

Properties of Naphthols:

- \* Naphthols are insoluble in water
- \* Naphthols made soluble by converting them into its sodium salts
- \* Substantivity of some naphthols can be increased by adding electrolytes.
- \* Naphthols differ widely from one to another in their affinity or substantivity for cotton fibre
- \* Naphthols can be dissolved by Hot and cold dissolving method.
- \* Naphthol available in trade name like Naphthol Brentnols, Amarthols.

Classification of Naphthols:

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

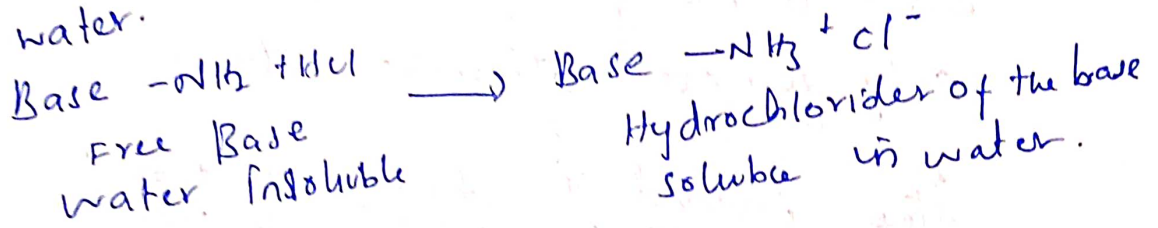
- \* Low substantivity Naphthols:  
Naphthol AS-D / AS, AS-OL
- \* Medium substantivity Naphthols:  
Naphthol AS-RL, AS-BG - AS-LT
- \* High substantivity Naphthols  
Naphthol AS-ITR, AS-BL, AS-BS
- \* Still higher substantivity naphthols.  
Naphthol AS-S, AS-LB, AS-BT

## Properties of Fast Bases:

- \* Free bases are insoluble in water
- \* Free bases are made soluble by converting it to its soluble form i.e. Hydrochlorides.
- \* HCl and NaNO<sub>2</sub> are added for converting base into its hydrochloride form.
- \* This diazotisation process is stable only at ice cold temp (also addition of NaNO<sub>2</sub> 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.

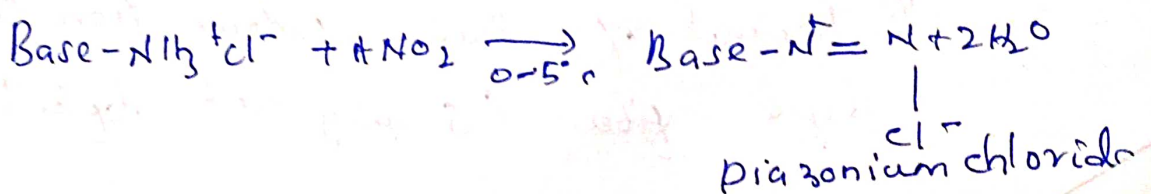
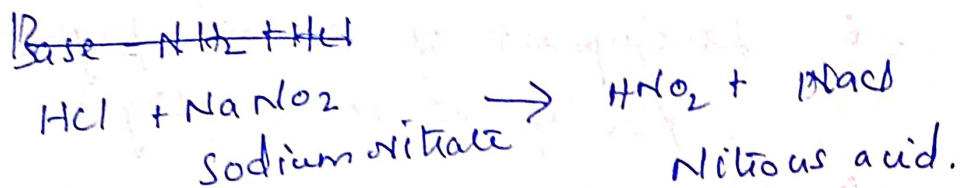
## Dissolution of Base

Free bases are insoluble in water, they are converted into its hydrochlorides which is soluble in water.



## Diazotisation of Base:

Hydrochloride of the base treated with NaNO<sub>2</sub> at 0-5°C is called Diazotisation reaction.



Dissolution / Diazotisation of base can be done by direct or Revers method.

### Direct method of Diazotisation:

1 gm of the <sup>Aromatic -NH<sub>2</sub></sup> 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 to 5-8°C and 0.5 gm of NaNO<sub>2</sub> is added and stirred well.

↓  
Solution kept for 20-30 mins.

### Indirect (or) Reverse method of Diazotisation

1 gm 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<sub>2</sub> is added and stirred well.

↓  
Cooled.

↓  
Solution is kept for 20-30 mins.

### Application procedure of Azodic on cotton material

The steps involved in dyeing cotton material with Azodic 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 transferred to developing bath.

### 2) Diazotisation:

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

### 3) Coupling or Development

Coupling bath is set up with the diazotising 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 exhaustion.

↓

Coupling process is continued for 20-30 mins.

### 4) After treatment:

cold wash

↓

Neutralized with HCl at 40°C for 10 mins

↓

cold wash

↓

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

↓

Hot wash

↓

cold wash

↓

Dried.

## pad - dry - development methods

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 dye.

The goods are treated with 2% bisolamine 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 30-40 mins



Then the fabric is bleached with NaOCl or  $H_2O_2$ .