

Coating composition

Coatings may be applied as liquids, gases or solids e.g. powder coatings.

Normally 4 key kinds of ingredient are used for coatings. 1)Binders/Film forming materials/polymers. 2) Additives. 3)Pigments/Toners/Fillers/. 4) Solvents including water.

- 1) Binder (Resin/Film-Former): The backbone of the coating that forms a solid film and adheres it to the substrate. Examples: Natural and synthetic polymers like latex, polyethylene, waxes, and various resins.
- 2) Pigments/Extenders/Fillers: Provide color, opacity, and can also contribute to corrosion inhibition. Inexpensive materials used to add bulk, reduce cost, and enhance certain mechanical properties of the coating. Examples: Titanium dioxide (for whiteness) and extenders or fillers (used to reduce cost and improve performance).
- 3) Solvent (Carrier/Dispersant): Dissolves or disperses the binder and pigments, controls viscosity for application, and then evaporates to form the solid film. Examples: Water (for water-based coatings), organic solvents, or no solvent (for powder coatings).
- 4) Additives: Small-quantity components that improve specific coating properties. Examples: Defoamers, wetting agents (surfactants), flow modifiers, hardeners, preservatives, and UV stabilizers.

Liquid coating

These coatings are applied in a liquid state, but dry to leave a solid finish.

Liquid coatings comprise a liquid carrier and solids, which are the components left once the coating is dried.

There are numerous types of liquid coatings, solvent-based coatings, water-based coatings, high solid liquid coatings.

Powder coating

These coatings are applied in a fine powder state. They are based on polymer resin systems, combined with curatives, pigments, leveling agents, flow modifiers, and other additives. These ingredients are melt mixed, cooled, and ground into a uniform powder similar to baking flour. A process called electrostatic spray deposition (ESD) is typically used to achieve the application of the powder coating to a substrate.

Raw materials

Binders

Solvent

Fillers & Pigments

Additives

Formula design