

P2PLBC01 - PROPERTIES AND TESTING OF PLASTICS

Module I

Concepts of Testing & Identification Of Plastics Basic concepts of testing-Specification and Standards – National and International Standards – Test specimen preparation – Pre-conditioning and test atmosphere. Identification of plastics by simple test : Visual examination – Density – Melting point – Solubility test – Flame test – Chemical tests.

Module II

Physical Testing Long –term Mechanical Properties : Creep – Stress relaxation. Short-term Mechanical Properties : Tensile properties – Flexural properties – Compressive properties – Shear properties – Impact properties – Tear resistance – Hardness tests – abrasion resistance – Friction test. Gas and Moisture Permeability – Environmental stress cracking resistance – Crazing. Dielectric Strength – Dielectric Constant and dissipation factor – insulation resistance – volume and surface resistivity – Arc resistance – Antistatic tests. Refractive index – Luminous transmittance – Clarity and Haze – Photo –elastic properties – colour measurements and Specular Gloss.

Module III

Thermal Properties Melt flow index : Heat deflection temperature – Vicat softening temperature – Marten’s Heat resistance test – Brittleness temperature – Specific Heat – Glass transition temperature – thermal conductivity – Co-efficient of thermal expansion – Shrinkage – Thermal stability – Flammability.

Module IV

Permanence Properties and Product Testing Water absorption : Chemical Resistance – UV resistance – Ozone resistance – weathering resistance – salt spray and straining resistance – Irradiation effects – Microbiological attack. Testing of pipes and fittings – films and sheets – container – Foam – Laminates and FRP based products – Failure Analysis.

Text Book

1. Vishu Shah, Hand Book of Plastics Testing Technology, John Wiley & Sons Inc. New York
2. R.P.Brown, Hand Book of Plastics Test Methods, George Godwin Ltd., London, 1981.
3. Analysis & Testing by Crompton.
4. J.S.Anand, K.Ramamurthy, K.Palanivelu how to identify Plastics by Simple Methods.
5. G.C.Lves, J.A.Mead, M.M.Riley, Hand Book of Plastics Test Methods, The Plastics Institute,
6. Frank T.Traceski, Specifications & Standards for Plastics & Composites, ASM International, Metals Park, OH, 1990.
- 7.J.Hasiam, H.A. Willis, Identification & Analysis of Plastics, London Iliffe Books Ltd., New Jersey