TECHNICAL TUESDAYS

# POLYESTER AND ITS BLENDS – PART VIII

REF: TT/ AUGUST 2020 / WK 4

## Polyester Printing

As in case of dyeing, disperse dyes are the most suitable dye for printing of polyester fibers. Following are the common ingredients used in the printing paste:

- **Dyes** – For printing the dyes are selected dyes with good steaming and curing properties.
- **Thickeners** - Thickeners which have high solid content are best recommended for printing. Natural gums, gum Indalca etc. are commonly used thickeners. Carboxy methyl Cellulose or Cellulose gum is also used. While printing using this thickener sharp and good depth prints are achieved. Emulsion thickeners are also used which improves levelness and penetration of the dye in the fiber. However, Starch ether is not a preferred thickener as it does not give good wash off properties. Similarly British gum produces dull prints and not being considered for disperse printing.
- **Dispersing agent –** These agents are used to keep the dyes in dispersed form.
- **Wetting agent –** Disperse dyes being insoluble in water, the wetting agents are used for pasting.
- **Acid -** Disperse dyes are sensitive to alkali; therefore the paste is kept acidic. Small amounts of citric acid or tartaric acid is added to the paste and makes it slightly on acidic side.
- **Oxidizing agent** - Sodium chlorate is used to protect the dye from getting it reduced under the prolonged steaming conditions. This retains brightness of the shade.
- **Acid Liberating agent** - Ammonium sulphate is used as an acid liberating agent. So that the print paste remain acidic during steaming.

The printing paste is prepared using above ingredients as per recommended or required dosages. Then the fabric is prepared, dried and fixed. Different methods of fixation are:

1) **Curing -** Printed fabric is cured at 180 degC for 1 – 2 minutes.
2) **Thermofixation** - Printed fabric is thermofixed at 210 degC for 30 seconds.

After fixation, fabric is rinsed with cold water and hot water, reduction cleared followed by washing off.

## Challenges of Polyester Printing and their Remedies

- **Splashes of printing paste** - The splashes on fabrics occur when screen is lifted. Marinating proper print paste viscosity, use of gum with higher solid content can minimize the splashing.
- **Uneven prints** – Various impurities onto the fabric and improper penetration of dyes leads to uneven printing. Good scouring and use of penetrating agent can help to minimize this issue.
- **Bleeding of print-** Improper gum paste will produce low viscosity, which may cause bleeding. Suitable thickeners should be used. The excess use of dispersing agent present also causes bleeding. Use of suitable thickener, proper print viscosity, recommended dosages of print auxiliaries are some of the recommendation to avoid bleeding.
- **Tone variation of prints -** Uneven diffusion of disperses dyes gives tone variation. Uniform heating system in dryer can reduce this issue.
- **Staining in Printing –** Low sublime disperse dyes convert into volatile form creating stain on the unprinted portion of the fabric. Proper selection of dyes is necessary to avoid it. Staining occurs during washing off process as well. Following proper reduction clearing and rinsing processes after printing is highly recommended.
- **Poor color yield** – Impurities present in water make complexes with dyes causing lower color yield. Use of a good sequestering agent is advised to avoid this. Maintaining appropriate pH, desired pressure and temperature during fixing process, selection of compatible dyes are some of the parameters to be taken care of.

***Transfer Printing***

**- This is also called as transfer digital printing and is eco-friendly process.**

**- Demands less water and chemicals.**

**- Fabric is prepared with Anti-migrating agents before transfer print to get sharp prints.**

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

| UNSCRAMBLE THE JUMBLE WORDS |
|---|
| CIDA BERAINGTLI |
| LOSELLCE MUG |
| TIAN GRAMIGINT ENTAG |
| FERRANST |

Last week`s Answers: 1) THERMOSOL 2) SEQUESTERING 3) WEIGHT REDUCTION 4) OLIGOMER

Wishing you a great week ahead!

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