at 20-90°C, wrap with a plastic foil and store in a rotating rolling station for 4-24 hours. Remove degraded starch by hot washing at 95°C. Use 3-5 cc/l Soda caustic (50%) and will improve the results.

Neutralize and rinse well.

3. Desizing Of Denim garments (Rotary Washers)

AVCO-SLIP RF	1.0 - 3.0 g/l
AVCO-BIOPAL LFB	1.0 - 2.0 g/l
AVCO-POLYQUEST RE	0.5 - 1.0 g/l
AVCO-ZIM UNDP	1.0 - 3.0 g/l

Treat at 50-65ºc for 15-30 minutes, followed by hot and cold rinse.

4 Pad steam method

AVCO-TEX CAN	0.2 - 0.5 g/l
AVCO-BLANK HB LF	3.0 - 5.0 g/l
AVCO-ZIM UNDP	3.0 - 6.0 g/l

Pad at 20-90°C, steaming for 1-30 minutes by saturated steam.
Washing at 95°C, use 2-4 cc/l caustic soda (50%).

TESTING FABRICS FOR THEIR DEGREE OF DE-SIZING

Preparation of iodine solution:
Dissolve 10 gr. of Potassium Iodide (KI) in 100 ml. of water add 0.635 gr. of Iodine and shake well. Top up with water to 800 ml and finally add Ethanol to reach 1 ltr.

According to the TEGEWA - Violet scale for assessing the de-sizing degree of starch, immerse a de-sized fabric sample (which is pre-rinsed in hot alkaline and cold water) in the Iodine solution for a period of about 1 min. After immersion rinse shortly in water, damp with filter paper and compare immediately with the violet scale.

Judge according to the following results:

1. Pure dark blue coloration = presence of non-degraded starch.
2. Pale blue coloration = slight starch residue of the fibre.
3. Red-violet coloration = starch degraded to water soluble dextrin.
4. Yellow coloration = complete freedom from starch.

Degradation into a reddish-violet color is adequate for solid shades.