

DEVELOPMENTS IN RESIN FINISHING – PART IV

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Role of catalyst in Resin finishing

Catalyst is an important component of the resin-finishing recipe. It ensures that the reaction to be carried out within the recommended curing temperature and time. The reaction rate is dependent on the amount of catalyst present. If the amount of cross-linking agents used is very large or very small, the amount of catalyst should not exceed a certain maximum or fall below a certain minimum.

Different classes of catalysts are used in the resin finishing. However, time to time upgradation of these catalysts taken place.

- **Ammonium salts** - Ammonium chloride, Ammonium sulfate and Ammonium nitrate are the Ammonium salts, which are used as catalysts in resin finishing. Ammonium salts are used with cross linking agents consisting of urea and formaldehyde. As the use of these cross linkers declined, the importance of the ammonium salt catalysts also reduced. Limitations of these catalysts like problems with liquor stability, shade changes and fishy odor also contributed to the reduced of them.
- **Metal salts** - Magnesium chloride, Zinc nitrate, Zinc chloride are some of the catalysts in resin finishing. Although zinc nitrate is an effective catalyst, but problem of yellowing and impacts on environment made them undesirable. Magnesium chloride is the commonly used one.
- **Catalyst mixtures** – Mixtures of catalysts are also used. E.g. Magnesium chloride with added organic and inorganic acids. Liquid catalyst mixtures are also available. These are mostly based on magnesium chloride and organic acids, e. g. s-hydroxycarboxylic acids, or inorganic Lewis acids.

Testing standards of resin finished substrates

Assessment or testing of a finished textile product is done to ensure a quality product. To maintain quality, it is important to test the treated or finished fabric/garment at every stage of processing; same is the case with the resin finished fabric. Frequent testing is necessary to maintain adequate quality control.

In resin finishing or Wrinkle free finishing the testing which is done is called crease recovery.

Crease recovery is a fabric property which indicates the ability of fabric to go back to its original position after creasing. The objective of this testing standard is to measure the crease recovery of the given fabric.



It is a measure of creases resistance in terms of crease recovery angle. To measure this, the popular instrument is Shirley crease recovery tester.

There are various test methods for measuring crease recovery. These test methods are divided into two major categories. In one category, a single sharp crease or fixed deformation as it is called is introduced into the fabric and in the other category, random creases or random deformations are introduced in the fabric. In both cases, the conditions of fabric deformation, as well as of recovery need to be carefully controlled.

A popular method used by industry to assess fabrics is American Association of Textile Chemists and Colorists (AATCC) -AATCC Test Method 124 (ISO 7768) is used for evaluating the appearance, in terms of smoothness, of flat fabric specimens after repeated home laundering. This provides a measure of the durable-press, easy-care or minimum-iron properties of the fabric.

Another method is AATCC Test Method 128 'Wrinkle Recovery of Fabrics: Appearance Method', in which largely random wrinkles are induced in the fabric under standard atmospheric conditions using a standard wrinkling device under specified load for a specified period of time. The specimen is then reconditioned and rated for appearance by comparing against AATCC standards.

In the case of crease recovery testing using a Shirley crease recovery tester, the fabric specimen (either wet or dry) is creased and compressed under specified load and atmospheric conditions for a specified period. The load is then removed and the specimen is allowed to recover, once again under specified conditions and times, the crease recovery angle is measured. Crease recovery is determined depending upon the recovery angle. If the angle is 0 degree then recovery is zero and if the angle is 180 degree then recovery is full.



Fig 1.1 – Shirley Crease recovery tester

Ref: textilestudycentre.com



Crease recovery depends on the construction, twist of yarn, pressure, time etc. Usually crease recovery is more in warp way than in weft way. This is because warp yarns are well in quality, strength, treated with sizing, kept in more tension during weaving etc.

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

UNSCRAMBLE THE JUMBLE WORDS
SHEDINIF
GORYCATE
ISTTW
COVERERY

Last week`s Answers: 1) MAGNESIUM CHLORIDE 2) SILICONE 3) GLYOXAL 4) POLYCARBOXYLIC ACID

Wishing you a great week ahead!

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