

TESTING AND ANALYSIS SERVICES FOR INDUSTRY & RESEARCHERS

Polymer & Petrochemical department provides a network of high-end analytical laboratory services to a variety of industry, government and research customers. All tests are performed according to recognized standards such as ISO, ASTM and PS. In addition to this we provide customized tests as per requirement of customers.

Mechanical Testing Facility

1. Universal Testing Machine (5kN&20kN)

- To determine the mechanical properties of polymeric materials, elastomers, foams, films, textile fibers, geo membranes etc.
 - a. Tensile Strength
 - b. Elongation
 - c. Yield Point
 - d. Modulus
 - e. Flexural Strength
 - f. Compressive strength
 - g. Adhesive strength
 - h. Peel strength
 - i. Tear strength

2. Dart Impact tester

- To determine the impact behavior of polymers and wide range of materials such as engineering plastic, fiber-reinforced polymer, pipes, plastic films and coatings.

-

3. Izod/Charpy Impact tester

- To compare the toughness of notched and un-notched polymeric samples.
- To determine the effect of notched and un-notched size on the toughness of samples.

4. Melt flow index

- To determine the relation between the molecular weight and melt flow index of polymer samples.
- To determine the effect of temperature on the flow behavior of polymer samples.

5. Dynamic mechanical analyzer

- To determine the viscoelastic properties of polymers under various elongation, compression or shearing rates, different frequencies and temperatures.

Modes:

Single Cantilever

Dual Cantilever

Bending 3-point

Tension

Compression, and

Shear

6. Moving Die Rheometer

To measure the cure kinetics of rubber.

7. Stress Relaxation

To determine the service life of a rubber O-ring seal at different temperature. Stress relaxation in compression and tension.

Thermal and Chemical Characterization Facility

1. Thermal analyzer (TGA/DSC)

To analyze the thermal stability and effect of filler contents. Following thermal properties can also be measured.

- a) Sp. heat capacity
- b) Crystallinity
- c) Melting/processing temperature
- d) Glass transition temperature
- e) Temperature stability
- f) Oxidative degradation, Oxidation stability
- g) Chemical reactions / Polymerization /Reaction kinetics

2. FTIR

To perform compositional analysis of different materials by determining the functional groups using Infrared Spectroscopy.

Polymer Processing Facilities

1. Two Roll mill with heating and cooling system

It is used for the compounding of rubber and plastic.

2. Single Screw Extruder with blown film

- To determine the effect of extrusion parameters on blown film properties.
- Study the effects of blow ratio.
- Preparation of packaging films for consumer products.
- Preparation of high strength films for industrial packaging.
-

3. Twin screw extruder with side dosing system

- To determine the effect of blend ratio, filler dispersion on mechanical properties, thermal properties and on morphology development.
- To perform the compounding of Poly vinyl chloride (PVC).

4. Vacuum forming

To determine the effect of process parameters on wall thickness of product.

5. Temperature control Hot press (Approximately 500°C and 200bar)

It is used for the compression molding of elastomers, thermoplastics, thermosets and composites.

Petroleum Testing Facilities

1. Atmospheric distillation unit

To determine the IBP and FBP of petroleum products.

2. Vacuum distillation unit

To distillate heavy oil into different fractions at reduced pressure.

3. Smoke pointer tester

To check the smoke point of different fuels.

4. Cloud point and pour point tester

To determine the flow of fuels at different temperatures.

5. Aniline point

To check the miscibility of fuel at different temperature.

6. Flash point

To check the flash point of different fuels.

7. Bomb calorimeter

To measure the calorific value of different materials.

8. Penetrometer

To check the hardness of wax and bitumen at different temperatures.

9. Oxidation stability tester

To measure the break point of fuel.

10. Reid vapor pressure

To check the vapor pressure of different fuels at 100°F.

11. Conradson carbon tester

To measure the unburnt carbon residue in different fuels.

12. Hydrometer

To measure the specific gravity and density of fuels.

13. Corrosion tester

To check the corrosion of metals.

14. Fluorescent Indicator

To analyze the composition of fuels.