

# Tinius Olsen

## Solutions for Metals Testing Machines • Software • Calibration • Service



# Tensile Strength

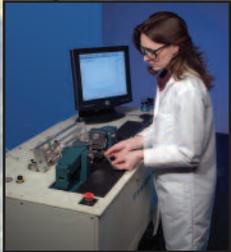


Tinius Olsen's line of versatile hydraulic testing machines can perform a diversity of materials test routines that meet ASTM, ISO and other international testing specifications, including tensile, compressive, flexural, and shear tests. These machines are available at seven standard load tier points, namely, 150 kN (30,000 lbf), 300 kN (60,000 lbf), 600 kN (120,000 lbf), 1,000 kN (200,000 lbf), 1,500 kN (300,000 lbf), 2,000 kN (400,000 lbf), and 3,000 kN (600,000 lbf).

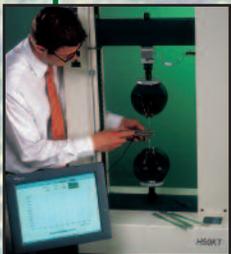
These machines are highly customizable and can be tailored to your individual needs with extended columns and leadscrews (for larger, flexible testing spaces), closed, semi-open, or fully open crossheads (to allow for quicker and easier specimen orientation, loading and unloading), gripping options for crosshead pocket grips, a wide selection of load cells, tools and grips, extensometers, hi-res position transducers, and furnaces or environmental chambers. Of course, no system is complete without data acquisition and analysis software; you can choose from several software platforms so that your unique needs are perfectly met. Whether it is complex, sophisticated, scalable machine and test control generating unique results or choosing from a database of over 1400 commonly used standards, we have the software for your needs.



For those applications that require a larger testing area, faster test speed, or longer test stroke than can be achieved on a hydraulic testing machine, Tinius Olsen also has a range of high force electromechanical testers, with capacities of 100 kN (22,000 lbf), 150 kN (30,000 lbf), 200 kN (45,000 lbf), and 300 kN (60,000 lbf). These can also use the same accessories and software to complete the test system.



Tinius Olsen has taken this one step farther and has developed a series of horizontal tensile testers that can be fully automated with loading and unloading robots, barcode readers, specimen racks, dimensional gauging stations, and other non-destructive testing stations. The results from these precision testing systems can also be integrated into ERP systems, meaning that once specimen racks are loaded, the system can operate, giving shipping departments quality certificates and pass/fail data, without any operator intervention.



The quality and robustness of these proven test machines is borne out by decades of daily use. While the test frames last for many years, the control and measurement electronics are subject to constant technological advancement. To this end, Tinius Olsen has a complete series of retrofit and upgrade packages available to suit the thousands of Tinius Olsen and competitive test frames already in daily use.

The above detail outlines Tinius Olsen's product offering for large metal specimens, testing for tensile strength, flexural strength, shear strength, and all the physical parameters associated with these types of tests, but perhaps the most popular application we are asked about is the testing of small sheet steel specimens. For this application, our popular benchtop testing machines are appropriate since they have machine capacities ranging from 1 kN (200 lbf) to 75 kN (15,000 lbf).



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



# Drawability

The Modul-r is the most efficient and economical 'Go/No-Go' testing method available for determining if a given batch of sheet steel is suitable for a deep-drawing application.

After marking the rolling direction of the sheet, three narrow test strips are blanked, or sheared, at 0°, 45° and 90° to this direction from a 150 mm square sample sheet. All three test strips are produced simultaneously with the punch press. Testing involves simply inserting a steel strip into the test slot and depressing the 'TEST' button for a few seconds while the resonant frequency appears on the display. The operator records the reading on a worksheet and repeats the test for the remaining two strips.

# Impact



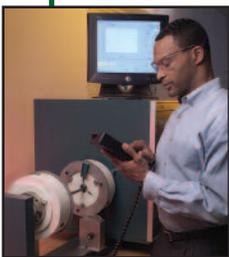
Our model IT406 and model IT542 Impact Testers, with available energy capacities of 406J and 542J respectively, feature heavy-duty construction and an interchangeable striker to easily change between Charpy, Izod, and tensile impact testing. The proper accessories allow these machines to operate in accordance with ASTM E23 and other similar international standards, along with a fully enclosed and interlocked model to meet the requirements of CE directives. These machines also feature a

microprocessor-based display for conducting the test, obtaining test results, calibration, connection to a PC, and system configuration.

The striker can be replaced so that either Charpy, Izod, or tensile impact tests can be performed. The system can also be supplied with an instrumentation system that can collect and analyze up to 1 million data points per test so that an extremely detailed graphical representation of the impact curve can be analyzed.



# Torsion Strength



For maximum versatility and capability, Tinus Olsen offers a full range of torsion testing machines from 10,000 in.lb (1,000 Nm) to 300,000 in.lb (30,000 Nm) capacity (larger capacity or longer machines are available upon request). These superior torsion testers not only provide weighing and loading capabilities in both directions of rotation, but also make it possible to determine the ultimate torque of a specimen and provide data on how that specimen behaves under continuous or intermittent torque loading conditions.



# Hardness

Our Brinell hardness testers are renowned throughout the world for robustness and reliability. These air-operated machines offer a combination of laboratory accuracy with rugged construction to withstand the most demanding shop requirements. Simplicity and confidence of accurate, uniform application of standard loads, combined with the flexibility of an adjustable mounting head or standard testing frame, means that the Tinus Olsen machines are the Brinell hardness testers of choice.



## Popular Test Methods

DESCRIPTION	ASTM	ISO	EN	JIS
Specification For Gray Iron Castings	A48			
Standard Specification For Steel Wire, Plain, For Concrete Reinforcement	A82			
Standard Specification For Steel Welded Wire, Plain, For Concrete Reinforcement	A185			
Standard Test Methods And Definitions For Mechanical Testing Of Steel Products	A370	6892	10002-1, 2002-1	Z2241
Standard Specification For Carbon Steel Chain	A413			
Standard Specification For Steel Strand, Uncoated Seven Wire For Prestressed Concrete	A416		10138	
Standard Specification For Austenitic Ductile Iron Castings	A439			
Tensile Test on Reinforcement Steel		1606	10080	3112
Specification For Steel Welded Wire Reinforcement, Deformed, For Concrete	A497			
Standard Specification For Deformed And Plain Billet-Steel Bars For Concrete Reinforcement	A615			
Standard Specification For Steel Strand, Seven Wire, Uncoated, Compacted, Stress-Relieved For Prestressed Concrete	A779			
Standard Specification For Hard-Drawn Copper Wire	B1			
Determining the Hardening Coefficient (n-value)		10275		
Standard Specification For Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, Or Soft	B8			
Standard Specification For Aluminum 1350-H19 Wire For Electrical Purposes	B230			
Determining the Vertical Anisotropy		10113		
Standard Specification For Aluminum And Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, And Tubes	B221			
Test Method For Green Strength For Compacted Metal Powder Specimens	B312			
Standard Test Method For Compressibility Of Metal Powders In Uniaxial Compaction	B331			
Test Method For Transverse Rupture Strength Of Cemented Carbides	B406			
Standard Specification For Zinc-Coated (Galvanized) Steel Core Wire For Aluminum Conductors, Steel Reinforced (ACSR)	B498			
Bending Test		7438		
Standard Specification For Metallic Coated Stranded Steel Core Wire For Aluminum Conductors, Steel Reinforced (ACSR)	B500			
Standard Specification For Aluminum Clad Steel Core Wire Aluminum Conductors, Aluminum Clad Steel Reinforced	B502			
Bending Tests on Pipe and Pipe Lengths		8491	10232	
Test Method For Shear Testing Of Aluminum And Aluminum-Alloy Rivets And Cold-Heading Wire And Rods	B565			
Test Method For Compressive Strength Of Cylindrical Concrete Specimens	C39			
Standard Test Methods For Cold Crushing Strength And Modulus Of Rupture Of Refractories	C133			
Standard Test Methods For Breaking Load And Flexural Properties Of Block Type Thermal Insulation	C203			
Standard Test Method For Shear Properties Of Sandwich Core Materials	C273			
Standard Test Method For Flatwise Tensile Strength Of Sandwich Constructions	C297			
Test Method For Static Modulus Of Elasticity And Poisson's Ratio Of Concrete In Compression	C469			
Standard Test Method For Splitting Tensile Strength Of Cylindrical Concrete Specimens	C496			
Standard Test Methods For Tension Testing Of Metallic Materials	E8			
Standard Test Method For Compression Testing Of Metallic Materials At Room Temperature	E9			
Compression Test on Hard Metals		4506	24506	
Standard Test Method For Brinell Hardness Of Metallic Materials	E10	6506		
Standard Test Methods For Elevated Temperature Tension Tests Of Metallic Materials	E21		10002-5, 2002-2	
Standard Test Methods For Notched Bar Impact Testing Of Metallic Materials	E23			
Bending Test on Weld Seams	E190, E290			910
Tensile Test at Low Temperatures	E345	384-E, 15579		
Standard Test Methods For Linear Elastic Plane Strain Fracture Toughness Of Metallic Materials	E399			
Standard Test Method For Plastic Strain Ratio, $r$ , For Sheet Metal	E517			
Standard Test Method For Tensile Strain-Hardening Exponents (n-Values) Of Metallic Sheet Materials	E646			

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.



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