

Soap your way to success with a wonder soaping-off agent

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WITH increasing scarcity of utilities like power and water, resource intensive processes like reactive dyeing and printing are attracting attention of textile processors world-wide to find opportunities for optimization. Textile processors are aware that each Rupee saved by streamlining consumption of utilities will keep them competitive in today's challenging business environment.

One area for savings is to improve efficiency in the after-soaping process of reactive dyeing and printing. In reactive dyeing and printing of cotton goods, not all the reactive dyes will react with the cotton. Some dyestuff will always react with -OH group of water thereby become hydrolyzed. Once this happens the ability of the hydrolyzed dye molecules to react with cotton is lost and they remain unreacted in the dye liquor. These dye molecules are called hydrolysate, and if not eliminated eventually create a havoc to the color fastness of dyed cotton goods. In order to achieve required wash fastness of dyed material, it is necessary to remove all hydrolysate after the dyeing process is complete. This is done by multiple treatment of the dyed material with chemicals in hot water that usually give a water softening property to remove the hydrolysate. There are a host of chemicals ranging from non-ionic surfactants, phosphonates to polyacrylates that are employed by the processor to mop up the troublesome hydrolysates. However this can only be achieved by a number of extensive soaping and rinsing steps that end up using lots of water, energy and time. In spite of this they are not completely removed.

The industry today requires a soaping agent that works on deactivating the hydrolysate without using additional water and energy. Leomine Organics Pvt Ltd has introduced a product that does just that. Leomine Washoff WAF is a wonder product that affects radically the way the hydrolysate behaves in relation to cotton and makes it easy to remove them from the dyed cotton material and dye liquor to achieve optimal color fastness.

The effect of Leomine Washoff WAF can be easily demonstrated in the laboratory. Its performance can be compared to other washing off chemicals using other chemistries. For the experiment the hydrolysate dye is

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prepared by reacting a reactive dye with caustic soda at boil for two hours. It is then neutralized with hydrochloric acid and adjusted to pH 7. A known quantity of the hydrolysate dye solution is taken in two beakers. 1 gpl of Leomine Washoff WAF is added in one beaker while the same quantity of another washing off chemical viz a polyacrylate is added in another beaker. The moment Leomine Washoff WAF is added to the hydrolysate liquor, the solution decolorizes indicating that Leomine Washoff WAF has acted on the hydrolysate. Pre-bleached cotton knit fabric pieces are then placed one each in each beaker and soaping is carried out at 95 degrees for 15 minutes. The fabric pieces are then transferred to separate beakers containing cold water and rinsed. Once the fabric pieces are removed from the beakers and dried, the action of Leomine Washoff WAF becomes clearly apparent. The fabric in the beaker containing the polyacrylate soaping agent is stained while that in the beaker containing Leomine Washoff WAF is stain free indicating that a barrier has been created between the hydrolysate and the cotton fabric. From the experiment it can be concluded that the mode of action of Leomine Washoff WAF is far superior to other modes of washing resulting in high color fastness.

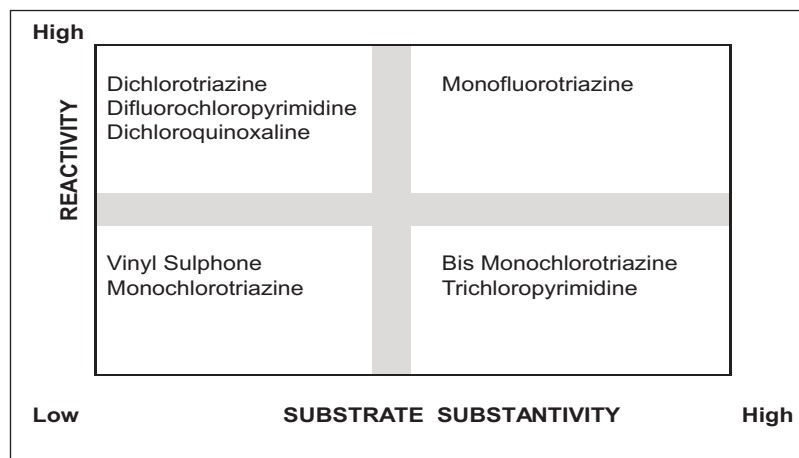
The experiment can be repeated under hard water and high TDS (Total Dissolved Solids) conditions. The results are found to remain the same. The superior performance of Leomine Washoff WAF remains unaffected even under these harsh conditions

It is the reactive dye hydrolysate that if left untreated will cause serious cross-staining during home laundry wash. Therefore it is absolutely important to free the dyed material from the ever present hydrolysates completely.

There are various factors that affect the removal of hydrolysate from the substrate, Some of them are listed below:

- Substrate structure
- Substantivity of the hydrolysate (depends on the reactive dye anchor system)
- Quantity of hydrolysate present on substrate
- Salt concentration employed
- Swelling of fibre
- Energy (heat employed) in the system
- Liquor interchange between fresh liquor and substrate

The reactivity and substantivity of reactive anchor systems of the reactive dyes require different conditions under which they are applied on the textile material. They also determine the behavior of hydrolysates in the dyeing liquor and their interaction with the substrate



Factors affecting removal of hydrolysates from dye liquor :

- Quantity of hydrolysate present
- Solubility of hydrolysate
- Liquor ratio employed (dilution level)
- Liquor retention between rinse stages (Carry over)
- Rate of dilution during overflow rinsing

To summarize:

1. Most reactive dyes will react rapidly with both –OH groups on the cellulose and dissociated water in the dyeing bath
2. A large number of low substantive dyes will react with water and get hydrolyzed
3. High substantive dye hydrolysates will require higher energy to remove them from the substrate
4. High salt concentration will hinder removal of hydrolyzed dyestuff

5. Hydrolyzed dyes in the dye liquor can only be removed by dilution. However optimization is possible using Leomine Washoff WAF
6. It is absolutely necessary to remove hydrolysates in order to meet consumer requirement of color fastness

Leomine Washoff WAF with its unique features and benefits, listed below, helps the textile processor to overcome the above challenges.

- It is independent from salt concentration and water hardness. Works in all conditions
- It is equally effective with reactive dyes with different anchor systems
- It can be applied under low temperatures
- It is suitable for cellulose rich wovens, knits and yarn
- It can be used for washing off reactive dyed and reactive dye printed cotton goods
- It can be used in exhaust and continuous processes in all machines
- Its principle ingredient is nonionic – so is highly compatibility with other chemicals
- It does not work on the substrate but works selectively on the hydrolysate
- It is active in acidic and alkaline conditions
- It has low viscosity so is easily dosable
- It is APEO/ NPEO free
- It prevents dye transfer and therefore exhibits excellent anti-stain properties
- It increases productivity by reducing the number of soaping and rinsing steps
- It reduces overall processing costs significantly
- It is more eco-efficient as compared to other washing off agents in the market

Leomine Washoff WAF is a wonder product that combines with the reactive dye hydrolysate at a molecular level to destroy its substantivity for the substrate in presence of salt, resulting in unbeatable color fastness of reactive dyed goods. ■