

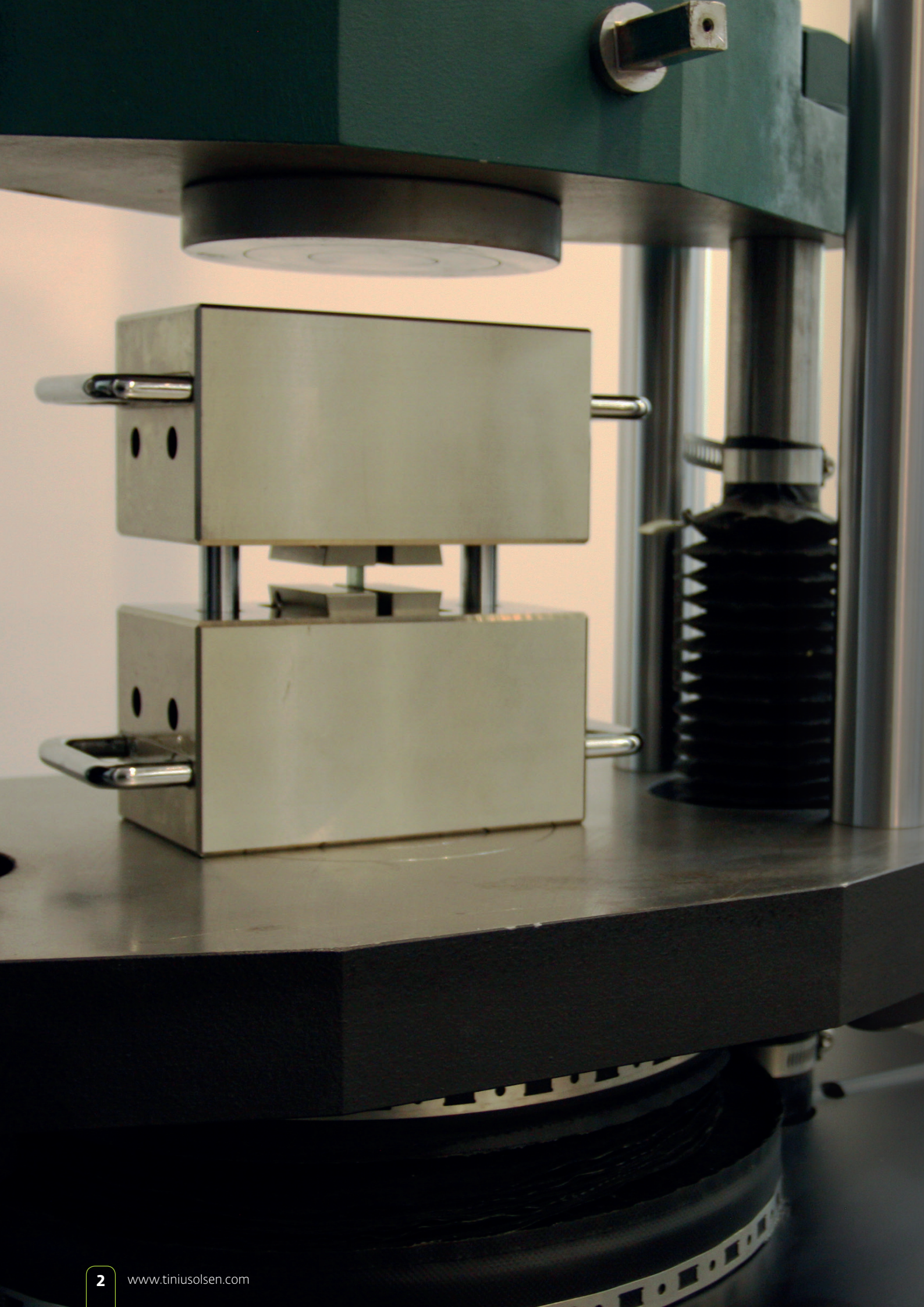



The first name in materials testing

Testing Composites

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Using Tinius Olsen
composites testing
equipment you
will benefit from
improvements in

PRODUCTIVITY
REPEATABILITY
TRACEABILITY

Tinius Olsen offers solutions for testing the strength and performance of composites through basic tensile and compression tests, flexural and fracture bending modes, interlaminar and notched shear tests. Our versatile composite testing stations are configured to perform tests in accordance with ASTM, ISO, GB and other international standards. These standards are met from test configuration through to reporting and immediate output of data for use in your systems and processes.

Different types of testing



TENSILE IN PLANE

Pulling the composite to determine tensile modulus of elasticity, tensile strength, ultimate tensile strain and Poisson's ratio.

ISO 527-4, ISO 527-5, ASTM D3039, ASTM D5083, EN 2561, EN 2597, Airbus AITM 1-10007 and Boeing BSS7320



COMPRESSION IN PLANE

Compressing the composite to determine compressive modulus, Poisson's ratio and stress-strain response.

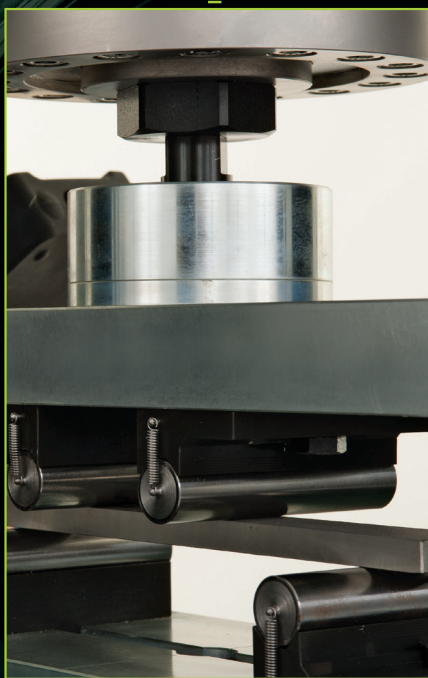
ISO 14126, ASTM D695, ASTM D3410, ASTM D6641, EN 2850, AITM 1-0008 and BSS7260 type III and IV



INTERLAMINAR SHEAR

Shearing the composite under a compressive force to determine the shearing strength.

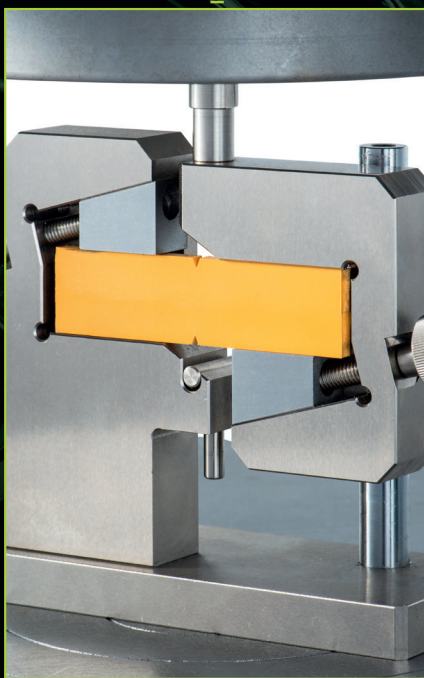
ISO 14130, ASTM D2344, EN2377, EN2563



FLEXURAL 3 and 4 POINT BEND

Bending the composite to determine flexural modulus, strength and strain at rupture.

ISO 14125, ASTM D790, ASTM D6272,
ASTM D7264, EN 2746, EN 2562



...AND MORE, INCLUDING:

V-notched shear, notched tensile laminate,
both filled and open-hole types.

ISO 15024, ASTM D5528, EN2377, EN2563



HORIZON SOFTWARE

Tinius Olsen's testing, analysis and reporting software. Whether testing raw material carbon tows or carbon fibre reinforced composite structures and components, Tinius Olsen's Horizon composite testing software provides the platform to make sure the testing is accurate, to standard and efficient. - see page 6



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 database able to meet even the most rigorous compliance and traceability needs of those in the 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 and how they are used and who is using them – through to recording, storing and reporting.

Horizon can work with a single testing machine, such as a tensile tester and single PC as a standard work station, or with multiple machines and PCs across multiple labs, operators and stakeholders.

Tinius Olsen composites



**Model 50ST – 50kN
(5,000kg/11,000lbf)**
Shown with Bluetooth-
enabled, wireless
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 300ST with MTS grips.
Shown with tethered
handheld interface.



UTM Accessories

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

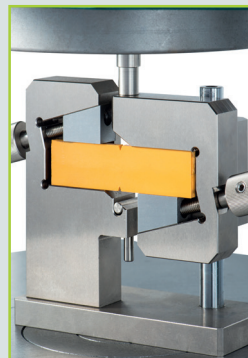
- Extensometers contacting and non-contacting, technologies, low and high strain as required.
- Specimen grips, holders, probes and tooling to hold test specimens in the precise way as defined by the test standard and to effect the application of force. All capable of coping with the specimen break again 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.

Grips

Tinius Olsen offers a wide range of grips to handle your specific composite testing requirements. Grips for tension, flexure, compression and impact tests are all available for our ST and SL Series, covering many different materials, test conditions and standards. A few examples are featured here.



**Combined loading
compression fixture**



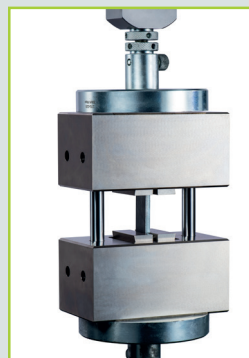
**V-notched shear
compression fixture**



**V-notched rail shear
test fixture**



**Compression
anti-buckling fixture**



**Shear loading
compression fixture**



**Single shear open hole
bearing test fixture –
procedure B**



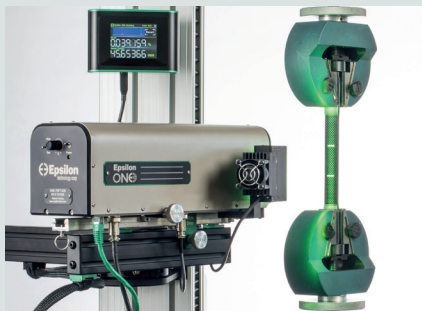
**Single shear bearing
strength test –
procedure C**

testing solutions

Extensometers

Epsilon ONE

Epsilon ONE optical non-contact extensometers (right) perform high-accuracy, high-resolution, non-contacting axial strain and displacement measurement. Strain or extension is measured and output in real time.



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.

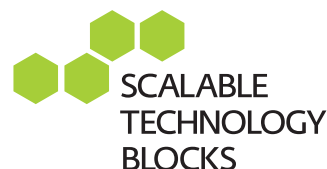
VEM Series

The Tinius Olsen VEM Series of video extensometers are fully integrated with our testing machines and results-

reporting software, supporting multiple gage length click and drag placements, strain rate control and real time results during and throughout the test.

Automated Systems

Tinius Olsen automated materials testing systems are designed for those who are clear on making a focused investment to get a step change in productivity in the test lab, delivering test results instantaneously to the teams that need them. Results reported in accordance with the relevant test standard, whether ISO, ASTM, JIS, GB or GOST standard.



Tinius Olsen has developed scalable technology blocks to automate many types of tests. Our systems can deal with low milli Newton forces to high thousands of kNs and process from 30 to 1250 tests a day. Pictured left is an automated flexure test.

Temperature Chamber and Furnace

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.



Contact us

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

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The Tinius Olsen global

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 unequalled 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.



Horsham, USA

Redhill, UK

service network





Testing Composites

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