TECHNICAL TUESDAYS

POLYESTER AND ITS BLENDS – PART XII

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Polyester Processing – Problems and their remedies

In the processing of polyester and its blends, few challenges are faced which can be minimized by proper process control. Some of them are as below:

1) **Listing -** One of the problems of polyester processing is listing. A fabric having listing yields shade variation after making the garment. This is a regular problem of Beam dyeing machine used specially in suiting processing. Some of the causes are uneven heat setting i.e. temperature variation in the heat setting chambers and heat setting below optimum temperature. Hence to control listing it is important to carry out proper heat setting. Listing may cause due to yarn count variation, faulty twist, tension variation during weaving etc.
2) **Shade related problems** – Uneven dyeing, shade dullness, color spots are few of the problems. Incompatible dye selection, improper rate of heating, improper dissolution of dyes,non-maintenance of pH of the bath may cause shade related problem during the processing of polyester and its blends. Process control and use of proper auxiliaries can help in minimizing the issues.
3) **Moire -** Moire is a defect of blended fabric. Over twisted yarn in blended fabric, uneven heat setting conditions, uneven relaxation of the fabric tension and residual traces of alkali may be reason of moiré defects.
4) **Poor fastness properties -** Poor color fastness to washing and rubbing is not a regular problem of disperse dyeing. But sometimes improper dyeing temperature control, improper use of recommended auxiliaries, incomplete washing off process etc results into poor color fastness. Also, if a blended fabric is dyed several times under pressure to rectify the shade then degradation of viscose, cotton may result into poor color fastness to rubbing and washing. Selection of dyes with poor color fastness to rubbing and sublimation may cause poor color fastness properties. In case of unexhausted dyes also poor color fastness occurs. In case of polyester dyeing by thermosol method, poor color fastness results if curing is not done properly.
5) **Oligomers -** Oligomers are one of the problems in wet processing of polyester fabric. White powdery oligomer deposits cause dulling of shades especially in dark shades, black, navy etc. Oligomers cause agglomeration of dye particles resulting in dye spots, unlevelness, and poor fastness. Controlling dyeing parameter, addition of oligomer dispersant and leveling agent during dyeing, draining off dye bath in hot conditions, use of alkali accelerators during reduction clearing can help in oligomer removal.

Key words

- Listing - It is shade variation across the width of the fabric. Variation can be from selvedge - selvedge or selvedge-center.

- Moire - Wavy pattern on the fabric. It is a defect.

- Oligomers – Small chain length of polyester. Present in the fiber as fine powder which tends to migrate onto the surface at high temperature.

Special finishing of Polyester and its blends

Polyester and its blends exhibit outstanding performance, making them applicable for a wide range of products. Still, some shortcomings such as: hydrophobicity, building of static charge, tendency to pill etc. remains. These problems occur generally due to its natural property and can be reduced by using different finishing agents.

- **Antistatic finish** - During different processes like spinning, weaving etc. friction is generated in textile fibers because of rubbing. And this develops static charges in hydrophobic fibers. The shocks are experienced during processing on machines. Therefore, to avoid these static charges, the fabrics are treated with finishing agents. Those finishes are called Antistatic Finish. The principle mechanisms of antistatic finishes are increasing the conductivity of fiber surface and reducing frictional forces through lubrication.
- **Soil release finish** - Soil release is a chemical finish that allows removal of soils by the laundering process. Soil release finishes are necessary for hydrophobic fabrics which have very low water absorbency. This finish allows stains to leave the fabric faster and makes fabric cleanable. A soil release finish can help prevent liquids and powders from soaking into the fabric. Soil release finishes also protect fabric from soil re-deposition during laundering. Flouro carbon polymers are commonly used for soil release finish. This finish imparts a fabric protector that enables the fabric to repel spills when in contact.

.....To be continued.....

UNSCRAMBLE THE JUMBLE WORDS
INGLITS
MABUSTION
REMOI
ILOS ELERASE

Last week`s Answers: 1) DYEABLE 2) CATIONIC 3) GLASS TRANSITION 4) STATIC ELECTRICITY

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