

(4 Lect./Week)
(4 hrs. Lab/Week)
(1 Student's presentation /Week)

(Total Credits -7)

Paper 503: Polymers in Packaging Technology

1. Introduction, Definition, importance, scope of packaging, Packaging Materials, Origin of packaging materials, types, properties, advantages & disadvantages of packaging materials.
2. Types of packaging, box, bottle, tetra, pouch, shrink, vacuum, gas, Controlled Atmosphere Packaging (CAP), Modified Atmosphere Packaging (MAP), aseptic etc.
3. Polymers in packaging, LLDPE, HDPE, HMHDPE, PP-Properties and applications, PVC packaging, Nylon packaging, Polyester Packaging, Polycarbonate and PS and Expanded Polystyrene.
4. Packaging Techniques, Thermoforming in packaging, Co-extrusion, Extrusion-Stretch Blow molding, LDPE, BOPP films.
5. Performance properties of Packaging materials, bursting strength, tensile strength, tearing strength, drop test, puncture test, impact test etc.

PRACTICALS

1. Identification and Polymer package structures using FTIR, DSC and TGA approaches
2. Mechanical properties of polymer packaging materials:
 - Determination of Bursting strength, Tensile strength, Tearing strength, Drop test strength, Puncture test strength, Impact strength etc.
3. Determination of water vapor transmission rate of packaging material
4. Testing sealing strength integrity of packaging materials
6. Testing Dart impact strength of packaging films

Suggested Readings:

1. Food Packaging Principles and Practice by Gordon L. Robertson, CRC press, 2005.
2. Paine FA and Paine HY, A Handbook of Food Packaging, Blackie Academic and Professional, 1992.
3. Robertson GL, Food Packaging – Principles and Practice, CRC Press Taylor and Francis Group, 2012.
4. Coles R, McDowell D, Kirwan MJ Food Packaging Technology. Blackwell, 2003.
5. Robertson GL, Food Packaging – Principles and Practice, CRC Press Taylor and Francis Group, 2012.
6. Coles R, McDowell D, Kirwan MJ Food Packaging Technology. Blackwell, 2003.
7. Polymers for packaging materials for preservation of food stuffs by L.A.Sukhareva, V.SYakolev, O.A.Legonkova , 2008.