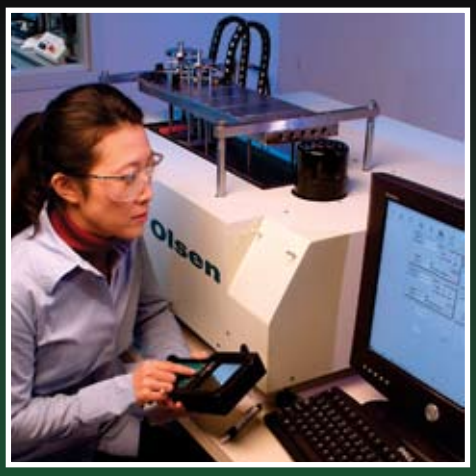
Bulletin
123-D

Tinius Olsen

Solutions for Plastic Testing

Machines • Software • Calibration • Service



Tensile Strength

Tinius Olsen's versatile benchtop polymer testing machines can perform many materials test routines that meet ASTM, ISO and other international specifications, including tensile, compressive, tear, peel, flexural, puncture, shear and frictional resistance tests. Several different machines are available at five load tier points, namely, 1 kN (225 lbf), 5 kN (1,125 lbf), 10 kN (2,250 lbf), 25 kN (5,625 lbf), and 50 kN (11,250 lbf).

These machines are available with a wide selection of quick change load cells, tools and grips, extensometers, hi-res position transducers, and environmental chambers. No system is complete without data acquisition and analysis software. Choose from several software platforms — whether you need complex, sophisticated, scalable machine and test control, the ability to generate unique results, or the means to select from a database of over 1,400 commonly used standards, we have the right software.

Tinius Olsen is one of the world's foremost manufacturers of materials testing machines and has been designing and manufacturing these machines for Quality Control, education, and R&D use since 1880.

Folding Endurance

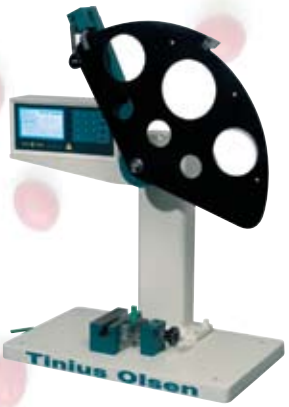
A pliable specimen is placed under a constant tension load, then folded to an angle of 135° in either direction, at a rate of 175 double folds per minute, until the specimen is severed at the crease.
A variable folding rate option allows the operator to vary the rate between 20 and 175 double folds per minute.

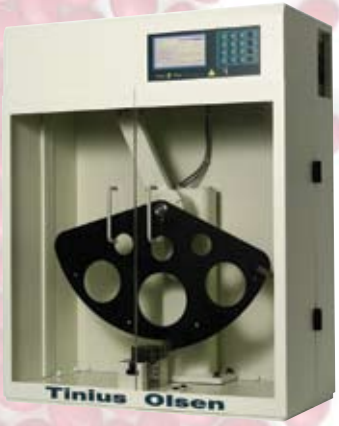
Impact Strength

Our IT503 and IT504 Impact Testers feature heavy-duty construction with an aerodynamic compound pendulum, ensuring maximum rigidity in the direction of impact. This unique construction virtually eliminates windage losses yet allows simple and rapid changes in capacity by adding or removing weights on the pendulum. The proper accessories allow these machines to operate in accordance with ASTM D 256, D 6110, D 4812, D 4508, D 950, ISO 179, 180 and other similar standards. These machines feature a microprocessor-based display for conducting the test, obtaining test results, calibration, and configuring the system.

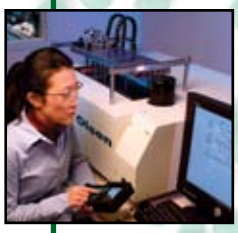
These machines can be supplied with an optional hot and cold conditioning chamber for testing specimens from +150°C down to –70°C. Additionally, the compound pendulum can be replaced with individual Charpy pendulums for higher, up to 50J, available energy levels and lower available energy levels to meet the specific requirements of ISO 179. The system can also be supplied with an instrumentation system that can collect and analyse up to 1 million data points per test so that an extremely detailed graphical representation of the impact curve can be analysed. The required notches for test specimens can be produced on our Model 899 Sample Notcher.

Tinius Olsen also manufactures simple drop dart testers for plastic film, which can be used either as stand-alone machines or in conjunction with a benchtop tensile tester to meet ASTM and ISO standards.





Heat Distortion



We manufacture two models that perform Deflection Temperature Under Load (DTUL, also called Heat Distortion) and Vicat penetration tests, with six and three test stations respectively. The larger machine can test up to six different specimens simultaneously, with an automated test sequence that proceeds according to user programmed control and configuration parameters.

Unique features to these machines include air bearing supports on loading arms to ensure ultra-smooth operation for precision displacement measurement accuracy; specimen basket to catch samples that fall off their test station at high oil flow rates; pneumatic lift and lowering of test station gantry to start and end the test; and cooling options to increase the number of tests that can be performed per day.

Melt Flow

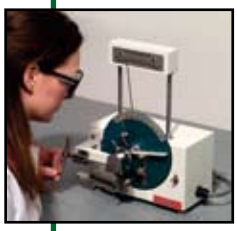
We are a leading manufacturer of melt index testers for resin flow verification. There are now two models to choose from that are fully compliant with the requirements of ASTM D1238, ISO 1133, and other international standards. The MP200 is ideal for budget conscious organisations in need of an economical, Procedure A only machine.

The versatile MP600 features a modular design for easy upgrading from its basic Procedure A (Cut & Weigh) configuration. For Procedure B testing, the MP600 can be equipped with an optional PPDT-600 automatic timing switch. This switch uses a precision optical encoder to measure the piston position to better than 0.025 mm (0.001 in). Among its capabilities are: calculation and display of Capture Time, Flow Rate, and Volume Rate for each capture; calculation of Apparent Shear Stress, Shear Rate, and Viscosity; calculation of Melt Density using a cut-off weight; and automatic selection of piston travel distance.

Other optional features, such as a programmable motorised weight platform, Flow Rate Ratio attachment, and a pneumatic purge and cleaning fixture, allow for more automated testing.

Again, the MP600 is complemented by software. EP600 software can control up to 10 individual melt indexers from one PC, take multiple readings from each indexer, and perform data analysis with powerful SPC for each indexer or for the group.

Stiffness



Tinius Olsen Stiffness Testers are ideal for determining the stiffness properties of a wide range of materials and products. Operation is simple; a specimen is clamped at one end and a controlled load applied at the free end. The load is applied steadily by a motor drive, and an accurate indication of load and resulting angle of bend are shown simultaneously on analogue scales.

Cantilever bending is probably one of the earliest methods of testing, dating back to Galileo in the 16th century, but is brought completely up to date with Tinius Olsen's three standard machines with capacities of 50 in.lb, 6 in.lb, and I in.lb.

Popular Test Methods

Type of Test	Description	ASTM	ISO	JIS
Tension				
	Tensile Properties Of Plastics	D638	527	
	Test Methods For Vulcanised Rubber And Thermoplastics Elastomers	D412	37	
	Test Methods For Rubber Property	D413		
	Test Methods For Rubber Property - Adhesion To Rigid Substrates	D429		
	Test Methods For Tear Strength Of Conventional Vulcanised Rubber And Thermoplastics Elastomers	D624		K6252
	Test Methods For Shear Strength Of Plastics	D732		
	Tensile Properties Of Plastic Sheeting	D882	527-3	
	Test Method For Bond Or Cohesive Strength Of Sheet Plastics An Electical Insulating Materials	D952		
	In Plane Shear Strength Of Reinforced Plastics	D3846	4585	
	Test Methods For Rubber O Rings	D1414		
	Tensile And Tensile Adhesion Properties Of Rigid Cellular Plastics	D1623	1926	
	Tensile Properties Of Plastics By Use Of Microtensile Specimens	D1708	6239	
	Test Method For Climbing Drum Peel For Adhesives	D1781		
	Test Method For The Tensile Properties Of Polymer Matrix Composite Materials	D3039		
	Test Methods For Flexible Cellular Materials	D3574	3386	
	Tear Propagation Resistance Of Plastic Film And Thin Sheeting By A Single Tear Method	D1938	6383-1	
	Tensile Properties of Reinforced Thermosetting Plastics Using Straight Sided Specimens	D5083	3268	
	Rubber, Vulcanized of thermoplastic - Determination of tensile stress-strain properties			K6251
Compression				
	Compressive Properties of Rigid Plastics	D695	604	K7181
	Test Method For Rubber Properties In Compression	D575		
	Flexural Properties Of Unreinforced and Reinforced Plastics And Electrical Insulating Materials	D790	178	K7171
	Compressive Properties Of Rigid Cellular Plastics	D1621	844	
	Test Method For Column Crush Properties Of Blown Thermoplastic Containers	D2659		
	Tensile, Comprehensive And Flexural Creep And Creep Rupture Of Plastics	D2990	899-1,2	K7116
	Test Method For In-Plane Shear Strength For Reinforced Plastics	D3846		
	Test MethodFor Apparent Horizontal Shear Strength Of Fiber Reinforced Pultruded Plastic Rods	D4475		
	Test Method For Flexural Properties Of Fiber Reinforced Pultruded Plastic Rods	D4476		
Melt Flow				
	Flow Rates Of Thermoplastics By Extrusion Plastometer	D1238	1133	K7210
	Specification For FEP Flourocarbon Molding, And Extrusion Materials	D2116	286	
	Polybutylene Plastics Molding And Extrusion Materials	D2581		
	Specification Of Modified ETFE Flouropolymer Molding, And Extrusion Materials	D3159	12086	
	Classification Of E-CTFE Flouroplastic Molding, Extrusion and Coating Materials	D3275		
	Test Method For Flow Rates For Polyvinyl Chloride With Molecular Structural Implications	D3364		
Impact				
	Determining The Pendulum Impact Resistance Of Notched Specimens Of Plastics	D256	179 / 180	
	Test Method For The Impact Strength Of Adhesive Bonds	D950		
	Tensile Impact Energy To Break Plastics And Electrical Insulating Materials	D1822		
	Test Method For The Chip Impact Strength Of Plastics	D4508		
	Test Method For Determining The Charpy Impact Resistance Of Notched Specimens Of Plastic	D6110		
Heat Deflection under Load				
	Deflection Temperature Of Plastics Under Load	D648	75	K7191-2
	Vicat Softening Temperature Of Plastics	D1525	306	
Stiffness				
	Test Method For The Apparent Bending Modulus Of Plastics By Means Of A Cantilever Beam	D747		K7106
Folding Endurance				
	Test Method For Folding Endurance Of Paper By MIT Tester	D2176	5226	P8115

Please note that this is a very brief summary of some of our most popular requests for standards compliance; it is by no means a complete list of the thousands of ASTM, DIN, EN, ISO, CNS, JIS, GOST, BIS, and other international and industrial standards we comply with.

Contact Your Local Representative:

Tinius Olsen

1065 Easton Road
Horsham, PA 19044 USA
(215) 675-7100
Fax (215) 441-0899

6 Perrywood Business Park
Honeycrock Lane, Salfords
Redhill, Surrey RH1 5DZ England
+44 (0) 1737 765001
Fax +44 (0) 1737 764768

www.TiniusOlsen.com
info@TiniusOlsen.com