

# SYNTO-ZIM 120

## ENZYMATIC DE-SIZING AGENT

SYNTO-ZIM 120 is an alpha amylase enzyme used for de-sizing of fabrics sized with starch and starch derivatives. SYNTO-ZIM 120 degrades the starch chains into water-soluble products that can be eliminated from the fabric by washing-off.

### SPECIFICATIONS:

<b>Chemical nature</b>	Bacterial alpha amylases in aqueous preparation.
<b>Appearance</b>	Brown liquid with a characteristic odour.
<b>Density (gr/cc)</b>	1.11 - 1.12
<b>pH (1% solution)</b>	6 - 7
<b>Solubility</b>	Readily soluble in cold water.
<b>Water hardness</b>	Effective in hard and soft water, SYNTO-ZIM 120 contains added Ca salts, which stabilizes and activates the enzyme.
<b>Compatibility</b>	Copper, zinc and their salts as well as chlorine and other oxidizing agents impair the effectiveness of SYNTO-ZIM 120. Some anionic surface-active substances used as wetting agent hinder the enzymatic degradation of starch.
<b>Storage stability</b>	Store the product in closed containers in cool place. Once opened, the containers should be used immediately. Storage for prolonged periods at temperatures of over 30°C causes loss of activity. When stored in suitable conditions shelf life is at least 6 months.

### PROPERTIES & USES:

1. SYNTO-ZIM 120 is a bacterial alpha-amylase with a high enzymatic activity.
2. Optimum activity is in the temperature range of 30 - 55°C and pH range of 5 - 8.  
At lower temperatures longer treatment time is needed.
3. The strong amylolytic action of SYNTO-ZIM 120 allows rapid conversion of the starch size into dextrin, which is easily removed by hot washing-off process.

## Technical – Information

4. SYNTO-ZIM 120 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. SYNTO-ZIM 120 can be used together with slightly acidic complexing agents to obtain one step demineralization and desizing process.
6. SYNTO-ZIM 120 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 the desizing method.

#### **General suggestions**

- a. For batch treatments (high L.R.)      use: 1.0 – 3.0 g/l
- b. For jig (low L.R.)                              use: 1.5 – 3.0 g/l
- c. For pad-roll treatment                      use: 3.0 – 6.0 g/l
2. The pH of the desizing solution must be slightly acid. For optimum results, adjust to pH 5 - 6 with acetic acid. Take care, as often some textile such as denim garments carry in the fibres residual alkalinity from the previous dyeing process.
3. The treatment temperature should be 40 - 55°C.
4. The treatment time recommendation is for high liquor ratio methods 45 - 90 min. for fabrics and 15 - 20 min. for garments, and 4-8 h dwell time for the pad roll process.
5. Efficient de-sizing is only possible if the fabric is adequately wetted and if sufficient swelling water is applied to the size. This can be achieved by adding a detergent or wetting agents such as AVCO-BIOPAL LFB and AVCO-BIOLIT 2090.
6. Usually continuous desizing is linked to singing machine and the speed of the singing reaches up to 150 m/min. At the stage of desizing it is needed to remove all additives incorporated in the sizing such as waxes, paraffin's and all soiling and staining on the fabric that may have been accumulated during weaving. It is therefore important to add an emulsifying and a 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 transferred for bleaching and dyeing. The best results are achieved by alkaline boiling (3-5 cc/l caustic soda - 50%). The addition of AVCO-POLYQUEST PDK (1-2 g/l) will help eliminate water hardness and other metal precipitates from the fabric.

### TYPICAL DESIZING PROCEDURES

1. Jigger

AVCOTEX CAN	0.2 – 0.5 g/l
AVCO-BIOLIT 2090	1.0 – 3.0 g/l
SYNTO-ZIM 120	1.5 – 3.0 g/l

Adjust pH to 5 – 6  
Run 4-6 ends at 50 - 55°C.  
Remove degraded starch by hot washing at 95°C for 2 ends. The use of 3-5 cc/l of caustic soda (50%) and 1-2 g/l of AVCO-POLYQUEST 1096 will improve the results.  
Neutralize and rinse well.

## Technical – Information

### 2. Pad roll batching-up method

AVCO-BIOLUZE MAX-HC	2.0 – 4.0 g/l
SYNTO-ZIM 120	3.0 – 6.0 g/l
AVCO-POLYQUEST 1096	0.5 – 1.0 g/l (optional)

Adjust pH to 5 - 6

Pad at 50 - 55°C, wrap with a plastic foil and store in a rotating rolling station for 4 - 8 hours.

Remove degraded starch by hot washing at 95°C. The use of 3-5 cc/l of caustic soda (50%) and 1-2 g/l AVCO-POLYQUEST PDK will improve the results.

Neutralize and rinse well.

### 3. Desizing of 100% grey cotton garments

Use the following recipe:

AVCO-BIOPAL LFB	1.0-2.0 g/l
AVCO-SLIP RF	1.0-2.0 g/l
SYNTO-ZIM 120	1.0-2.0 g/l

Run at 40 - 50°C for 20-40 minutes.

Drain the bath.

Refill water and add the following:

AVCO-L DR	1.0-2.0 g/l
Soda-ash	1.0-2.0 g/l

Wash at 70-80°C for 5-10 minutes.

Drain the bath.

Rinse hot and cold.

### 4. De-sizing Denim Garment before "stone-washing"

Use the following recipe:

AVCO-BLANK NPS-LF	0.5-1.5 g/l
SYNTO-ZIM 120	0.5-1.5 g/l

Adjust pH to 5 - 6

Run at 40 - 50°C for 20 - 40 minutes.

Drain the bath.

Refill water and wash at 60 - 70°C for 5 - 10 minutes.

Drain the bath and rinse.

## ***Technical – Information***

### ***TESTING FABRICS FOR THEIR DEGREE OF DESIZING***

Preparation of iodine solution:

Dissolve 10 g of Potassium Iodide (KI) in 100 ml. of water, add 0.635 g of Iodine and shake well. Top up with water to 800 ml and finally add Ethanol to reach 1 liter.

According to the TEGEWA - Violet scale for assessing the desizing 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 onto the fibre.
3. Red-violet coloration ⇨ starch degraded into water-soluble dextrin.
4. Yellow coloration ⇨ completely free from starch.

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