Lecture-21

Contents

- Dispersing Agent?
- Carrier?
- Reduction Cleaning

Chemicals Used in Dyeing with Disperse Dye

Dispersing Agent:

Disperse dyes are insoluble in water and form aqueous dispersion in water. Since they are water insoluble, they will give uneven dyeing if they are directly used in dye bath.

So, to ensure uniform and trouble free dyeing the dye should be present in dye bath in a uniform and very fine form and should give a stable dispersion. This is the reason for which a special chemical is used in dye bath named dispersing agent.

They should be effective under dyeing conditions, stable to hard water, high temperature and other dyeing assistants.

For example, alkali sulphates, alkyl aryl sulphonates etc. are some surface active agents which are recommended as dispersing agents in disperse dyeing.

Chemicals Used in Dyeing with Disperse Dye (continued)

Carriers:

It has been established that certain hydrocarbons, phenols, amino acids, amides, alcohols, esters, ketones, nitriles etc. accelerate the rate of dyeing polyester fibre with disperse dyes from aqueous medium at temperature up to 100°C.

These dyeing assistants alter the dispersing properties of the dyes and the physical characteristics of the fibre so that more dye can be transferred from the dye bath to the fibre.

These are called carriers and are necessary for dyeing polyester fibres at the normal pressure and temperature below 100°C to increase the dyeing rate and to permit dye migration within the fibre.

Chemicals Used in Dyeing with Disperse Dye (continued)

Factors considered for selection of carriers

i) High carrier efficiency

ii) Cheap.

iii) Available at market.

iv) Non toxicity

v) Little or no effect on the light fastness of the dyeing

vi) No degradation or discoloration of the fiber.

vii) High stability under dyeing conditions.

viii) Compatibility with the dyestuff.

ix) Ease of dispersion in the dye bath.

x) Ease of removal after dyeing.

xi) Low volatility of the carrier.

Chemicals Used in Dyeing with Disperse Dye (continued)

Reduction Cleaning:

In case of dark shade dyeing, we have to use more amounts of dye and chemicals. But, these chemicals should be removed from fabric after dyeing. For this reason, a special process is used in case of disperse dyeing. This cleaning process is called reduction cleaning.

By reduction cleaning, surface dye molecules or unfixed dye molecules are stripped and this in turn results in level dyeing. Reduction cleaning also improves wash fastness property of textile material.

Chemicals Used in Dyeing with Disperse Dye (continued)

Recipe for Reduction Cleaning:

Detergent : 1 g/L

Sodium Hydorsulphite : 2 g/L

Caustic Soda: 1-2 g/L

Time: 20-30 min

Tem: 70-80° C


Thank
You!