UNIT - III

propeties of Napthol :

* Naphthols are in soluble in water
* Naphthols made soluble by converting them into its sodium salts
* Substantivity of some naphthols can be increase by adding electrolyies.
* Naphthols different widely from one to another in their affinity or substantivity for cotton fib
* Naphthols can be dissolved by Hot and cold dissolving method.
* Naphthol available in trade name like Naphthol Brenthols, Amarthols.

classificatin of Naphthols :

According to substantivity Naphthols are classified into four types. They are

* Low substentivity Naphthols :
  Naphthol AS-D / AS / AS-OL
* Medium substentivity Naphthols :
  Naphthol AS-RL / AS-BG - AS-LT
* High substentivity Naphthols
  Naphthol AS-ITR / AS-BL / AS-BS
* Sitt higher substentivity Naphthols.
  Naphthol AS-S / AS-LB / AS-BT

properties of fast Bases:

* Free bases are insoluble in water
* Free bases are made soluble by converting it to its soluble from i.e. Hydro chlorides.
* Hcl and $NaNO_2$ are added for converting base into its hydrochloride form.
* This diazotisation process is stable only at ice cold temp (After addition of $NaNO_2$ made at 0-5°C)
* Free bases can be dissolved by direct and Reverse method.
* Bases available in trade name like Brentamine fast base (HCl) Fast Base.

Dissolution of Base

free base are insoluble in water, They are converted into its Hydrochlorides which is soluble water.

Base $-NH_2$ + HCl ⟶ Base $-NH_3^+ Cl^-$

Free Base — water Insoluble

Hydrochlorides of the base — soluble in water.

Diazotisation of Base:

Hydrochloride of the base treated with $NaNO_2$ at 0-5°C is called Diazotisation. reaction.

~~Base $-NH_2$ + HCl~~

$HCl + NaNO_2 \longrightarrow HNO_2 + NaCl$

Sodium nitrate — Nitrous acid.

Base $-NH_3^+ Cl^- + HNO_2 \xrightarrow[0-5°c]{} Base-N^+\equiv N + 2H_2O$

Cl^-

Diazonium chloride

Dissolution / Diazotisation of base can be done by Direct or Reverse method.

Direct method of Diazotisation :

Ammatic $-NH_2$

1gm of the Base is made into a paste with 2.5 ml of Hcl.

↓

15 ml of Hot water is added and stirred well

↓

Solution is cooled 5-8°c and 0.5 gm of $NaNO_2$ is added and stirred well.

↓

Solution Kept for 20-30 mins.

Indirect (or) Reverse method of Diazotisation

1gm of the Base is made into a paste with little amount of hot water.

↓

Solution is cooled to 5-8°c and then 0.5 gm of $NaNO_2$ is added and stirred well.

↓

Cooled.

↓

Solution is kept for 20-30 mins.

Application procedure of Azoic on cotton meterial

The steps involved in dyeing cotton meterial with Azoic are,

1. Naphtholation.
2. Diazotisation
3. coupling or Development
4. After treatment

1. Naphtholation:

Naphthol is converted into soluble Naphtholate by cold or Hot dissolution method

↓

Then the Naphtholating bath is setup with the required amount of prepared Naphthol solution and salt (if need)

↓

Wetted out cotton bank is introduced into the bath at room temp.

↓

Naphtholation process is continued for 20-30 mins.

↓

Naphtholated material is evenly squeezed and transfered to developing bath.

2) Diazotisation:

Free base is converted into its Hydrochloride by Direct or Indirect method of Diazoation.

3) Coupling or Development

Coupling bath is set up with the diazotized base solution, Sodium Acetate and Acetic acid

↓

Naphtholated material is entered into the bath at room temp

↓

0.5 gm of salt can be added to enhance exhausation.

↓

Coupling process is continued for 20-30 mins.

4) After treatment:

cold wash

↓

Neutralised with HCl at 40°C for 10

↓

cold wash

↓

Soaping with 1-2 gpl of non-ionic soap at boil for 10-15 mins.

↓

Hot wash

↓

cold wash

↓

Dried.

Pad - Dry - Development method

Pad (cotton fabric is padded with the soluble Naphtholate solution prepared by cold or hot dissolution method)

↓

Drying (padded fabric is dried at 100°c for 2 mins.

↓

Developing (dried fabric is again padded with the coupling solution)

↓

Developed fabric is given a cold wash, neutralisation, cold wash, soaping, hot wash, cold wash and then dried.

Stripping of Azoic dyes.

The goods are treated with 2% Hissolamine A and 2% of caustic soda at boil for 10 mins

↓

Then the bath temp is dropped to below boil

↓

5-6% of hydros is added

↓

process continued for further 30-40mins

↓

Then the fabric is bleached with NaOCl or H_2O_2.