

PAINT





Definition



- Mechanical dispersion of one / more finely divided pigments in a medium
- (thinner + vehicle).
- When paint is applied on a metal surface, the thinner evaporates, while the vehicle forming a pigmented film



Characteristics of good Paints



- Spread easily on the metal surface.
- Adhere well to the metal surface.
- High hiding power.
- Not crack on drying.
- Stable colour.
- Have high corrosive resistance.
- High water repelling property.
- Give a glassy film.
- long life.
- High covering power.



Constituents and their functions of Paint



i) **PIGMENTS**

Solid and colour producing substances

Functions of Pigments

- i) desired colour and opacity to the film.
- ii) provides strength to the film.
- iii) protects the film from the destructive uv-rays.
- iv) improves weather-resistance to the film.





Examples:

- **White Pigments** – White lead [2PbCO_3 , Pb(OH)_2] or ZnO .
- **Lithophone** (75 % BaSO_4 + 25 % ZnS)
- **Red Pigments** – Venetian red (Fe_2O_3 and CaSO_4)
- **Indian red** (Fe_2O_3)
- **Blue Pigments** – Prussian blue $\text{Fe}_4[\text{Fe(CN)}_6]_3$
- **Green Pigments** – Chromium oxide
- **Black Pigments** – Lamp black, carbon black
- **Yellow** – Chrome yellow, Zinc yellow





Vehicle or Drying Oil

- Non-volatile portion of a medium.
- film forming constituent of the paint.
- higher molecular weight fatty acids present in vegetable & animal oils.

Functions

- They form a protective film by the oxidation and polymerisation of oil.
- They bind the pigment particles together on the metal surface.
- They impart water repelling property, toughness and durability to the film.

Examples:

Linseed oil, dehydrated castor oil, soyabean oil, etc.





Thinners or Solvents



highly volatile portion of a medium which evaporates after the application of the paints.

Functions

- i) reduces the viscosity of the paint.
- ii) dissolves oil, pigments, produces a homogeneous mixture.
- iii) increases the penetrating power of the vehicles.
- iv) increases the elasticity of the paint film.
- v) helps the drying process of the paint.



Examples: Turpentine, benzene, dipentene, naphtha, kerosene, etc.



Extenders or Fillers

inert white or colourless & low refractive indices pigment materials.

Functions

- i) Reduces the cost of the paints.
- ii) Retards the settling of the pigments.
- iii) Modifies the shades of pigments.
- iv) Reduces the cracking of dry paint film.
- v) Increases the durability of the paint.

Examples: Talc, gypsum, china clay, CaCO_3 , ground silica, magnesium silicate, etc.





5.Driers used to increase the rate of drying process (oxygen carriers).

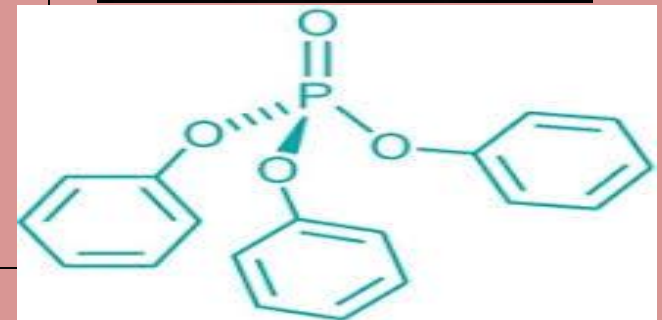
Examples: Metallic soaps like Naphthenates, linoleates, resinates borates and tungstates of cobalt, Zn, Mn and Pb.

vi) Plasticizers: They are added to provide elasticity to the film and to prevent cracking of film.

Examples: Triphenyl phosphate, tributyl phthalate, tricresyl phosphate, dibutyl tartarate, etc.



Triphenyl Phosphate(TPP)



Triphenyl phosphate