

PAINTS USED IN RAILWAYS



DIFFERENT PAINTS USED IN IR

ALKYD

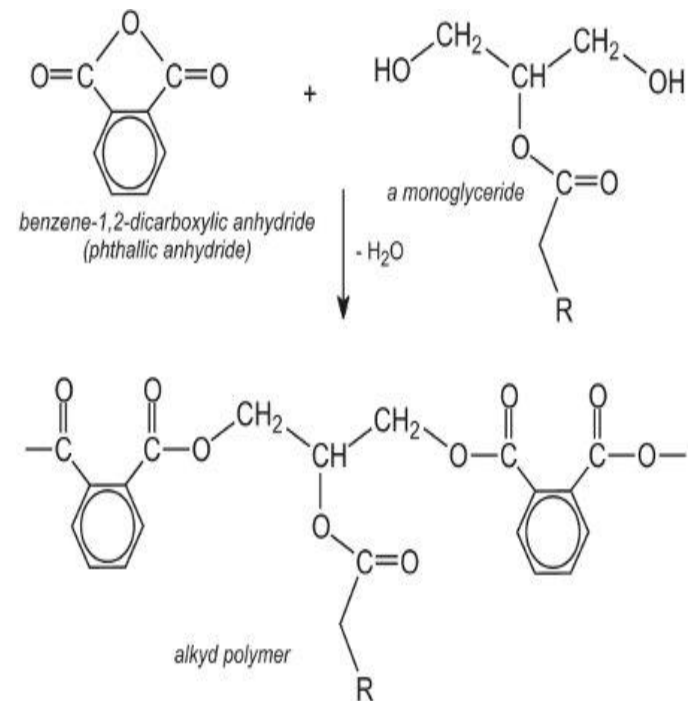
PU

EPOXY PU

ALKYD PAINT

- A single pack system.
- Produced by the polymerisation of **polybasic acids** (Phthalic anhydride, Fumaric acid, Maleic acid, Succinic acid, etc) with **polyhydric alcohols** (Glycol, Glycerol, Penta erythritol, etc) in correct proportion in presence of heat and catalyst (CO_2).

Glycerol + Phthalic acid = Alkyd Resin



MERITS & DEMERITS OF ALKYD PAINT

Merit-

1. Good resistance to weathering
2. Stability to sun light
3. Good resistance to water & alkali.

Demerit-

1. Low durability
2. Very poor gloss & colour retention
3. Frequent repainting
4. Not suitable for immersion service

PU PAINT

- Two pack system.

Formed through a reaction of **poly isocyanate** with **polyol**.

Poly isocyanate + Polyol = PU Resin
[Polyol derivatives of Poly alcohols, Polyesters, Poly ethers or blends of these]

Two Pack:-

- Pack 'A'- **Base** (resin & pigment)
- Pack 'B'- **Hardener** or catalyst [a material, generally part of two component paint system, which reacts with other components to produce a fully cured coating.
 - mixed directly before application



MERITS & DEMERITS OF PU PAINT

Merit:

1. Better durability
2. Better abrasion resistance
3. Better gloss retention
4. Better UV resistance
5. Excellent resistance to water and many chemicals

Demerit:

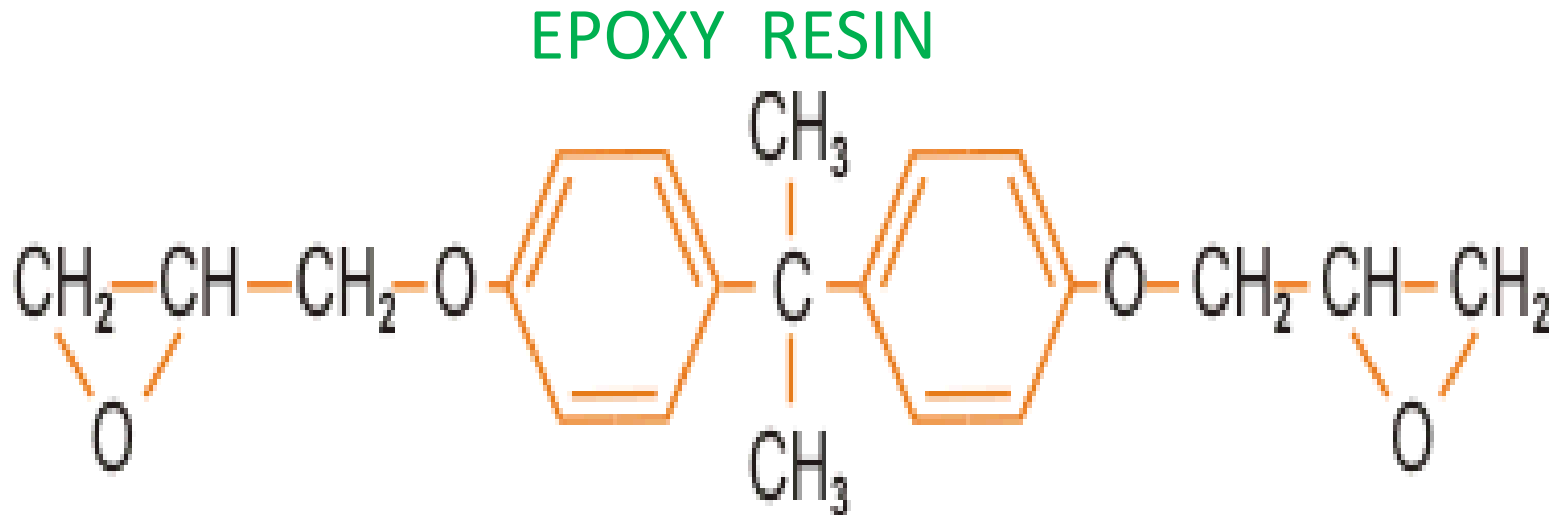
1. Poor adhesion to steel surfaces
2. Very toxic
3. Poor pot life
4. Requires high surface finish

EPOXY PAINT

A two pack system.

Made from Epichlorohydrin (in excess) & Bisphenol 'A'

Epichlorohydrin + Bisphenol 'A' = Epoxy Resin



MERITS & DEMERITS OF EPOXY PAINT

Merit-

- 1.Non-toxic
- 2.Good flexibility
- 3.Abundantly available
- 4.Excellent adhesion property
- 5 Good resistance to water, moisture & organic solvents but not resist UV light
- 6.Excellent colour & gloss retention
- 7.Easy application
- 8.Excellent chemical, abrasion & corrosion resistance

Demerit-

- 1.High initial cost
- 2.Low pot life
- 3.High consumption of costly thinner
- 4.Not suitable for water immersion service

WHY SWITCHING OVER TO PU PAINTING?

For high profile coaches (LHB, Duranto, Rajdhani, Shatabadi) IR shifted from Alkyd to PU system because Alkyd system is:

- Less durable
- Very poor gloss & colour retention
- Less resistance to salty atmosphere & UV-rays
- Less resistance to many chemicals
- Requires frequent repainting & hence increased effective cost of painting

REASONS FOR SWITCHING OVER TO EPOXY PU SYSTEM

Toxic nature of PU forced IR to switch over to Epoxy PU system, over and above the merits of PU system:-

- Epoxy system is non-toxic
- Epoxy resin is abundantly available in our country
- Epoxy primer has better adhesion property

THANK YOU

