



Sand Testing Equipment

Know your sand. Control your process. Improve performance.

Get the accurate, reliable data you need to understand your sand, identify variability, and make better process decisions.

SIMPSON
A Norican Technology

Reduce Casting Defects and Maximize Profitability

Proactive sand testing is essential to preventing sand-related casting defects, reducing scrap, and improving profitability. Accurate, reliable testing gives foundries the insight they need to understand sand properties, identify variability, and make informed process decisions.

Simpson offers one of the most comprehensive ranges of sand testing technology in the industry. Our portfolio brings together proven testing solutions designed to deliver accurate, repeatable results and help foundries better understand and control their sand processes.

With more than a century of sand expertise, Simpson continues to develop testing technologies that provide deeper process insight—helping foundries improve casting quality, reduce defects, increase efficiency, and maximize operational performance.

- **Comprehensive portfolio** of sand testing equipment and solutions
- **Accurate, repeatable results** for greater process confidence
- **Advanced technology** designed to deliver actionable process insight
- **Global availability** with service and parts support

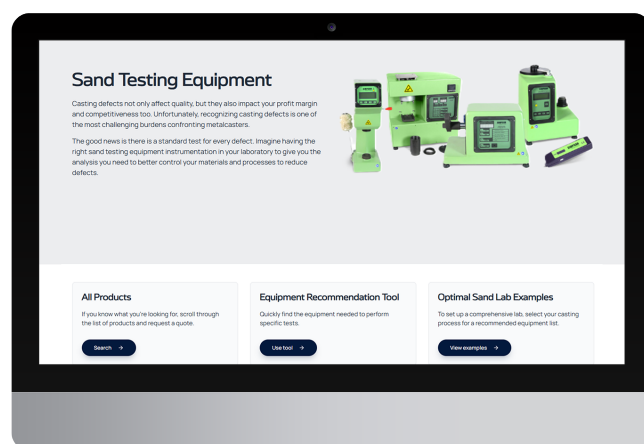
Serving Customers Worldwide

- Foundries
- Foundry Suppliers
- Research Centers
- Universities

Looking to reduce defects and improve casting quality?

Find the right equipment for your foundry.

simpsongroup.com/sand-testing

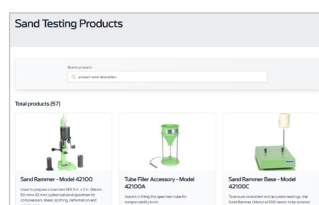


Watch video demonstrations on our YouTube channel or by visiting simpsongroup.com.

Identify What You Need

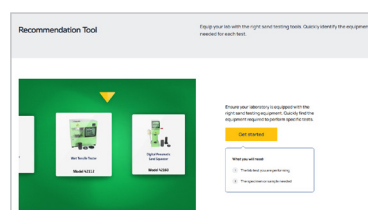
Browse our equipment

Explore our sand testing equipment by product or model number.



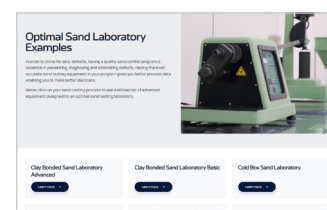
Identify equipment needed to perform specific tests

Answer a few questions to find the right equipment for your needs.



See what an optimal sand lab looks like

Explore recommended lab set-ups for your sand casting process.



Maintaining High Performance

Keep Your Testing Accurate and Reliable

Regular calibration helps ensure your sand testing equipment delivers accurate, repeatable results you can trust. Simpson's authorized service technicians provide the expertise, training, and certified parts needed to keep your equipment performing at its best—so you can make confident decisions based on reliable data.

Service Plan:

- 1 Annual or biannual on-site calibration
- 2 Discount on calibration and service labor
- 3 Calibration certificate indicating before and after calibration status
- 4 Formal written report covering all work completed
- 5 Report history stored by SIMPSON

Maintain Accuracy. Ensure Confidence



MODEL 42113

Calibration Kit

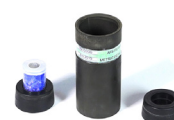
Includes certified standards that are used to check the calibration set points for the following sand testing machines; 0042100, 0042104, 0042105, 0042112, 0042160.



Model 42125

Mechanical Load Cell Model

Used to calibrate loads on several pieces of Simpson sand testing equipment.



Model 42132

Permeability Standard

The Permeability Standard is used to verify and calibrate the Digital Absolute Permmeter, Model No. 42105.

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MODEL
AFS: 42100
Metric: 42100-M
Sand
Rammer



Used to prepare standard AFS 2" x 2" or Metric 50mm x 50mm cylindrical sand specimens. It is also used to determine the compactability of prepared clay bonded molding sand used in a foundry.

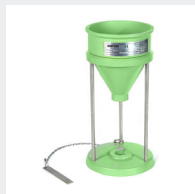
MODEL
AFS: 42160
Metric: 42160-M
Digital Pneumatic
Sand Squeezer



Used to prepare standard AFS 2" x 2" or Metric 50mm x 50mm sand specimens and to determine the compactability of prepared clay bonded molding sand. The instrument can be a replacement for the standard 3-ram method of making sand specimens using a traditional sand rammer.

Accessories for Sand Rammer and Digital Pneumatic Sand Squeezer

AFS: 42100A
Metric: 42100A-M
Tube Filler
Accessory



Assists in filling the specimen tube for compactability tests. It assures that properly riddled sand fills the specimen tube from a standard and fixed distance. Both the Digital Pneumatic Sand Squeezer (Model 42160) and the Sand Rammer (Model 42100) use this accessory.

42100C
Sand
Rammer
Base



To ensure consistent and accurate readings, the Sand Rammer (Model 42100) needs to be isolated from vibration variations. This base is mounted to the rammer to achieve uniform ramming energy.

42100D
Sand
Rammer
Pedestal



The Sand Rammer (Model 42100) and its base (Model 42100C) mount to this pedestal to eliminate vibrations that can affect the accuracy of the results and can disturb other instruments residing on the same bench.

AFS: 42100F
Metric: 42100F-M
Transverse
Strength Core
Box Accessory



Used to make standard transverse test specimens with air-set or core oil type sand binders.

42100G
Tensile Core
Strength
Accessory



Used to make standard tensile test specimens with air-set or core oil type sand binders.

AFS: 42100E
Metric: 42100E-M
Rowell
Flowability
Tester



Used to determine the flowability of a molding sand.

45623
Stripping
Post



Used to remove the compacted sand after compaction and sample testing by placing the tube over the top and pushing the tube downward which pushes the sand out of the tube.

45628
Specimen
Tube



Used to put sand into for compaction and sample making on either the Sand Rammer model 42100 or the digital squeezer model 42160.

MODEL
AFS: 42104
Metric-42104-M
Electronic
Universal Sand
Strength Machine



Used to determine the strength properties of clay and/or chemically bonded foundry sand specimens. The machine is capable of performing many different sand strength tests with additional fixtures and accessories that are easy to connect. With the required accessories, the machine can measure green and dry compression strength, green and dry shear strength, splitting strength, green deformation at maximum strength, hot shell tensile strength, cold shell tensile and transverse strength, disk transverse strength, and core tensile and transverse strength.

Accessories for Electronic Universal Sand Strength Machine

AFS: 42104C
Metric: 42104C-M
Core Tensile
Strength
Accessory



When mounted to the Electronic Universal Sand Strength Machine (Model 42104), this accessory measures the cold tensile strength of standard dog bone specimens prepared from cold box, core oil, hotbox/ warmbox and nobake/air-set sands.

42104D
Splitting
Strength
Accessory



Used to measure splitting strength. This test is considered an indirect measurement of a clay bonded molding sand's tensile strength property.

42104E
Green
Deformation
Accessory



Measures the deformation of a clay bonded sand specimen after a compression strength test is done on the Electronic Universal Sand Strength Machine (Model 42104). Deformation is the change in the length of the sand specimen before and after the compression test.

AFS: 42104F
Metric: 42104F-M
Hot Shell
Tensile
Accessory



Measuring the hot tensile strength of shell/ cironing sands.

42104H
High
Compression
Strength
Accessory



A force multiplier that, when used with the Electronic Universal Sand Strength Machine (Model 42104), can perform a compression strength test on a standard AFS 2" x 2" (50mm x 50mm) sand specimen with a compression strength range of 250–3100 PSI (170–210 N/cm²).

42104J
Compression
& Shear Clamp
Accessory



Used to test the cylindrical specimen that was prepared by the sand rammer or digital squeezer. Two separate tests can be done with this accessory, green compression or shear strength tests.

AFS: 42104K
Metric: 42104K-M
Core Transverse
Strength
Accessory



This accessory is attached to the Electronic Universal Sand Strength Machine (Model 42104) to determine the transverse strength of chemically bonded sand specimens.

AFS: 42104L
Metric: 42104L-M
Shell Transverse
Strength
Accessory



Accessory measures the transverse strength of shell/cracking sand transverse specimens.

AFS: 42104N
Metric: 42104N-M
Shell Tensile
Strength
Accessory



Used to determine the tensile strength of shell/cracking coated mold and core sands when mounted on the Electronic Universal Sand Strength Machine (Model 42104).

42104P
Disk
Transverse
Accessory



When mounted on the Electronic Universal Sand Strength Machine (Model 42104), this accessory breaks disc transverse specimens.

MODEL
AFS: 42103
Metric: 42103M
Tensile
Core Box



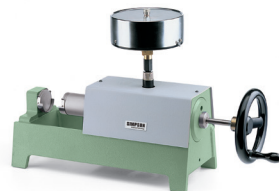
Makes standard specimens for tensile strength testing using self-curing (air-set) sands.

Model
AFS: 42103A
Metric: 42103A-M
Transverse
Core Box



Makes standard specimens for transverse strength testing using selfcuring (air-set) sands.

MODEL PFG
Universal Sand
Strength Machine



This hand-driven strength machine is used to determine the strength properties of clay and/or chemically bonded foundry sand specimens. The device has the capability to run five different sand strength tests with additional fixtures and accessories that are easy to connect to the instrument.

Accessories for the Universal Sand Strength Machine

PFG-MA
Motorized
Universal
Sand Strength
Machine
Accessory



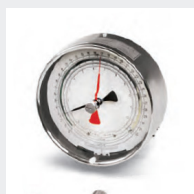
This is an electric motor upgrade option for the Universal Sand Strength Machine (Model PFG) designed to replace the manual hand drive.

PBV
Core
Transverse
Strength
Accessory



Used to determine the transverse strength of chemically bonded sand specimens.

PHM
High
Pressure
Gauge



This high load gauge is used for measuring strengths up to 132 N/cm² with the PFG.

PQS
Twin-
Transverse
Shear Strength
Accessory



To measure the twin-transverse shear strength of clay bonded molding sand specimens, these two uniquely designed testing clamps are mounted to the Universal Sand Strength Machine (Model PFG).

PSP
Splitting
Strength
Accessory



Used to measure splitting strength. This test is considered an indirect measurement of a clay bonded molding sand's tensile strength property.

PZV
Core Tensile
Strength
Accessory



This accessory is mounted to the Universal Sand Strength Machine (Model PFG) to measure the cold tensile strength of standard dog bone specimens prepared from cold box, core oil, hotbox/warmbox and nobake/air-set sands.

MODEL
AFS: 42105
Metric: 42105-M
Digital Absolute
Permmeter



Measures the permeability of standard AFS 2" x 2" or Metric 50mm x 50mm sand specimens. With the addition of optional accessories, this instrument can measure the permeability of unbonded sand, coatings, cores and molds.

Accessories for the Digital Absolute Permmeter

42105A
Shell
Permeability
Accessory



Measures the permeability of shell sand samples when attached to the Digital Absolute Permmeter (Model 42105).

42105B
Mold
Permeability
Accessory



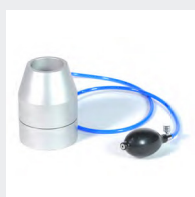
Measures the permeability of an actual production mold or core.

AFS: 42105C
Metric: 42105C-M
Base
Permeability
Accessory



When using this device as an accessory, the base permeability of loose porous sand masses can be determined.

42105D
Additional
Permeability
Accessory



Measures the permeability of core samples.

42105E
Refractory
Coating
Accessory



Measures the permeability of refractory coatings used in lost foam casting applications.

MODEL
AFS: 42106
Metric: 42106-220
Laboratory Sifter



Used to determine the grain fineness and distribution of foundry sands.

Accessories for the Laboratory Sifter

AFS: 42106A
Metric: 42106A-M
Sand Testing
Sieves



Used to determine the grain fineness and distribution of molding and core sands.

MODEL
AFS: 42112
Metric: 42112-M
Wet Tensile
Strength Tester



The tensile strength of the condensation zone in a clay bonded molding sand can be accurately measured using this technology. The automated instrument simplifies the testing process and displays the wet tensile results in an easy-to-read digital display.

MODEL PVF-C
Minilab



This multi-purpose instrument is used to determine strength properties of clay and/or chemically bonded sand specimens. The Minilab may be used to create a 50mm x 50mm cylindrical test specimen and can run many different sand strength tests using additional accessories. These tests include: compactability, compression strength, splitting strength, twin-transverse shear strength, core transverse (bending) strength and core tensile strength.

MODEL 42131
AFS Clay Tester



Used to determine the percentage of particles with a diameter less than 20 microns in a foundry sand sample.

Accessories for the AFS Clay Tester

42119
Rapid
Sand
Washer



Used to ensure correct and repeatable test results when preparing sand samples for the AFS Clay Tester (Model 42131). This sand washer uses highspeed agitation to remove all clay from the sand grains within the molding sand sample.

US Model
223100/42136-IS
Europe Model
PMK/PRK
Methylene Blue
Clay Tester with
Magnetic Stirrer



Used to determine the amount of live bentonite clay present in a sand sample. This instrument utilizes a magnetic stirrer for the agitation of the system sand to keep the clay suspended in the solution.

A bottle mounted auto-pipettor is used instead of a glass burette to dispense the methylene blue, easier to use, less mess, and more accurate.

MODEL PFP
Mold
Strength Tester



Used to determine the mold strength on a finished green sand mold.

MODEL 42142
Mold Hardness
Tester B-Scale



The most-used tester for green sand foundries, ideal for medium to soft sands. Portable with an LCD display, it delivers accurate hardness readings (0-100) and automatically records the maximum penetration.

MODEL 42143
Mold Hardness
Tester C-Scale



Designed for harder green sands, this tester reads from 60-100. Portable and lightweight, it features an LCD display that eliminates reading errors and automatically records the maximum penetration.



Advanced kits allow for the download of stored test data with the advanced kit and to check calibration set points.

MODEL PEP
Impact
Penetration
Tester



Determines the degree of curing in lower zones of chemically bonded molds and cores. In addition to identifying curing time, it is useful in determining the proper strip time.

MODEL PKH
Scratch
Hardness
Tester



Used for the rapid determination of the scratch hardness of chemically bonded molds and cores.

MODEL 42145
Digital Scratch
Hardness
Tester



Used for the rapid determination of the scratch hardness of chemically bonded molds and cores.

MODEL
AFS: 42109
Metric: 42109-M
Test Pieces
Blower



Used to make standard tensile strength and shell transverse test specimens.

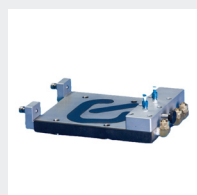
Works With Test Pieces Blower

42109A Catalyst Vaporizer



Connects to the Test Pieces Blower (Model 42109) in order to control the gassing and purging sequence of the test specimen.

42109B Cold Box Gassing/ Purging Device



Produces cold box (gas-cured) test specimens. Required to properly disperse gas into the specimen and then flush the specimen with a purging gas.

42109C Disk Transverse Tooling



Used in the Test Pieces Blower (Model 42109) to prepare a disk transverse specimen.

AFS: 0026-132 **Metric: 0026-132M** 1" Dog Bone Tooling



Making the core sample for tensile strength testing on the strength machine.

AFS: 206604 **Metric: 206605** Core Shell Transverse Tooling



Used in making the shell transverse strength sample that is used on the strength machine.

AFS: 206602 **Metric: 206603** Core Shell Tensile Tooling



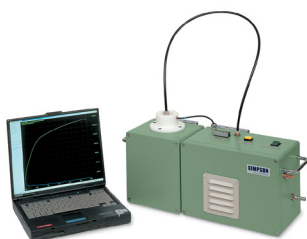
Used in making the shell tensile strength sample that is used on the strength machine.

MODEL 42141
Friability
Tester



Used to measure the ability of compacted molding sand to resist abrasion or scuffing within the first few millimeters at the surface of a prepared mold.

MODEL PGD-E
Gas Pressure
Measuring
Device



Used to accurately measure the gas pressure generated over time from a foundry sand sample heated to a set temperature.

MODEL 42110
Laboratory
Muller



Used to prepare mixtures of clay bonded foundry sands. The mulling conditions found in industrial mullers can be emulated on a smaller scale using this laboratory muller.

Visit [simpsongroup.com](https://www.simpsongroup.com) to get additional details on every product in this brochure.



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