

Lecture 5.3 – Paints: Constituents, Classification, and Paint Technology

Learning Objectives

- Learn the constituents and classification of paints.
- Understand Pigment Volume Concentration (PVC) and paint formulation principles.

1. What is Paint?

- A liquid material applied on surfaces that forms a solid film when dried.
- Used for protection, decoration, and identification.

2. Constituents of Paint

- Binder (Resin): Forms the film and provides adhesion.
- Pigments: Provide color, opacity, and protection.
- Solvents: Adjust viscosity for easy application.
- Additives: Improve durability, gloss, drying rate, etc.

3. Classification of Paints

- Oil-based paints: Use oil as a binder, slow drying.
- Water-based paints: Use water as solvent, eco-friendly.
- Acrylic, epoxy, latex paints based on polymer chemistry.

4. Pigment Volume Concentration (PVC)

- $PVC = (\text{Volume of pigment} / \text{Total volume of non-volatile content}) \times 100$.
- Influences gloss, durability, permeability.

References

1. Ullmann's Encyclopedia of Industrial Chemistry
2. NPTEL: Paint and Coating Technologies

Assignment Questions

1. Explain the role of each constituent of paint.
2. What is PVC and how does it affect paint performance?
3. Compare oil-based and water-based paints with examples.