

TECHNICAL TUESDAYS

TOPIC: Role of pH in finishing baths during textile finishing

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What is pH?

The pH is defined as the amount of Hydrogen ions available in a solution. The pH value is a measure of the acidity or alkalinity of a solution. The pH scale ranges from 0 to 14. (0 represents greater acidity and 14 represents greater alkalinity)

Role of pH in finishing baths during cationic softener finishing:

Quaternised cationic fabric softener molecules ionize into a hydrophilic head with a negative charge and a hydrophobic tail with a positive charge. Neutral cotton fabric, when placed in water, acquires negative charge (zeta potential).

The positively charged hydrophobic tail of the softener molecule is attracted to the negatively charged cellulose as a result of which, the softener residue firmly anchors itself to the fibre's surface.

In alkaline pH, the cationic softener in the quaternary ammonium form gets back to the amine state and does not ionize to give a positive charge.

Additionally, the speed of exhaustion on cotton fabric depends on the strength of the positive charge carried, which in turn depends on the pH.

In acidic conditions (low pH), softeners carry a higher charge and are therefore exhausted more rapidly, even under lower temperatures.

If the pH is highly acidic, it results in uneven finishing. This is due to the rushing and exhaustion of softeners into sites that can be easily penetrated and lower amounts are available for sites that are more difficult to penetrate.

If the pH is very acidic, it may result in yellowing on whites.

Therefore, we must maintain proper acidic pH during finishing with cations softeners. The pH should be around 5.5 for even finishing.

Wishing you a great week ahead!

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