Plastics is a general terminology for a wide range of natural and synthetic compounds, many variations are commonly used in diverse industries and products. Plastics can include a wide range of fillers additives and reinforcing materials, the combination of these and the manufacturing process can greatly influence the mechanical characteristics of the end material. As advanced plastics now have a major role in the most demanding industries such as aerospace and automotive engineering, it is essential that the performance of such materials is carefully assessed and monitored.

The capability of Testometric’s precision testing systems is invaluable in ensuring that the material selected has the characteristics and performance to meet the required specification for the particular component or product. Packages are available to cover the complete range of plastic materials; they include software, grips and other accessories for all test procedures covering tensile, compression, flexural, shear, peel, creep, hardness, tear, puncture, adhesion, friction, ring stiffness etc. They comply with all international test standards and specific test methods are pre-installed in the software.

A large range of grips is available for tensile testing of plastics, it includes various types of manual, self tightening, pneumatic and hydraulic versions that are essential for positive gripping. The WinTest software includes pre-defined test methods that include all relevant calculations such as UTS, yield stress, E modulus, strain etc.

- ASTM D 638 Tensile properties of plastics
- ASTM D 2990 Tensile, compressive, and flexural creep and creep-rupture of plastics
- ASTM D 3826 Degradation end point in degradable polyethylene and polypropylene using a tensile test
- ISO 527-2 Plastics – tensile properties moulding and extruding plastics
- DIN 53534 Tensile properties of plastics
- DIN 65378 Tensile properties of plastics
- DIN 65466 Tensile properties of plastics
- ASTM D 882 Tensile test plastics – Thin sheet
- ASTM D 1708 Tensile test plastics – Microtensile
- ASTM D 5083 Tensile properties of reinforced thermosetting plastic
- ASTM D 882 Tensile properties of thin plastic sheeting.
- BS EN 12311 Determination of tensile properties. Bitumen sheets for roof waterproofing.
- BS EN 12814 Testing of welded joints of thermoplastics. Tensile test.
- BS EN 12814 Testing of welded joints of thermoplastics. Tensile test with waisted test specimens.
- BS EN ISO 527 Tensile properties. Films and sheets.
- BS 2782 Tensile strength, elongation and elastic modulus.
- BS EN ISO 527 Tensile properties. Test conditions for moulding and extrusion plastics.
- BS 2782-3 Determination of tensile strength and elongation at break of polytetrafluoroethylene (PTFE) products.
- BS 2782-11 Thermoplastic pipes, fittings and valves. Tensile properties of dumb-bell specimens from PVC gutter profiles of pipes.
Flexural

3 and 4 point flexural fixtures are available for testing a variety of plastic materials, they have fixed or variable spans and supports to meet specific standards.

- ASTM D 790 Flexural properties of plastics
- BS EN ISO 178 Plastics – Determination of flexural properties
- DIN 53458 Flexural properties of plastics
- ISO 178 Flexural Test
- ASTM D 6272 Flexural properties of unreinforced and reinforced plastics by four-point bending.
- ASTM D 790 Flexural properties of unreinforced and reinforced plastics and electrical insulating materials.
- ASTM D 4476 Flexural properties of fibre reinforce pultruded plastic rods.
- BS EN ISO 178 Determination of flexural properties.
- BS EN ISO 899-2 Determination of creep behaviour. Flexural creep by three-point loading

Tear

A variety of manual and pneumatic fixtures are available for tear testing of plastics. Dedicated test methods include all relevant calculations including highest, lowest and average peel force etc. The peak criteria and calculation limits are defined according to the specific standards.

- ISO 8067 Tear strength
- ASTM D 3574 Tear resistance
- BS 2782-3-360 Tear resistance of plastic sheet
- ASTM D 1004 Tear resistance of plastic sheet
- ASTM D 1938 Tear resistance of plastic sheet; single tear
- ISO 6383-1 Tear resistance of plastic sheet

Shear

A variety of fixtures are available for carrying out a range of shear tests. They cover punch, flat plane and interlaminar methods. WinTest software includes all relevant calculations.

- ASTM C 273 Shear test in flatwise plane of flat sandwich
- ASTM D 732 Shear strength of plastics by punch tool
- ASTM D 2344 Apparent interlaminar shear strength of parallel fibre composites by short-beam method

Compression

A wide range of compression platens is available with differing sizes and capacities. Tests can be conducted on all types of plastic material and finished products. WinTest software has pre-defined test methods to comply with all relevant standards.

- ASTM D 695M Compressive properties of rigid plastics (Metric)
- ASTM F 806 Compressibility and recovery of laminated composite gasket materials
- ASTM D 695 Compressive properties of rigid plastics.
Reinforced Plastics

Testing of reinforced plastics requires specialised precision grips, fixtures, extensometers and software. There are required because of the high strength and low elongation characteristics of this type of materials. Testometric provide all these products along with their WinTest software that has pre-defined test procedures for all the relevant international standards.

ASTM D 2343 Tensile properties of glass fibre strands used in reinforced plastics.
BS EN 2597 Carbon fibre reinforced plastics. Unidirectional laminates. Tensile test perpendicular to the fibre direction.
BS EN 2747 Carbon fibre reinforced plastics. Tensile test.
BS EN ISO 527 Determination of tensile properties for unidirectional fibre-reinforced plastic composites.
BS EN ISO 14126 Fibre-reinforced plastic composites. Determination of compressive properties in the in-plane direction.
BS EN 2562 Carbon fibre reinforced plastics. Unidirectional laminates. Flexural test parallel to the fibre direction.

Puncture

Various puncture test fixtures are available with manual pneumatic clamping for plastic film and sheet materials. WinTest software includes pre-defined test methods with all relevant calculations.

ASTM F 1306 Slow rate penetration resistance of flexible barrier films and laminates.

Adhesion

Various specialised fixtures are available for conducting peel tests on plastic laminates and similar materials. WinTest software includes test methods with all relevant calculations including minimum, maximum and average peel force between specified limits.

ASTM F 88 Seal strength of flexible barrier materials
ASTM F 904 Comparison of bond strength or ply adhesion of similar laminates made from flexible materials
ASTM D 903 Peel test
ASTM D 1876 Peel test
ASTM D 3167 Peel test
Testometric's video systems are the most advanced elongation measurement systems available, they are simple to operate and have many unique features. Models are available for all grades of plastics, they are ideal for use with environmental chambers.

Manuel and pneumatic specimen cutters are available along with an extensive range of hardened tool steel cutting dies to all relevant international standards including; BS, ASTM, ISO, EN, DIN etc.

Testometric comprehensive Wintest software comes with an extensive range of pre-defined test methods for plastic testing. The software incorporates all relevant calculations including UTS, yield stress, E modulus, strain, flexural stiffness, flexural modulus, compressive strength, shear strength, tear strength, etc.

Various test chambers are available to provide testing facilities under actual working conditions. Standard versions cover temperature range from ambient to +300°C and -70 to +300°C. Special temperature ranges and sizes are available. High temperature and none contact extensometers are available to operate with the chambers.