

## PRINTING – PART IX

REF: TT/ JULY 2021/ WK 1

### C) Digital Printing (Continued.)

In digital or inkjet printing, a very good pre-treatment of the fabric is necessary. Fabric must be singed properly in order to remove surface protruding fibres; because the protruding fibres can lower the printing quality and also can block the nozzles of the printer. Desizing, scouring and bleaching are also essential to remove impurities and to provide a fabric of uniform absorbency and whiteness; mercerization can be done to improve the depth of the print. The type of fabric pre-treatment will vary with the substrate and dyes used in the inks.

Before printing, the fabric is coated in a solution based on the ink being used except pigment inks which usually do not require it. This is an essential process to improve the absorption level of the substrate and reactivity to the ink. The coating solution varies as per types of ink and substrates. Like in case of printing with reactive dyes onto cellulosic fabrics the coating solution applied on the fabric contains alginates for penetration control, urea to increase color depth and alkali, which is required for the formation of a covalent bond between the dye and the fiber.

However, the process of application remains same. The fabric is fully submerged in the solution bath and then dried.

#### Digital Printing Ink

Liquid ink is used in digital printing; depending on the type of fabric, various inks can be used for printing of fabric or garment.

There are mainly four categories of ink used in the digital textile printing.

- a) **Reactive inks** – These inks are used for printing cotton and other cellulosic substrates. Reactive inks have good light fastness and can develop bright colors. Wash fastness is also good due to the chemical bond created between the dye and the fabric. After printing, the fixation is done by steaming and then the fabric washed.
- b) **Pigment based inks** – Digital pigment ink printing process only colors the surface of the fabric. The process that involves pigment ink is carried out in three stages – print, dry, and cure or bake. Pigment ink printing is more economical; however, the shades produced by pigment inks are comparatively dull. Pigment textile pigment inks contain a binder and a binding agent, which fix the color to the fibers on heating, and print fabrics with vibrant colors without losing their breathability



and water absorbability. Also, the ink has low formaldehyde content and has minimal impact on human skin and the natural environment. Pigment inks have very good light fastness and the ability to be used on a wide range of fabrics is a significant advantage.

- c) **Acid Inks** – These types of inks are designed for printing nylon, silk, wool and even leather. They are used to manufacture sportswear, swimwear, banners and accessories including ties and scarves. Like reactive inks, acid-based inks are also bright but have better light fastness. Wash fastness is also good due to the strong ionic bond created between the substrate and dye stuff. Pre-treated fabrics and steaming and washing after printing are the important process steps.
- d) **Disperse Inks** - These inks are used for printing polyester fabrics. They are generally not as bright as acid and reactive inks. When heated to high temperatures the dye becomes gaseous and is absorbed into the polyester fibers. As the dye cools and condenses it gets trapped in the fibers, making fabrics printed with disperse inks. Disperse inks are divided into low and high energy inks. Low energy inks are also known as dye sublimation inks. These inks have good light fastness and can be printed onto paper and then transferred to polyester or printed directly on the polyester itself and heated in an oven or transfer press. All high energy disperse inks must be printed direct to fabric and then undergo heat fixation.

References:

- 1. <https://www.kaocollins.com/>
- 2. <https://ctnbee.com/>
- 3. <https://imieurope.com/>
- 4. <https://www.kornit.com/>
- 5. <https://indiantextilejournal.com/>

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

UNSCRAMBLE THE JUMBLE WORDS
MASUBLITION
YLNON
PIGENTM
GIDITAL

Last week`s Answers: 1) FORMAT 2) DESIGN 3) NOZZLE 4) CONSUMPTION

Wishing you a great week ahead!

Technical Tuesdays is a knowledge sharing initiative by Resil Chemicals Private Limited

[arc@resil.com](mailto:arc@resil.com) | [www.resil.com](http://www.resil.com).