

Lecture-10

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graph TD; A[Lecture-10] --- B[Contents]; B --- C[Hydrolysis of Reactive Dyes]; B --- D[Stripping Process of Reactive Dye]
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Contents

Hydrolysis of Reactive Dyes

Stripping Process of Reactive Dye

Hydrolysis of Reactive Dyes

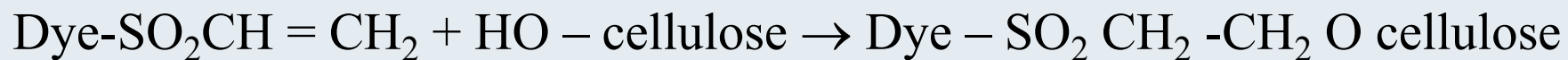
Under alkaline condition, reactive group in reactive dye is supposed to be attached with the hydroxyl group (-OH) of cellulose through the reaction.

But, the reactive group of such dyes may react with water as the increasing temperature which is simply referred as hydrolysis.

Thus, hydrolysis increases the loss of dyes and about 35-40% dyes may go for wastage in this case.

In case of Vinyl Sulphone Dyes:

a) Reaction with Cellulose

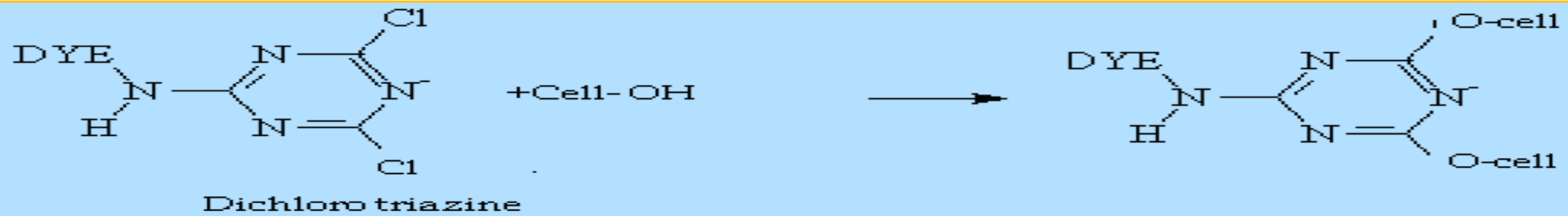


b) Reaction with Water (Hydrolysis)

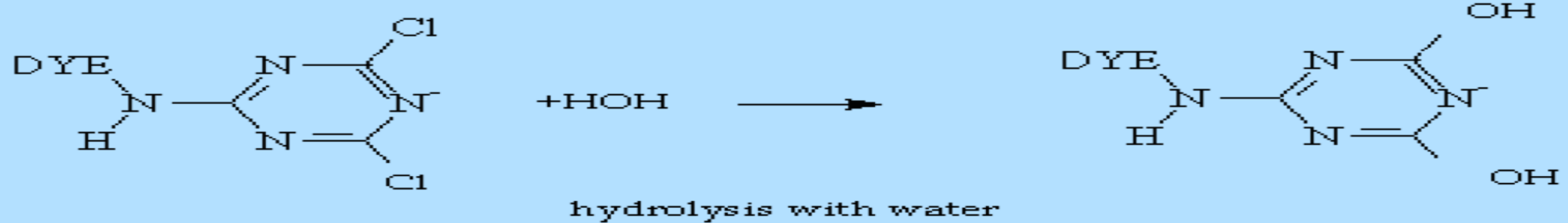


Hydrolysis of Reactive Dyes (Continued)

Incase of Triazinyl dyes



fixation with cellulose



Hydrolysis of Reactive Dyes (Continued)

Factors affecting dye hydrolysis

- Liquor ratio: longer liquor ratio increases hydrolysis and vice versa.
- Salt concentration: Higher salt concentration decrease hydrolysis up to a limit and vice- versa.
- pH: Higher pH increases dye hydrolysis.
- Temperature: Higher temperature increases the hydrolysis of dyes.
- Dye reactivity: It increase both hydrolysis and fixation rate.
- Time: Higher dyeing time increases hydrolysis.
- Type and no of reactive dye: vinyl sulphone is more prone to hydrolysis than triazinyle group.

Hydrolysis of Reactive Dyes (Continued)

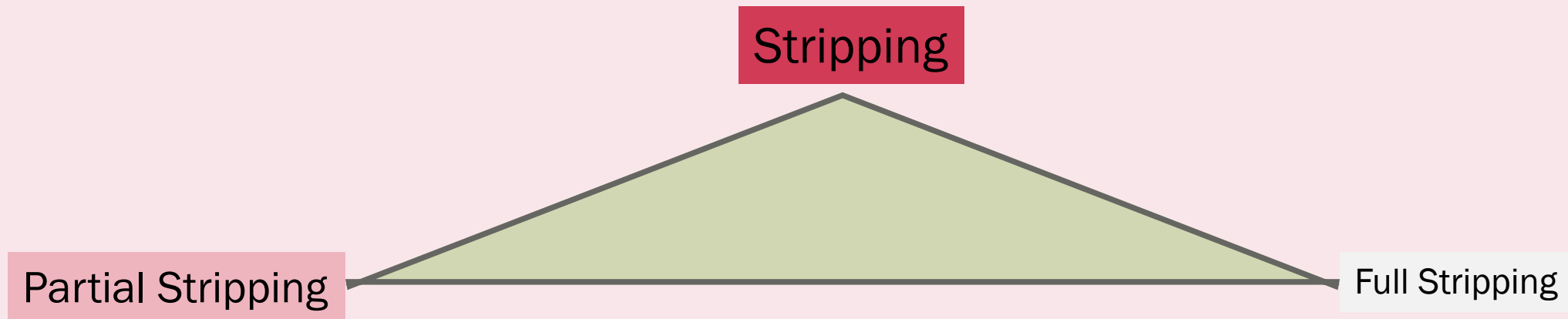
Prevention of dye hydrolysis

- As hydrolysis is increased with increasing the temperature during dye dissolving, its application temperature should not be above 40°C.
- Relatively large amount of electrolytes are required for the exhaustion, otherwise dye hydrolysis will occur greatly in dye bath.
- Dye and alkali solution should be prepared separately and mixed just before using.
- Dye and alkali solution should not keep for long time after mixing.

Stripping of Reactive Dyes

Stripping

The processing of removing color from the dyed material is called stripping. Stripping becomes necessary when there is uneven dyeing. The reactive dye cannot be satisfactory stripped from fibre due to covalent bond between dye molecules and fibre molecules.



Stripping of Reactive Dyes (Continued)

Partial Stripping

Partial stripping is obtained by treating the dyed fabric with dilute acetic acid or formic acid. The recommended conc. is betⁿ 5 to 10 parts glacial acid or 2.5 –10 parts of formic acid per 1000 parts of water .

Process- The goods are entered and temp is raised to 70-100°C and the treatment is continued until the shade has been reduced to the desired amount.

Full Stripping

For complete stripping the goods are first treated with sodium hydrosulphite ($\text{Na}_2\text{S}_2\text{O}_4$) at boil and then washed off and bleached with 1% sodium hypochlorite (NaOCl) at room temperature. This is carried out for 30 minutes.

