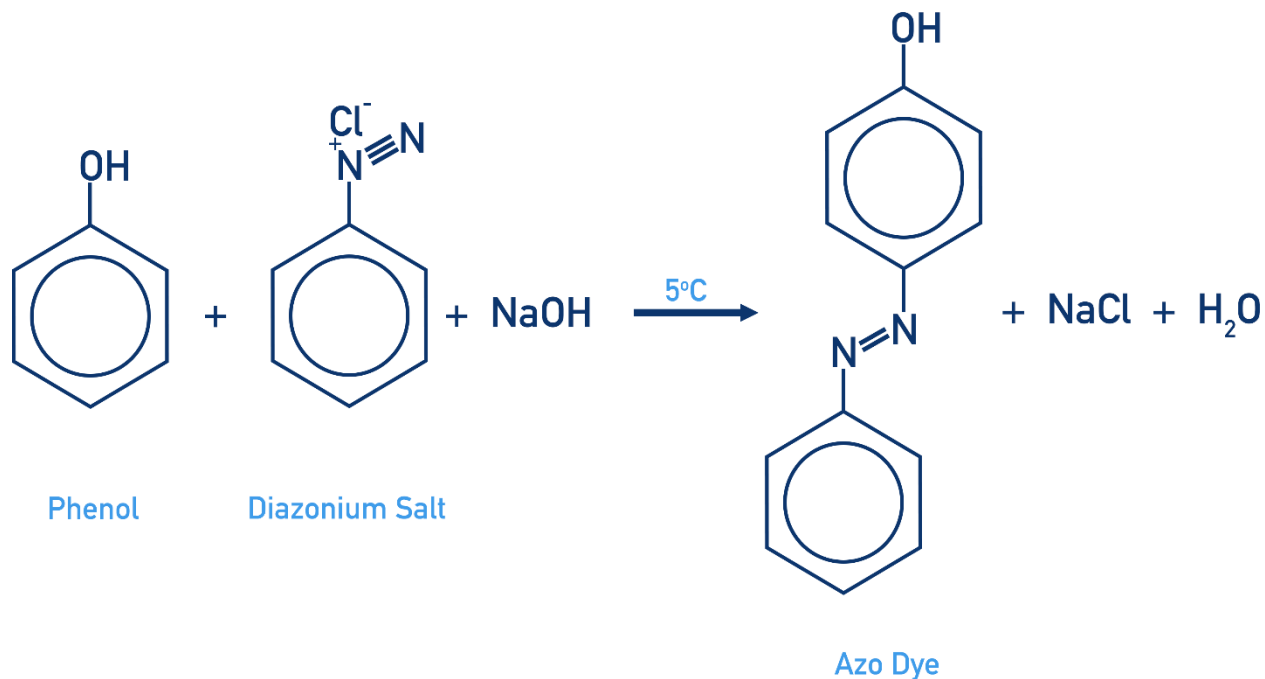


Azoic Color



The dyes which contain **insoluble azo group** (-N=N-) are known as azoic dyes. These dyes are not found in **readymade form**.

They are produced through a process which **creates the colored material directly** on the fabric by a reaction between two compounds namely, **di-azo compound or diazo base and coupling compound i.e. Naphthol**.

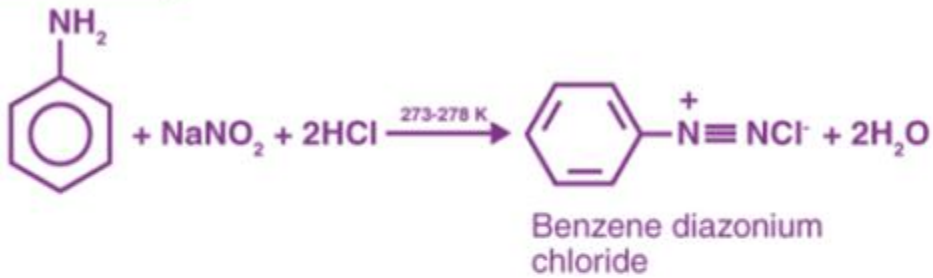
Ice Color:

For the diazotization reaction at very low temperature is required (**0-5⁰C**) which is normally created by **ice water**. So, it is called **ice color**.

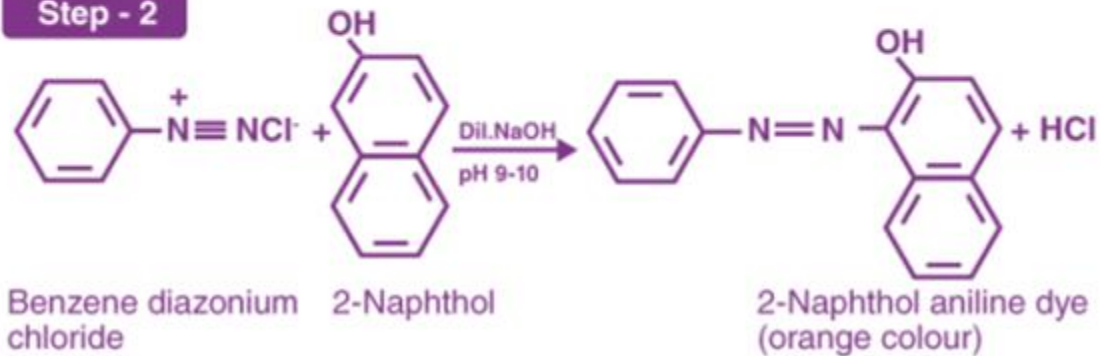
Magic Color:

Azoic colors are called magic color due to their versatility. Different colors are obtained by **combining different bases with same naphthol** within **very short time**. Again, different colors can also be obtained by **combining different naphthol with same base**. So, they are called magic color.

Step - 1



Step - 2



3) Coupling/Developing:

The **impregnated material** is treated in a bath **containing diazonium solution to carry out to coupling** and thus color is **produced inside the fabric**. The pH maintaining is important.

4) After Treatment (Steaming or Soaping)

- ✓ Soaping causes removal of superficial pigments and their dispersion in the bath, some sort of removal of pigments formed at the interface and promotes aggregation of pigments inside.
- ✓ High pressure steaming serves all the purposes as those with soaping, except the problem of superficial deposition. Thorough and repeated soaping can improve rubbing fastness.

Recipe of dyeing of cotton fabric with azoic dyes:

Naphtholation:

- Naphthol = 3%
- Glycerine = 1 g/L
- Caustic soda = 6 g/L
- Common salt = 15 g/L
- Time = 20-30 minute.
- Temperature = room.
- M: L = 1:30

Diazotization:

- Base color = 3 %
- HCl = 3%
- NaNO₂ = 2%
- Acetic acid = 2%
- Sodium acetate = 1%
- Temperature = 0⁰-5⁰C (with ice)
- Time = 20-30 minute.

Problems in Dyeing with Azoic Dyes

1. Uneven Shade

- Faulty liquor movement
- Faulty fabric movement during naphtholation
- Improper naphtholation
- Improper Hydro extraction

2. Naphthol Migration

The naphthol in fabric goes to base solution of the bath and **reacts with base other than in the fabric**. This is called naphthol migration.

This occurs due to:-

- a) Improper selection of naphthol
- b) More moisture in fabric.

3. Slow Coupling Reaction

- Improper selection of base to mix with naphthol
- Wrong range of pH in bath i.e. more acidity.

4. Affinity of Base towards Cellulose

- Azoic base should have affinity towards naphthol. But sometimes it shows affinity towards cellulose. This hamper dyeing.

5. Blinding Effect

- Presence of excess alkali during naphtholation.
- Improper value of pH
- Presence of alkaline group in coupling bath.

This blinding effect may be prevented by using alkali blinding agent (e.g. alum)

6. Pigment on Fiber Surface

- Unfixed dye on fiber surface (Unreacted naphthol)
- Improper washing after dyeing.

This can be prevented by–

- Using blinding agent for alkali
- Curing process

Difference between Azo dyes & Azoic Dyes

Azo Dyes:

1. Contains soluble azo group
2. Ready made dyes
3. Do not require diazotization and coupling reactions
4. Do not produce bright shades
5. Poor wash fastness property
6. Simple dyeing and printing process
7. Less costly

8. No ice is used
9. One bath process

Azoic Dyes:

1. Contain insoluble azo group
2. Not ready made dyes
3. Requires diazotization and coupling reactions
4. Produce dark, bright shade
5. Wash fastness is good
6. Complicated dyeing and printing process
7. Ice is used
8. More costly
9. Two bath process

Dr. Mainul Morshed