POLYESTER AND ITS BLENDS – PART VII

REF: TT/ AUGUST 2020 / WK 3

Thermosol Dyeing method

In thermosol dyeing process, dyeing is done at a high temperature by padding, drying and thermofixation. The fabric is first passed through the padding mangle containing dye solution. Thereafter the fabric is dried at 120°C temperature in dryer followed by passed through thermosol unit where thermofixation is done at about 200°C temp for 60-90 seconds. After thermofixing the unfixed dyes are reduction clearing or washed off. By this method, there is better consistency in shade is achieved and also retentions of natural feel of the fabric is good.

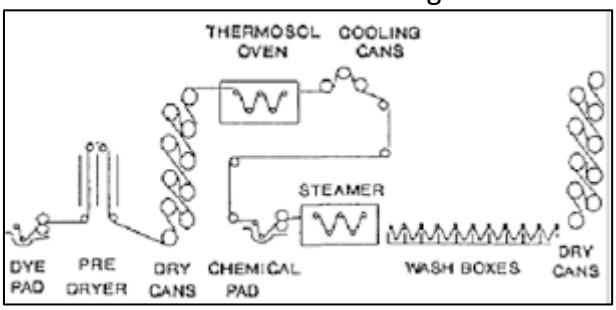

Fig 1.1 Thermosol Dyeing range

Ref: textilesite.blogspot.com

Important factors in polyester dyeing

Below are few important factors which affect the dyeing and its results. Hence it is necessary to take appropriate care in this regard.

- **Water quality** - The presence of calcium and magnesium ions in water can interfere with the anionic dispersing agents or dye leveling agents and wetting agents present in the dyebath. This forms coordination complexes. This complexes can affect the shade of some disperse dyes. This is due to the formation of coordination complexes. Sequestering or chelating agents are added into the dyebath to overcome this problem.
- **pH of the dyebath** - pH of the dyebath should be maintained in the range of 4.0-4.5. A proper pH regulator should be used to maintain it.
- **Temperature** - Dyeing of polyester depends on factors like starting temperature, rate of heating and dyeing temperature. These factors result into good dye bath exhaustion and even dyeing. The

starting temperature of dyeing should be maintained as per dye manufacturers recommendation, the rate of rise of temperature as 1.5 deg C/min and the dyeing temperature as 130 deg C.

- **Time -** Dyeing time is one of the most important factors to have better exhaustion of dye bath resulting into better color penetration and good color fastness. Recommended dyeing time is 60 mins.
- **Reduction Clearing -** Reduction-clearing treatment is necessary to remove unfixed dyes on the fiber surfaces. In this process, Hydrose and Caustic Soda are used as the reduction clearing agent. The treatment is done at 70 -80 deg C for 20-30 mins. This is a very important process to achieve the fastness properties and to retain the brightness of shades. However, there are few drawbacks of hydros. The reaction can produce sulphite and sulphate. High concentrations of sulphate can cause damage to unprotected concrete pipes; can corrode the effluent drainage system etc. Hence, other clearing agents like alternative reducing agents, oxidative clearing agent are being developed. Anthraquinone (AQ) based disperse dyes are reduced and solubilized during reduction clearing. Sometimes these reduced AQ based dyes re-oxidized back to the original before removing out of the fabric. In these cases, oxidative clearing agents are used.
  Ozone treatment is another alternative, which is under development. Ozone treatment can be applied in cold water without addition of any chemicals. This treatment besides chemical savings will lower the environmental impact.

Good to note

- Weight reduction of polyester is done by treating the fabric using caustic soda.

- This process imparts smooth surface to the fabric.

- Weight reduction improves the appearance of the polyester fabric.

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

UNSCRAMBLE THE JUMBLE WORDS
SOLTHERMO
EQUESTRINGSE
EIGHTW DUCTIONER
GOMEROLI

Last week`s Answers: 1) DIFFUSION 2) ADSORPTION 3) CARRIER 4) REDUCTION CLEARING

Wishing you a great week ahead!

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