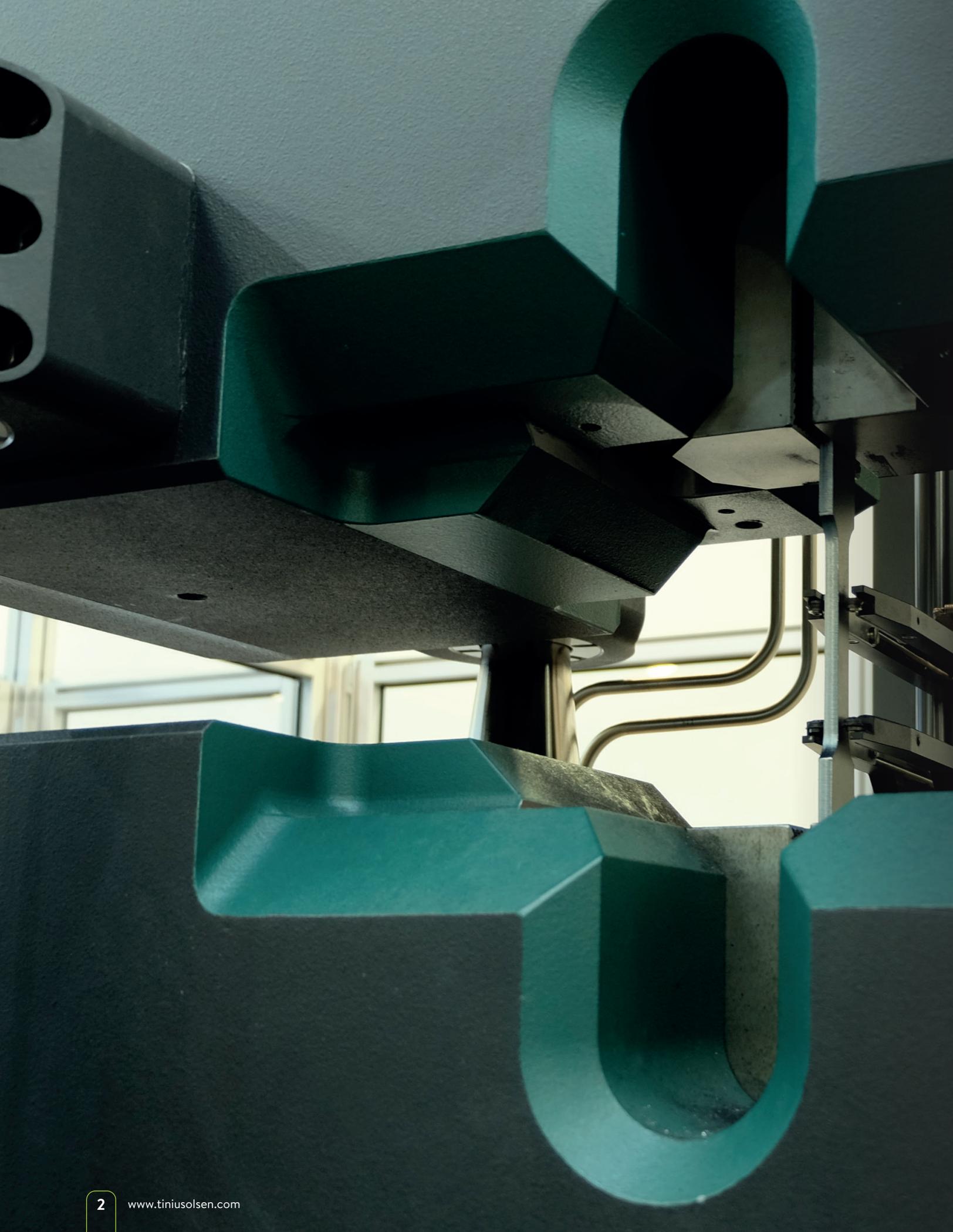


Testing Metals

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- 4 Different types of testing
- 6 Horizon Software
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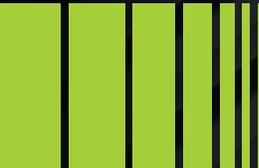




Using Tinius Olsen
metals testing
equipment you
will benefit from
improvements in....

PRODUCTIVITY
REPEATABILITY
TRACEABILITY

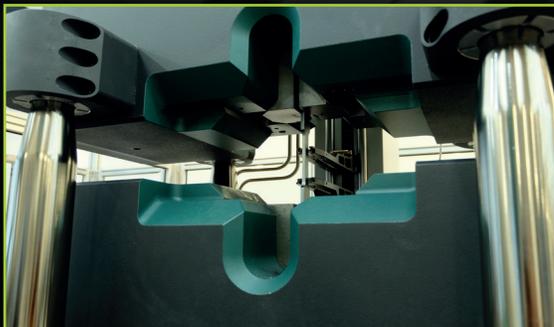
Tinius Olsen offers a wide range of solutions for testing the strength and performance of metal and metal devices; Tensile, compression, flexural, impact, torsion and hardness. Systems are built using standard Tinius Olsen technology blocks which can include temperature chambers, optical measurement devices, vision recognition, as well as test and control software, which automatically identifies pass/fail results and digitally integrates with clients' lab management or manufacturing processes.



Test to an International standard

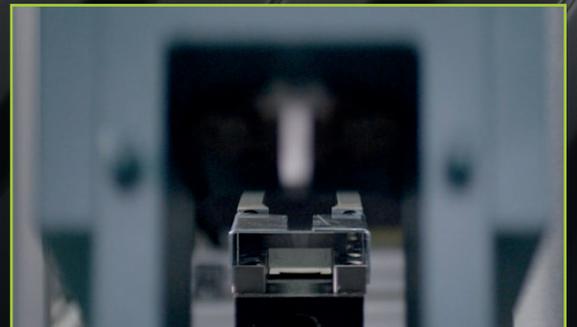
TENSILE

ISO 6892-1,
ASTM E8/E8M,
GB/T 228.1



IMPACT

ISO 148-1,
ASTM E23-16a,
GB/T 229



FLEXURAL

ISO 7438,
ASTM E290,
GB/T 232



HARDNESS

ISO 6508-1, 6506-1, 6507-1,
ASTM E18-16, E10-17, E92-16,
GB/T 230-1, 231-1, 340-1





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.



Manufacturing
Process

Quality
Manager

Lab
Manager

Back-up and
Archive

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 metals

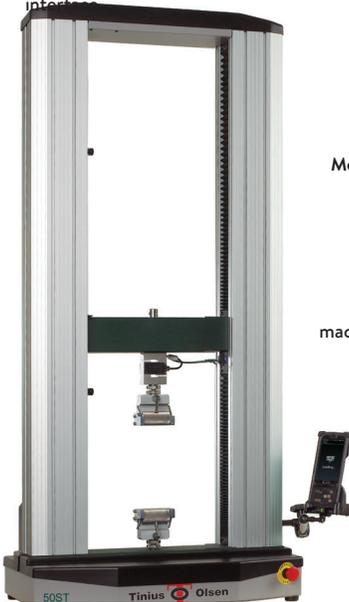
UTMs

Tinius Olsen's range of ST and SL models feature single, dual and four column frames with optimized foot print sizes. The single column models have frame capacities 1kN (100kgf/200lbf) and 5kN (500kgf/1,000lbf), dual column in capacities 10kN (1,000kgf/2,000lbf), to 300kN (30,000kgf/60,000lbf), four column in capacities 150kN (15,000kgf/30,000lbf) to 3,000kN (300,000kgf/600,000lbf). All frames are capable of testing raw materials, components and devices.

Model 50ST

50kN/10,000lbf capable

Shown with Bluetooth enabled handheld user interface



Model 300SL
300kN/
60,000lbf
capable.
A stiff and
powerful
testing
machine frame



Model 300ST 300kN/60,000lbf
capable



UTM Accessories

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

- Extensometers contacting and non-contacting, optical 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 metal testing requirements. Grips for tension, flexure, compression tests are all available for our ST and SL Series, covering many different materials, test conditions and standards. A few examples are featured here.



Flat and Vee wedge for testing flat and round specimens



Open front model "R" grips



Hydraulic wedge grips, software controlled in support of automation

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.

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.

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.



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.

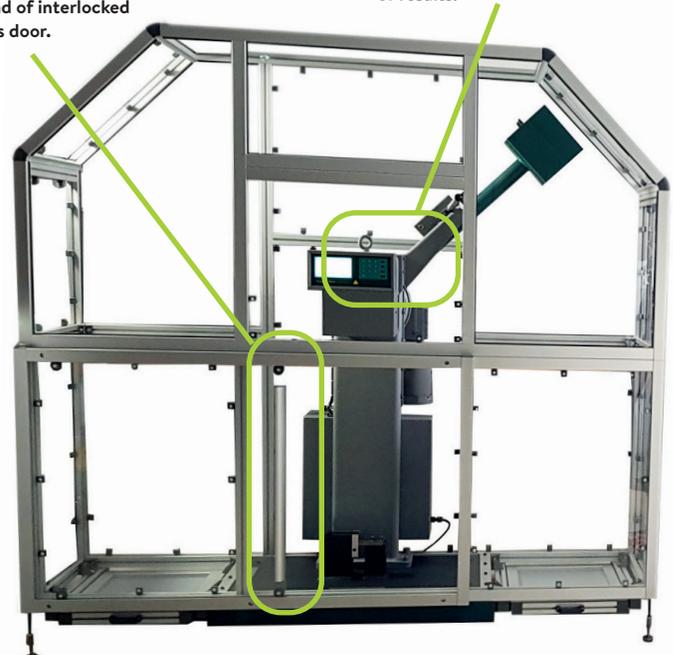
Impact Testers

406 to 800 joules metal impact testers are designed for repeated testing of specimens 24 hours a day 365 days a year. Be it testing at ambient temperature or cold, operator loaded or automatic loading the Tinius Olsen metal impact tester is considered the standard reference for all metals impact testing from national physics laboratories to manufacturing QA labs to education because of its accuracy, repeatability and reliability in service.

Impact testers are available in numerous configurations, no enclosure for integration into client's own systems, with impact resistant clear enclosures, with enclosure doors or light curtains, with auto stop and pendulum return or without.

Optional light curtain instead of interlocked access door.

Membrane keypad display for machine and test set-up and display of results.





FH-6 Series
to 250kg

Hardness machines

Rockwell, Vickers, Micro vickers, Brinell or Universal, semi-automated through to fully automated, testing raw material, components and or devices Tinius Olsen has a hardness tester to meet your needs.

Tester configuration options include X/Y tables, multiple indenter positions, multiple objectives and overview cameras in support of test piece positioning.



FH-10 Series
to 250kg



FH-14 Series
to 31.25kg



FH-1 Series
to 250kg



FH-2 Series
to 250kg



FH-3 Series
to 62.5kg



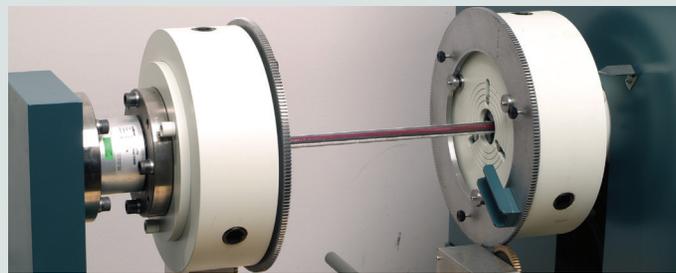
FH-8 Series
to 3000kg



FH-9 Series
to 3000kg



FH-11 Series
to 3000kg



Torsion testers

1,000 to 30,000Nm (10,000 to 300,000lbf) Tinius Olsen torsion testers are capable of loading and measuring rotation in both directions to determine the ultimate torque value and torque values throughout the test under either continuous or intermittent loading conditions. Units are configured as table or floor mounted with the measuring head being a movable component.

Contact us

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

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info@tiniusolsen.com

Tinius Olsen

USA
Horsham, PA

UK
Redhill, Surrey

India
Noida, UP

China
Shanghai

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.

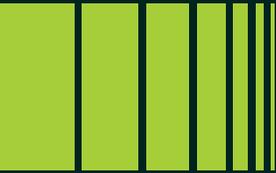
**SCALABLE
TECHNOLOGY
BLOCKS**

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 right is an automated flexure test.



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			
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			
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		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			



Testing Metals

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