

## PRINTING – CONCLUDING PART

REF: TT/ OCT 2021/ WK 1

**Challenges with different printing types (Continued.)****b) Reactive Printing**

- Certain color fastness properties cannot meet market requirements with reactive dye printing. Such as light fastness of pale shades to wet fastness properties of dark shades.
- Due to the nature of reactive dyes, the printed fabric is required to go through number of washing cycles to remove excess dyes. This results into the usage of more water and also the generation of wastewater leaking into surrounding water bodies, harming the environment.
- The main challenge with reactive dye printing is its impact on environment. Reactive dyes after fixation also do not completely gets fixed resulting in generation of excess dye contaminated water and dye wastage. Both unfixed dye and hydrolyzed dyes are soluble in water. Some reactive dyes are also associated with heavy metals, such as chromium, copper etc. and these get released into water bodies on degradation of the dye molecule. Effluent from printing cotton using reactive dyes, are much polluted, having high chemical oxygen demand (COD), and color in water. Also, the salt used in the process increases the chloride ion concentration in the wastewater which greatly increases the treatment reactivity.

**c) Digital Printing**

- In case of dark shade, staining occurs in the unprinted area. This can be minimized by avoiding the contact of fabrics with each other during loop formation in steaming.
- Shade variation is one of the major problems faced in digital textile printing. The shade of the print changes after finishing. By standardizing the chemical coating recipe and maintaining the recommended viscosity and pH of coating solution, the issue can be minimized.
- There are few technological challenges in digital printer as well, which needs to be addressed. Such as print heads require advancements, the improvement in adhesion of the pigment is required in case of pigment ink printing; the nozzles need to be modified specially for pigment printing as the size of pigments particles is bigger than dyestuff which may clog the nozzle etc.
- Though the digital printing technology is growing rapidly. The cost of this technique is its biggest challenge because the other existing techniques are a much cheaper. The main cost consuming area in this technique are the print heads and ink cost.



#### d) Sublimation Printing

- The main disadvantage with this printing is that the process is much slower than inkjet printing; as there are more steps involved.
- Sublimation ink is specially formulated to resist becoming a liquid; it is prone to clogging printers. For this reason, printing a graphic onto heat transfer paper for sublimation generally requires a separate dye-sublimation printer that can handle this specialized ink. This makes the printing costly.
- Sublimation printing produces a lot of non-recyclable waste.

#### Summary

The development of modern equipment and printing technology has helped textile manufacturers to reproduce multicolored textile designs with excellent colorfastness. This can be performed on a wide variety of fibers and fabric constructions with cost effective processes. New technologies and new developments in traditional methods will enable to grow textile printing industry into the future.

#### References:

1. <https://www.contrado.co.uk/>
2. <https://go.gale.com/>
3. <https://textilechemrose.blogspot.com/>
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Last week`s Answers: 1) WETTING 2) VISCOSITY 3) POROSITY 4) THICKNESS

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