

Testing Plastics

TESTING
SOLUTIONS

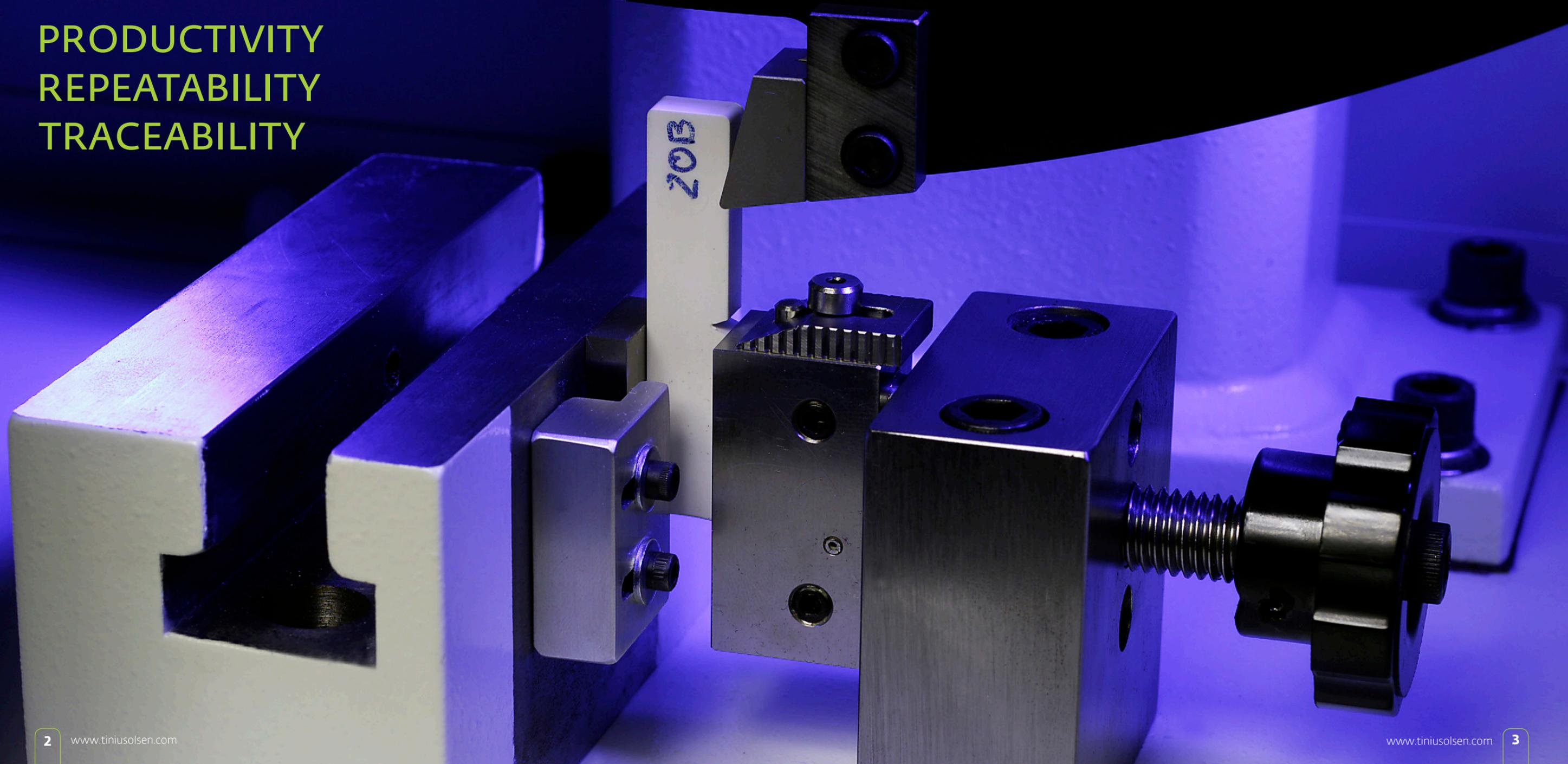
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Using Tinius Olsen
plastics testing equipment
you will benefit from
improvement in

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. The versatile benchtop polymer-testing machines can perform tests in accordance with ASTM, ISO and other international standards from test configuration through to reporting and making the results immediately available for your processes.



Different types of testing



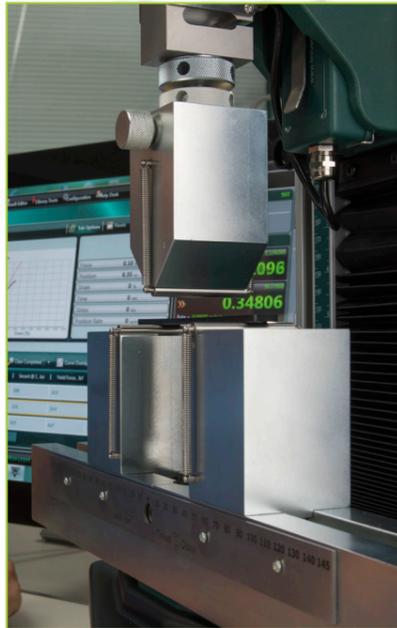
TENSILE

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



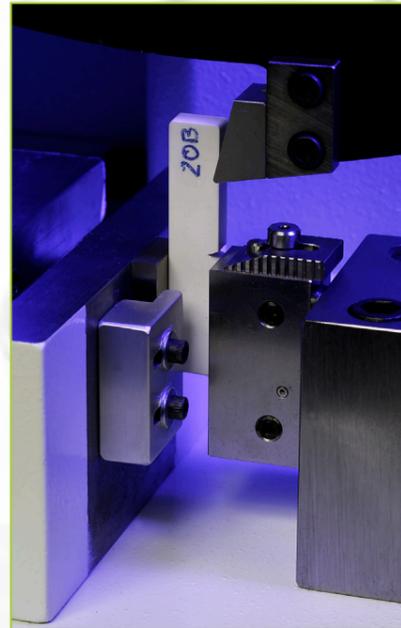
FLEXURE

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 Whether testing raw material such as rigid or reinforced or high impact plastics or structures and components such as films, enclosures and devices, whether they are moulded or extruded or 3 D printed Tinius Olsen's Horizon plastics testing software provides the platform to make sure the testing is accurate, to standard, efficient. - see page 6



PRODUCTION
 more tests
 with increased accuracy



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 as per 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 data base able to meet even the most rigorous compliance and traceability needs of those 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** – comes through Horizon's user interface which simply allows the operator to click and test, click and test, report.
- Repeatability** – is 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 are 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 standard work station or with multiple testing machines and PC work stations, across multiple labs, operators and stake holders.

Equipment and testing solutions



Model 5ST - 5kN (500kg/1,000lbf) Shown with Bluetooth-enabled handheld interface.

UTMs

The Tinius Olsen benchtop range of ST models feature both single and dual column frames with optimized foot print 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.



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

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

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.



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

Key features

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



Extensometers

100S

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

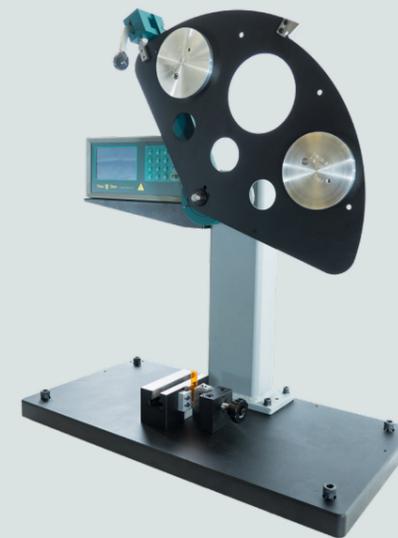
VEM Series

The Tinius Olsen VEM Series of video extensometers are fully integrated with our testing machines and results-reporting software, supporting multiple gauge length click and drag placements, strain rate control and real time results during and throughout the test. The **100 series** is designed to measure higher levels of strain (>10%) in tensile, compression, shear and flexural modes. The **200 series** is designed to measure low levels of strain from 0.01% in tensile, compression, shear and flexural modes. The flexible **300 series** has a choice of 70 lenses and various camera staging options available including a unit that allows for fine X, Y and Z camera positioning and adjustment for optimum measuring performance.

A heavy-duty tripod is available to facilitate the use of VEM with legacy Tinius Olsen and other test machines



testing solutions



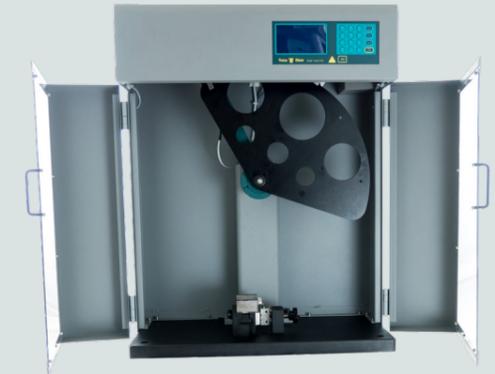
Impact

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 IT504 - In this configuration, the machine has been equipped with cold box (top cover removed). Liquid nitrogen is the typical medium used to cool the specimen.



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

HDT/Vicat

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



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 -70-300°C (-95-570°F). An internal radial

fan provides efficient air circulation that minimizes temperature gradients throughout the chamber.

A digital controller ensures accurate temperature control. Optional sub-zero 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 500L laser extensometer. When liquid nitrogen is used, a demisting facility is fitted.

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