TECHNICAL TUESDAYS

TOPIC: Disperse dye for polyester dyeing

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What is polyester fibre?

A polyester fibre is defined as a backbone of various polymers which are formed by the esterification condensation of polyfunctional alcohols and acids.

Characteristics of polyester:

- Polyester fabrics and fibers are extremely strong.
- Polyester is very durable: resistant to most chemicals, stretching and shrinking, wrinkle resistant, mildew and abrasion resistant.
- Polyester are hydrophobic in nature and exhibit quick drying properties. Resulting in its application for insulation by manufacturing hollow polyester fibers.
- Polyester retains its shape in the presence of harsh climatic conditions and hence is found to be a suitable material for outdoor clothing.

Reason behind the use of a disperse dye for the dyeing process of polyester:

Synthetic fibres such as polyester are fundamentally prepared from man-made polymers by an extrusion process through spinnerets, either in the molten state or from a solution in an organic solvent.

The manufactured polyester fibre differs from natural fibers and rayon, in its characteristics for moisture regain and the difficulty of dyeing the fibre. This is due to the fact that polyester exhibits a lower moisture regain (0.4%) and the fibre dose not possess a terminal functional group to which an ionic dye is attracted to, during the dyeing process.

Therefore, the application of disperse dyes during the dyeing process of polyester makes it the preferred option of use. Disperse dyes are non-ionic dyes with finite, but very limited water solubility. During the dyeing process the dye is entrapped within the fiber matrix, resulting in a uniform dye deposition over the fabric.
This class of dye has obtained its name from its application conditions, as they are applied as a very fine dispersion or suspension in water.

Methods of dyeing of polyester:

- HTHP Method
- Thermosol method
- Carrier method

Wishing you a great week ahead!

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