What is Paint?

Paint consist of

- Binder (also known as resin)
- Pigments
- Extenders
- Additives
- Solvents

In the dried paint film, only the first four components remain, solvents evaporate

Binder

◇**Natural Resin**
- Drying Oil
- Coal Tar
- Nitrocellulose

◇**Synthetic Resin**
- Alkyd
- Chlorinated rubber
- Epoxy
- Polyester
- Polyurethane
- Silicate
- Vinyl

Pigment

Colouring Pigments

- Organic
- Inorganic
- Titanium dioxide

Rust Preventing

- Zinc
- Zinc phosphate

Extenders

- Calcium carbonate
- Barium sulphate
- Talc

Solvent

- Water
- Ketones
- White spirit
- Xylene
- Alcohols

Additives

- Wetting Agent
- Anti-Settling
- Drier
- Anti-Skinner
- Antifungal
- Antibacterial
- Plasticiser
- Biocide

Properties of Paint

- Three generic type of binders are applied to test panels: Alkyd, epoxy and polyurethane
- Panels are exposed to sunlight, water and chemicals
- Different properties are demonstrated by different binders
- Important to select the correct type of paint for the purpose

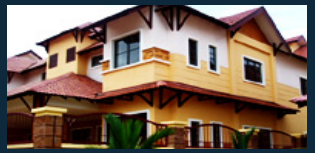
Different drying / curing processes

- Oxidative curing
- Physical drying
- Chemical curing

Curing mechanism

- Oxidative Curing
  - Alkyd

- Physical Drying
  - Chlorinated Rubber
  - Vinyl
  - Acrylic
  - Asphalt

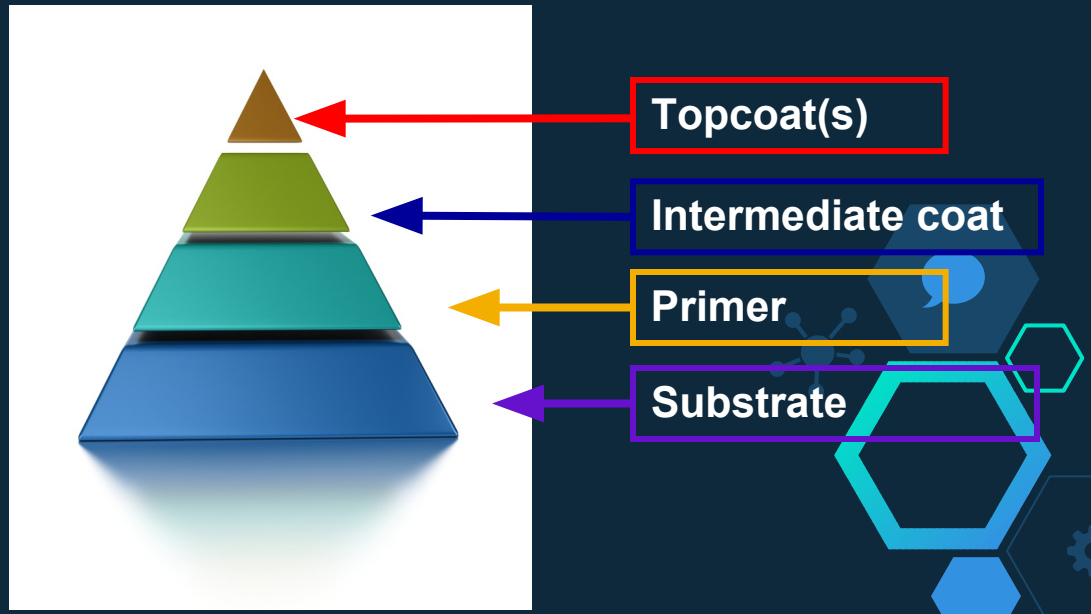


- Epoxy
  - Polyurethan
  - Silicate

Paint systems

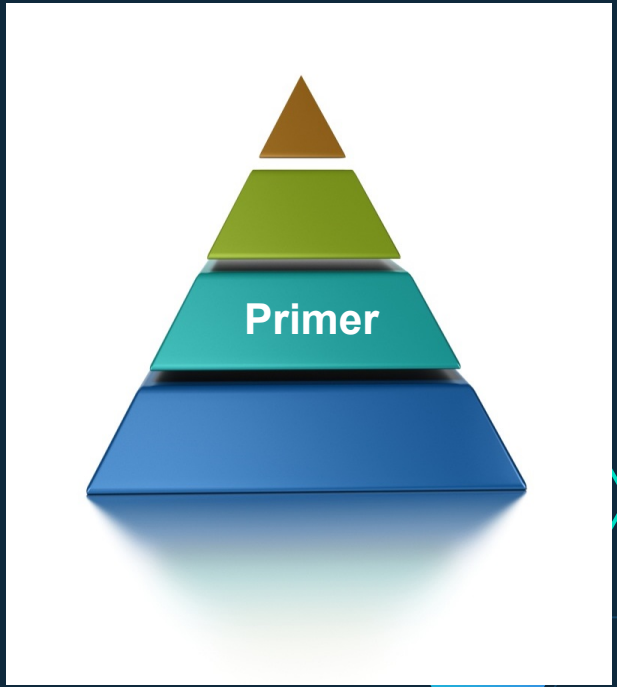
A paint system normally consists of

- Primer
- Intermediate coat(s)
- Topcoat(s)



The important properties of primers are

- Adhesion (strong bonding to substrate)
- Cohesion (high internal strength in the film)
- Inertness (strong resistance to corrosion and chemicals)
- Inter-coat bond (high bonding to intermediate coat)
- Appropriate flexibility



Intermediate or Body coats

The principal purposes of an intermediate coat is to provide:

- Thickness for total coating
- Strong chemical resistance
- Strong cohesion
- Strong bonding to primer and topcoat
- Provide electromechanical resistance

Topcoats perform several important functions like:

- Provide a resistant seal for the coating system
- Form the initial barrier towards the environment
- Provide resistance towards chemicals, water, and weather
- Provide a tough and wear-resistant surface
- Provide a pleasing appearance
- Provide UV resistance