Testing Plastics

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Tinius Olsen

Using Tinius Olsen plastics testing equipment you will benefit from improvements in ...

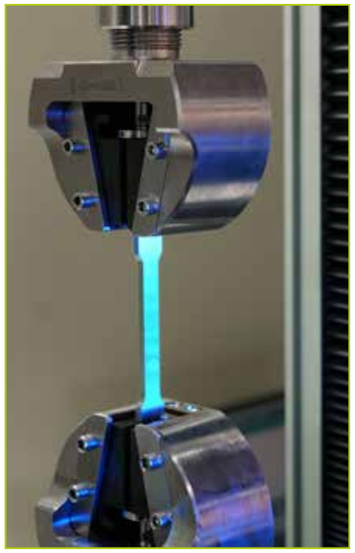
+ PRODUCTIVITY

+ REPEATABILITY

+ TRACEABILITY

Tinius Olsen offers solutions for testing the strength and performance of plastics through tensile, flexural, compression, folding endurance, impact, head distortion, vicat, melt flow, tear and puncture tests. Our versatile benchtop polymer-testing machines can perform tests in accordance with ASTM, ISO and other international standards from test configuration through to reporting and generating results immediately for your processes.

Different types of testing



TENSILE

Pulling the material or component at a constant speed, strain, or stress rate until it breaks, shears, or peels apart as your need and the standard requires.

ISO 527-1, 527-2, ISO 6259-1

ASTM D 638

GB/T 1040.1, 8804.1

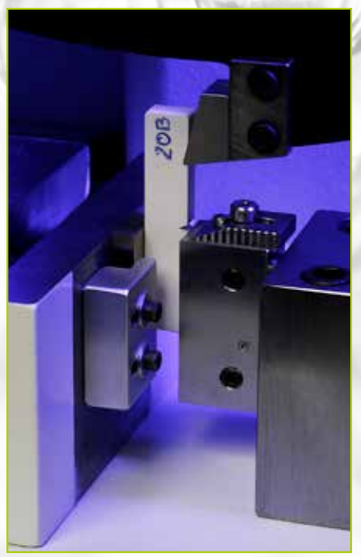
FLEXURE

Bending the material or component with it supported at two precise points of contact while applying a force at one or two contact points from above.

ISO 178

ASTM D 790

GB/T 9341



IMPACT

The process of hitting a material and instantaneously determining the energy it can absorb.

ISO 179, 180

ASTM D 6110-18, D256

GB/T 1043, 1843

VICAT/HDT

Testing for the bending and/or Vicat penetration of plastic at given temperatures over time.

ISO 75, 306

ASTM D648, 1525

GB/T 1633

MELT FLOW

Measuring the flow rate and associated properties of the polymer as it is extruded through a precision orifice

ISO 1133

ASTM D 1238

GB/T 3682

HORIZON SOFTWARE

Tinius Olsen's testing, analysis and reporting software. Used when testing raw material such as rigid, reinforced or high impact plastics, or structures and components such as films, enclosures and devices.

Whether materials are moulded, extruded or 3D printed, Tinius Olsen's Horizon plastics testing software provides the platform to ensure the testing is accurate, to standard and efficient.

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Horizon Software

Horizon is the link between the material or component under test and the process where the test results are required. It manages multiple operators and those viewing the results, it defines the test methods for the international standard used, and captures data at high speed showing live real-time results throughout the test. When the test is over, it instantly compares the results with the pre-defined pass/fail limits, then alerts and reports to those needing to know.

Horizon is a fully network-capable platform using an SQL database able to meet even the most rigorous compliance and traceability needs in the medical, aerospace, automobile and consumer product industries.

It is future proofed through Tinius Olsen's status as a formal software developer and includes built-in diagnostics and support tools.

Productivity – Horizon's user interface simply allows the operator to click and test, click and test, report.

Repeatability – Achieved by Horizon minimising the operations a user needs to make and, depending on the volume of testing, either semi automating or fully automating the test.

Traceability – Horizon works from its very core with compliance; Test methods, when, how and who is using them, through to recording, storing and reporting.

Horizon can work with a single testing machine, for example an MFI and a single PC as a stnadard work station, or with multiple testing machines and PC work stations, across multiple labs, operators and stakeholders.

Equipment and testing solutions

Model 1ST – 1kN (100kg/200lbf)
Shown with HMC3.0 Bluetooth-enabled handheld interface

UTMs

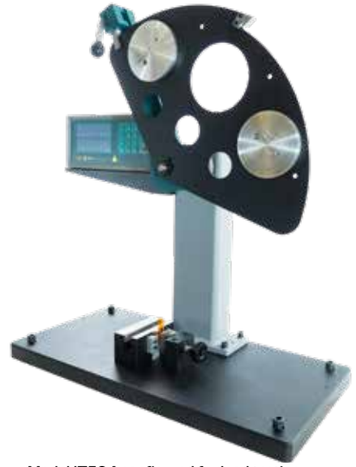
The Tinius Olsen benchtop range of ST models feature both single and dual column frames with optimized footprint sizes. The single column models have frame capacities of 1kN (100kgf/200lbf) and 5kN (500kgf/1,100lbf), while dual column models are available in capacities of 10kN (1,000kgf/2,200lbf), 25kN (2,500kgf/5,000lbf) and 50kN (5,000kgf/11,000lbf), and are designed to test a wide range of materials and finished products for strength properties in tension, compression, flexure, shear, tear and peel.

UTM Accessories

Available from Tinius Olsen, configured and integrated to meet the test need and deliver the results required:

- Extensometers contacting and non-contacting, technologies, low and high strain as required.
- Specimen grips, holders, probes and tooling to hold test specimens in the precise way as defined by the test standard and effect the application of force. All capable of coping with the specimen break again and again.
- Temperature Chambers providing a test environment at elevated hot or cold temperatures.
- Test specimen measurement calipers and stations.
- Bar code reading
- Video capture in sync with the test and the resultant curve

Model 25ST – 25kN (2,500kg/5,000lbf)
Shown with tethered handheld interface.



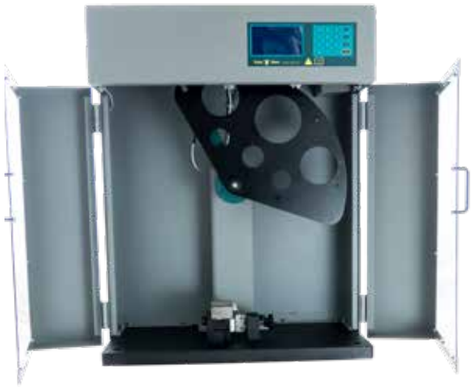
Model IT504 configured for Izod testing

Impact

The Tinius Olsen IT impact range can be configured for Charpy and/or Izod tests, for manual or automated specimen feed, from 0.5J to 50J.

Impact Accessories

Available from Tinius Olsen; Test specimen notcher and notch verification stations.



Model IT503 – the model complies with CE requirements and cannot operate if the interlocked doors are open.

Model MP1200M (motorised) shown with Programmable Piston Displacement Transducer and Automatic Cutter.

Melt Flow

The Tinius Olsen MP1200 model is configurable from a standard procedure A format through procedure B and on with automatic motorized weight application capability, post test polymer purge and cleaning.

Key features

- Three-zone band heater
- Touch-screen control
- Quick die release
- Powerful data analysis and control software
- USB connectivity
- Tapered weight design

Model MP1200M (motorised) shown with Programmable Piston Displacement Transducer and Automatic Cutter and selectable weight system

HDVT

Tinius Olsen's Heat Distortion and Vicat softening systems are available in 3 or 6 test station formats configured as HDT or Vicat across the stations as required. These systems support safe placement and retrieval of test specimens, rapid cooling post test and easy implementation of fume extraction.

Extensometers

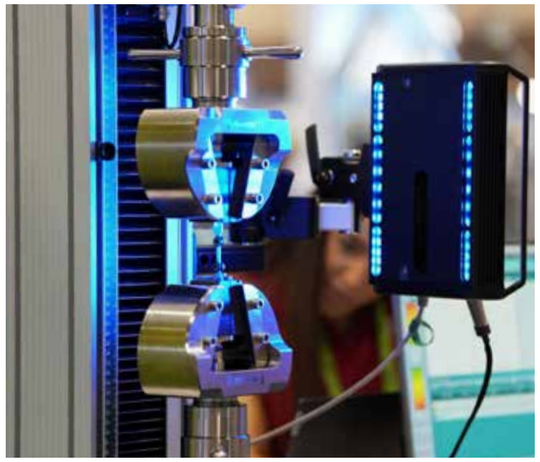
100S

The Tinius Olsen model 100S is a dual purpose extensometer to measure E modulus and offset yield stress (proof stress) on relatively high modulus materials while also to measuring high elongations up to break.

Vector

The Tinius Olsen VectorExtensometer is a groundbreaking, non-contact device designed to replace traditional clip-on extensometers by redefining how we measure and control strain in tensile, compression, and flexural testing.

It integrates adaptive AI with optical hardware to automate strain measurement, improving accuracy, data consistency, and operator safety. With support for various marking options and high-resolution measurements, it is ideal for a wide range of testing applications.



Environmental Chamber

Suitable for most twin screw materials testing machines, the Tinius Olsen Environmental Chamber provides a means for performing physical tests within a temperature range of -150 to 600°C (-238 to 1112°F). An internal radial fan provides efficient air circulation that minimizes temperature gradients throughout the chamber.

A digital controller ensures accurate temperature control. Optional subzero temperature testing is available via a self-pressurising liquid nitrogen Dewar.

The chamber door is fitted with a triple glazed window for viewing the test area and also scanning the sample for strain measurements when using the Tinius Olsen Vector Extensometer. When liquid nitrogen is used, a demisting facility is fitted.

Contact us

If you have any queries or require further information or advice, please contact us at:

www.tiniusolsen.com

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- **Redhill, Surrey, UK**
- **Noida, UP, India**
- **Shanghai, PR China**
- **Dubai, UAE**

Tinius Olsen Technical Centers and Showrooms

Quality is our business. Wherever you are in the world, we understand that the reliability of your product depends not only on the testing equipment that you purchase, but also on the quality and commitment of the support that stands behind that equipment.

Tinius Olsen is A2LA accredited in the USA and UKAS accredited in the UK. We are able to verify not only our equipment, but also a variety of other manufacturers' tensile, compression, impact, and hardness equipment which translates into one source for all your certification needs. Tinius Olsen's level of customer support is unequaled in the industry; from pre-scheduled maintenance/calibration contracts to our telephone support and priority on-site service, we're there when you need us.

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