

AMPTE26 PLASTICS TESTING TECHNIQUES-II

UNIT-1 CONSIDERATION OF THE IMPORTANCE OF TESTING

- 1.1 Identification of plastics- Determination of necessary manufacturing conditions
- 1.2 Assessment of properties of finished products in relation to service requirements
- 1.3 Standard and specification-National and International standards-Test specimen preparation-Preconditioning and test atmosphere.

UNIT-2 MECHANICAL PROPERTIES

- 2.1 Density and dimensions-Hardness-tensile strength-compressive strength-shear strength-flexural strength-heat strength-impact strength- dynamic stress-strain properties- creep-relaxation and set tests- friction and wear- abrasion test- fatigue- burst strength- and folding endurance

UNIT-3 THERMAL PROPERTIES

- 3.1 Specific heat and thermal conductivity thermal dependent properties- thermal endurance-glass transition temperature- thermal yield tests- Heat deflection temperature-
- 3.2 Vicat softening temperature-Marten's heat resistance test-low temperature brittle point and flexibility test-coefficient of thermal expansion-shrinkage
- 3.3 Thermal stability- Thermal ageing and flammability.
- 3.4 Permanence Properties: Water absorption-soluble and insoluble matter-chemical resistance environmental stress cracking resistance-ageing-gas permeability-water vapour permeability and weathering.

UNIT-4 OPTICAL PROPERTIES

- 4.1 Refractive index-light transmission-haze-clarity-gloss-colour guard and microscope.
- 4.2 Electrical Properties (4 hours)-Insulation resistance-power factor-permittivity – dielectric strength tracking resistance-arc resistance and antistatic test.
- 4.3 Application of national and international standards (BIS-ASTM-ISO) for testing and their significance, Knowledge and exposure on Sectorial Testing Standards.

UNIT-5 PRODUCT TESTING

- 5.1 Pipe and fittings-film and sheets-container testing and FRP based products. Factors for designing tests for newer products
- 5.2 Factors affecting the quality of materials and products Analysis of failure and its measurements
- 5.3 Techniques of characterization
- 5.4 Principles and application of DSC- TGA AND FTIR Concepts of non-destructive testing

References Books:

1. Brown; Roger P (Ed.), Hand Book of Polymer Testing, Marcel Dekker, Inc, New York (1999).
2. Brown; Paul F (Ed), Hand Book of Plastics Test Methods, Longman Scientific and Technical, Harlow (1988)