QUALITEST™
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Advanced

Soil Testing Technologies





Field Classification, Sampling & Preparation

Laboratory Classification

Moisture Content

Unbound & Hydraulically Bound Mixtures

CBR (California Bearing Ratio) - IBI (Immediate Bearing Index)

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About Qualitest

QUALITEST, together with the WorldofTest.com network, is a global supplier of testing technologies that help customers improve their design, development and manufacturing processes. Our mission is to help our customers design, develop and produce their products faster, with higher quality and at a lower cost. A leader in offering the widest range of precision metal testing technologies on the market, Qualitest leverages extensive industry experience to provide products that determine the mechanical properties of metals including steel, aluminum, alloys, iron, and much more. These solutions include portable and low cost instruments as well as bench-top and sophisticated systems to meet your highest demands.

With rapidly growing presence in North America and worldwide, Qualitest maintains offices in USA, Canada, UAE, Asia and Mexico with a wide network of sales and service partners. This global presence ensures that Qualitest customers have fast and efficient access to Qualitest service, support and consulting services to realize optimal return on their testing solution investments.

Qualitest offers direct after sales service/calibration support or through our authorized and nationwide A2LA accredited and ISO 17025 certified service centers.

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Soil

Located on the uppermost layer of the earth's crust, soil is one of the principal foundations of life on Earth. It serves as a reservoir of water and nutrients, as a medium for the filtration and breakdown of waste materials, and as a contributor to the cycling of carbon and other elements through the global ecosystem. Several varieties of soil have evolved through biological, climatic, geologic, and topographic processes.

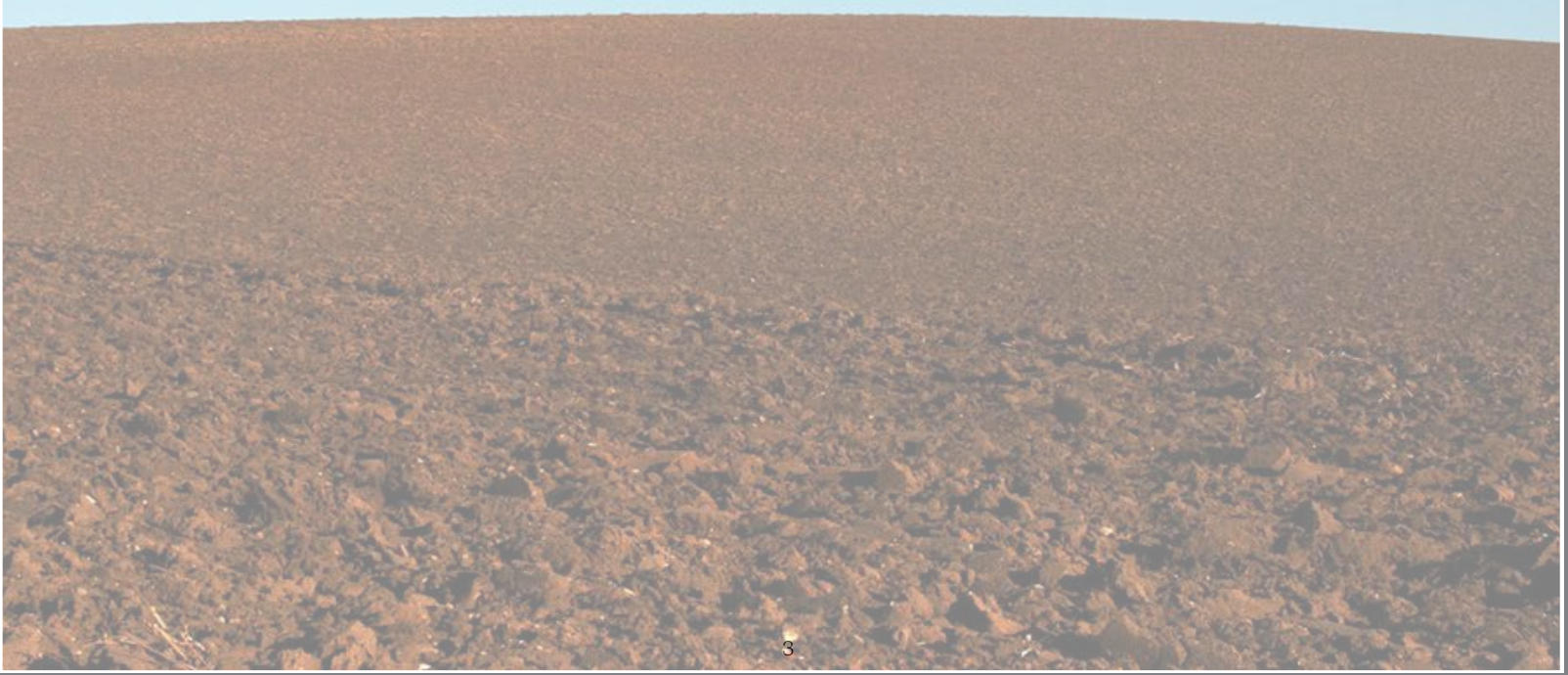
General Applications

The extreme variability of different soils requires both field and laboratory tests to improve our understanding of their strengths and weaknesses in different contexts.

Soil is used in agriculture—where it serves as the anchor and primary nutrient base for plants—and it is also a critical component in the mining, construction, and landscape industries. Large-scale projects like surface mining, road building, and dam construction require massive volumes of soil. Soil also plays an important role in filtrating and purifying water: after coming down to earth as precipitation, rain water is percolated through many "horizons" of soil and is reconstituted as groundwater. Other integral applications of soil include "earth sheltering," which is the architectural practice of using soil to regulate the thermal energy of buildings; waste management, which often uses soil to cover landfills; and septic management, which uses aerobic soil processes to drain septic fields and treat septic tank effluent.

Qualitest's Advanced Testing Technologies are the most reliable and cost-effective solutions for Soil Testing.

Together with our network of partners, Qualitest offers a complete selection of testing machines and systems for soil testing. We supply an extensive range of competitive solutions such as CBR loading presses, soil testing machines for determining the physical and chemical properties of soil, and a wide range of Permeability Testers complying with the most stringent international standards.



Field Classification, Sampling & Preparation

Surface Soil Sampler

Surface Soil Sampler is used to take a standard volume sample from the ground in order to establish the in-situ density of the soil. The apparatus consists of a 5 kg sliding weight drop hammer, which falls freely onto the driving head situated on top of the sampling tube ID 73x66 mm high. Made from steel protected against corrosion. The approx. weight of apparatus is 10 Kg.

Field Penetrometer

Dynamic Penetrometer Motor Operated 20-30 Kg Drop Weight

DIN 4094

The apparatus comprises a 4 stroke engine which drives, through a flexible shaft, the lifting mechanism, a 20 kg weight, a 10 kg supplementary weight, 10 rods, 5 cones each of 500 and 1000 mm2 size, and rod lifting device. The heaviest part of this apparatus is 20 kg dropping weight so it is very simple to use and easy to carry on site. The apparatus satisfy DIN 4094 standards for medium weight test apparatus 30 kg mass x 20 cm drop height.

Technical Specifications

- 1.9 kW 4 stroke engine
- Driving rate: up to 45 blows/min
- Fall height: 20 cm
- Drop weight: 20 or 20 + 10 Kg
- Total net weight: 70 Kg approx. (without sounding rods and accessories)

Laboratory Classification

Atterberg Limits

Liquid Limit Penetrometers

BS 1377:2, UNE 7002, UNE 7377,UNI 10014, DIN 18122, NF P94-052-1

The cone penetrometer apparatus is used to determine the moisture content at which clay soils pass from a plastic to a liquid state and it is used also for the determination of undrained shear strength (CEN ISO/TS 17892-12).There are two versions available: the standard version and the semi-automatic version

Main Features

- Cast iron base with leveling feet
- Digital penetration measurement gauge 0.01 mm precision
- Micrometer vertical adjustment device
- Automatic zeroing
- Electronic release mechanism

Liquid Limit Devices (Casagrande)

ASTM D4318, BS 1377:2, NF P94-051, UNE 7002, UNE 7377, DIN 18122

This apparatus is used to determine the moisture content at which clay soils pass from a plastic to a liquid state.
It comprises of removable brass cup, adjustable crank and cam mechanism, blow counter, and base. Different versions are available conforming to the various standards in use. They are identical in shape and differ, generally, from the type of base and weight of the cup. Furthermore all versions are available either manually or motor operated. The grooving tools, which also refer to the different standards, are not included and have to order separately. The approx. weights of standard and motorized versions are 2 Kg and 4 Kg respectively.

Moisture Content

Moisture Content Determination Equipment

Speedy Moisture Tester

AASHTO T217, ASTM D4944, BS 6576, UNE 7804

Speedy Moisture Tester is a well established portable test method for the determination of moisture content of soils, sand and fine aggregates. The procedure involves the reaction between water and calcium carbide which when mixed together give off a gas. The amount of gas is directly proportional to the amount of water present in the sample and results in percentage are taken from a pressure gauge. The tester is supplied complete with electronic balance, brushes and measure in a plastic carrying case. There are two versions available: QT-SMM:I 20 g cap., and QT-SMM:II 6 g cap.

Technical Specifications		
Model	QT-SMM:I	QT-SMM:II
Moisture Range	0-20%	0-20%
Gauge Divisions	0.2%	0.2%
Standard Weight on Balance	6 g	20 g
Case Dimensions	510x380x200 mm	510x380x200 mm
Weight approx.:	5.5 kg	6 kg

Universal Moisture Tester

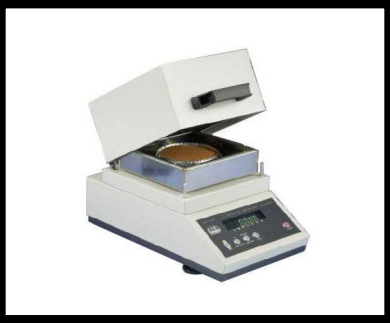
AASHTO T217, ASTM D4944, BS 6576, UNE 7804

The universal moisture tester can be used for soils, sand and fine aggregates. The QT-UMM:I, - QT-UMM:III and QT-UMM-IV models can determine moisture contents of 2% or under on samples up to 100g in mass, the QT-UMM;II long bottle version can determine up to 20% on 20g samples, while the speedy models are suitable for determinations of up to 20% on 6-20g of sample. The operating principle is identical for all models: the sample is introduced into the bottle with the reagent and the water in the sample reacts with calcium carbide and produces a gas, the pressure of which is indicated on the manometer and easily converted into the percentage of moisture. There are four versions available - the specifications are detailed in the following table:

Model	Description	Comprising	Sample mass /Moisture range (up to)	Case dimensions	Weight (approx.)
QT-UMM:I	Classic moisture meter with analogue manometer and digital balance	Digital balance, 20 carbide ampules, hammer, chisel, digital timer and other accessories	20g/10% 50g/4% 100g/2%	520x 340x140mm	6kg
QT-UMM:II	Classic moisture meter, long bottle version, with analogue manometer and digital balance	As above	20g/20%	520x340x140mm	6kg
QT-UMM:III	Digital moisture meter with 0-3 bar high-resolution digital manometer and digital balance	As above	20g/10% 50g/4% 100g/2%	520x340x140mm	6kg
QT-UMM:IV	Digital moisture meter with 0-3 bar high-resolution digital manometer, digital balance and log printer for printing test certificates	As above, plus log printer	20g/10% 50g/4% 100g/2%	520x340x140mm	6kg

Moisture Content

Moisture Determination Balance



Moisture Determination Balance automatically and simultaneously dries and weighs solid samples for the determination of moisture content. It provides a continuous direct readout for both weight and percentage moisture loss through the entire cycle.

Main Features

- Simultaneous drying and weighing of sample

Technical Specifications

- Capacity/Resolution: 160g x 0.001 g
- Timer: 0-99 min with 1 minute interval
- Dimensions: 194x340x235 mm
- Weight approx.: 11.5 kg

Moisture Condition Apparatus

BS 1377:4, EN 13286-46

Moisture Condition Apparatus is used in the assessment of earthworks for construction by comparison of compaction characteristics at various moisture contents, to determine “Moisture condition value” and “Chalk crushing value”. This robust apparatus is designed for use in the construction laboratory and incorporates a rammer, scale, counter and mould. The approx. weight of apparatus is 55 kg.

Automatic CBR Compactors

Universal Proctor / CBR Automatic Compactors

ASTM D1883, ASTM D698, BS 1377:4, ASTM D1557, AASHTO T99, AASHTO T180, NF P94-093, AASHTO T193, EN 13286-47, EN 13286-2

The automatic compactor provides a fully automatic and uniform compaction of specified effort, thus ensuring repeatable test results and eliminating any operator fatigue during the tests. Conforming to all the above and other major International Standards, designed for moulds 100 to 102 and 150 to 152.4 mm diameter, this programmable microprocessor-controlled soil compactor is particularly suitable for research purposes as it is possible to program a user-defined compaction sequence and a sequence conforming to standards. A sophisticated compaction technique permits the central blow required for the 150-152.4 mm diameter moulds. The end of each layer compaction is indicated by a visual and acoustic signal. Two doors, one blind frontal and one transparent lateral, ensure comfortable access to a wide test area ad gives free view during test running. The machine is supplied complete with all relevant accessories as: 2 rammer faces and two rammer weights that are easily interchangeable according to the reference standard. The software gives the possibility to program customized sequences allowing the user to set very precisely the rotation angle from 5° to 90° with 5° steps between two subsequent blows, granting a precise and uniform blows distribution. The rotating base has screw clamping system for the moulds locking.

Main Features

- Universal automatic application: one single model that fulfills all Standards requirements (ASTM/AASHTO/EN/NF/BS/UNE etc.), including the central blow
- User friendly selection of Standards EN, ASTM/AASHTO, BS, NF and other major International Standards by software
- Possibility to program up to 15 user defined compaction cycles and sequence
- Rammers and rammers kit for easy interchangeability according to all International standards included
- All safety features as protection guards and emergency button included as standard with the compactor
- Lateral transparent panel ensures free view on the compaction evolution
- Double doors for free access to wide test area
- Sensors controlled adjustable rotation angle from 5° to 90° (5° steps)
- Noise reduction cabinet is available
- Unique rammer lifting device to guarantee correct and long life drop height

AUTOPROCTOR, Automatic Proctor-CBR Compactor

ASTM D1883, ASTM D698, BS 1377:4, ASTM D1557, AASHTO T180, AASHTO T193, EN 13286-47

The Automatic Proctor/CBR Compactor provides a fully automatic uniform compaction of specified effort, thus ensuring repeatable test results and eliminating any operator fatigue during the tests. It consists essentially in a robust steel frame housing the motor speed reducer and lifting mechanism which assure uniformity of drop height at all specimen levels. The rammer pick- up has a cam system for accurate height release and is made of highly resistant material for trouble free long life. Compaction cycles conforming to the mentioned Standards, can be set on the digital control panel. The internal mechanism is protected by a two doors that stop automatically the machine when opened, conforming to the safety CE requirement. The compactor is provided with a 2495/4535 g hammer with double interchangeable tip 50.8 mm dia. circular face for 4" moulds and sector face for 6" dia. moulds conforming to ASTM/AASHTO Standards. It is also possible to convert the compactor to EN, BS and NLT Standards (for 100 mm dia. moulds only), by simply replacing the standard hammer with the 50mm dia hammer and adjusting the drop height. This compactor can also be used for other make moulds with a simple adjustment of the mould base to fit the compactor table. Furthermore, the compactor can be enclosed in a noise reduction and safety cabinet.

Main Features

- Automatic control
- Programmable compaction cycles conforming to EN, ASTM, AASHTO, NLT, CNR-UNI standards
- User defined programmable cycles
- Protection guards for operator safety (CE)
- Noise reduction cabinet available
- Digital touch button console
- Unique hammer lifting device to guarantee correct drop height
- Easy use and maintenance
- Modern and reliable design features to ensure long working life

Technical Specifications

- Usable for moulds diameter: from 100 to 102 and from 150 to 152,4 mm (4” and 6”)
- Selectable rammer drop: 300, 305, 450, 457 mm
- Blow rate: 30 blows/min
- Power: 740 W
- Overall dimensions: 521x403x1438 mm
- Weight approx.: 140 kg

Vibration Compaction Hammer

EN 13286-4, BS 1377:4, BS 1924:2

Vibration Compaction Hammer is used for the compaction of Proctor and CBR soil specimens. Using the appropriate tamping foot it can also be used for compacting asphalt in the “Percentage Refusal Density test”.

- Power: 950 W
- Full load impact rate 2800 bpm
- Overall dimensions (wxdxh): 130x530x380 mm
- 230 V, 50-60 Hz, 1 ph
- Weight approx.: 6.4 kg

Main Features

- Constant speed with variable speed control
- Durable aluminium housing
- Soft grip and shock-absorbing handle
- Easy to change tool by single-step holder
- Variable lock mechanism to adjust tool at 12-step angle
- Functional and robust design

Relative Density of Cohesionless Soil Test Sets

ASTM D4253, ASTM D4254, EN 13286-5,

This method covers the determination of the maximum dry density and water content of cohesionless materials when compacted using a vibrating table. Materials for which this method is applicable may contain up to 12% by mass fines (<0.063 mm). The maximum particle size of the materials to be tested is 80 mm. This method applies to mixtures to be used in road construction. The ASTM, also specify that it is used for the determination of the relative density of cohesionless soil for which impact compaction will not produce a well defined moisture-density relationship curve and where the maximum density of impact method will generally be less than by vibratory method. The two versions: QT-RDCS:I Conforming to ASTM and QT-RDCS:II Conforming to EN are practical identical except for the 0.1 cu.ft mould.

Technical Specifications

The QT-RDCS:I and QT-RDCS:II test sets includes: Vibrating table having the following specifications:

- Vibration frequency: 3600 r.p.m.
- Amplitude range: 0.05 to 0.64 mm
- Vibrator type: electromagnetic
- Separate amplitude control panel
- Table dimensions: 762x762 mm
- Table capacity: 250 kg
- 14200 cm^3 (0.5 cu.ft.) mould set
- Relative density gauge set

The QT-RDCS:I ASTM version also include:

- 0.1 cu. Ft. relative density mould set
- Weights approx.: QT-RDCS:I 310 kg, QT-RDCS:II 289 kg

www.Worldoftest.com/universal-compression-frame.htm

CBR Loading Presses

CBR Motorized Loading Press

ASTM D1883, BS 1377:4, NF P94-078, AASHTO T193, EN 13286-47, UNI 10009

The machine feature a rigid two column frame with upper crossbeam, which can be adjusted in height and locked in position with locknuts. The drive force is provided by a mechanical jack housed in the base cabinet which also accommodates the motor and the electric panel. The machine include a precision load ring, 50 kN cap., an adjustable penetration piston and dial gauge. All the load rings are provided with 0.001mm high resolution dial gauge, assuring a strict conformity to the standards.

Technical Specifications

- Max. Capacity: 50 kN (11,000lbf)
- Testing Speed Range: 1.27 mm/min
- Max Ram Travel: 120 mm
- Horizontal Span: 270 mm
- Power Rating: 300 W
- Dimensions Approx.: (dxwxh) 392x495x1194 mm
- Weight Approx.: 78 kg

Hand Operated CBR Loading Press

ASTM D1883, BS 1377:4,NF P94-078, AASHTO T193, UNI 10009

The machine feature a rigid two column frame with upper crossbeam, which can be adjusted in height and locked in position with locknuts. The drive force is provided by a mechanical jack housed in the base cabinet. The machine include a precision load ring, 50 kN cap., penetration piston and dial gauge. The CBR test can also be performed with the following other models of loading presses: Multispeed Loading Press CBR; Multipurpose Flexural & Compression Tester; CBR Motorized Loading Press; Field CBR Hand Operated Loading Press.

Technical Specifications

- Maximum Load: 50 kN
- Max Ram Travel: 120 mm
- Horizontal Span: 270 mm
- Load Ring Cap.: 50 kN
- Dial Gauge: 30 mm travel x 0.01 div.
- Dimensions (dxwxh): 410x300x1140 mm
- Weight Approx.: 75 kg

Field CBR Hand Operated Loading Press

ASTM D1883, BS 1377:4, NF P94-078, AASHTO T193, UNI 10009

The machine is obtained by the assembly of a simple two column frame plus some components part of the Field CBR test set. This assembly represents the most practical and economical solution when both laboratory and in-situ CBR have to be performed. The assembly comprises the conversion frame, mechanical jack , adapter, load ring , adjustable penetration piston , penetration gauge and adjustable dial gauge holder. The CBR test can also be performed with the following other models of loading presses: MULTISPEED Tester; Multi-purpose Flexural & Compression Tester; CBR Motorized Loading Press; Hand Operated CBR Loading Press.

Technical Specifications

- Max Load: 40 kN
- Dimensions approx.: 360x240x1060 mm
- Weight approx.: 55 kg

CBR (California Bearing Ratio) - IBI (Immediate Bearing Index)

Bench Machines for CBR, Marshall, Multipurpose Compression & Flexure Testing

ASTM D3967, ASTM D6927, ASTM D1559, ASTM D5581, AASHTO T245,AASHTO T193, EN 12697-34, EN 12697-12, EN 12697-23

Qualitest range includes a series of small and compact compression machines that can be used for several tests:

- CBR tests on soils
- Marshall tests on asphalt
- Uniaxial and unconfined tests on soils and rocks
- Compression tests on low strength concrete, cement and ground-cement samples
- Flexure tests on beams, mortar, tiles and any other compression or flexure test performed under displacement and/or load closed loop control within machine capacity.

Each machine can be selected depending on type of test and material:

- MULTISPEED machines are generally used for CBR, Marshall and displacement control tests
- UNIFRAME machines are generally used when load rate control is also required

Multispeed Digital Automatic Universal Tester for Displacement Controlled Tests

ASTM D1883, ASTM D1559, ASTM D5581, AASHTO T245, EN 12697-34,EN 12697-12, EN 12697-23, ASTM D4123, NF P98-251-1/4, BS 598:107, BS 1377:4, NF P94-078, AASHTO T193, EN 13286-47, ASTM D6927, DIN 1996, UNI CNR 10009, CNR 30, CNR 34

Multispeed Digital Automatic Universal Tester is suitable for CBR, Marshall, Indirect Tensile, Unconfined Compression and many other displacement controlled tests. The new MULTISPEED compression tester is the ideal solution for Road testing laboratory. The 50 kN capacity and the fully variable test speed of 0.2 to 51 mm/min make it possible to perform not only the CBR and Marshall tests, but many other applications as for instance Indirect Tensile test, Quick Triaxial tests, Unconfined and Uniaxial soil testing and, in general, all test to be performed under displacement control. The machine can be equipped with analogical or digital load/displacement measurement systems as well as with the specific accessories, to suit either the field or central laboratory requirement.

Main Features

The firmware provide the digital speed control and a number of important test functions as follows:

- Closed loop speed control
- CBR and MARSHALL test speed can be selected by default.
- Other testing speeds (Custom) between 0.2 and 51 mm/min, can be easily set.
- Selection of maximum platen displacement.
- The automatic stop of the machine avoids machine and specimen overloading, thus assuring operator safety.
- Rapid approach function, to reduce the testing time.
- Rapid platen return to speed up the platen base return at the end of the test.
- Speed calibration function by firmware. The test speed is originally factory calibrated using a polynomial interpolation. A test point is provided to verify the speed with a standard tachometer.
- Emergency stop button as required by the CE prescriptions.

Technical Specifications

- Max. Capacity: 50 kN
- Test Speed Range, infinitely variable: 0.2 to 51 mm/min
- Power: DC motor 750 W
- Horizontal Clearance (distance between columns): 270 mm
- Max. Vertical Daylight (without accessories): 730 mm
- Platen Travel: 100 mm
- Overall Dimensions (lxwxh): 392 x 495 x 1213
- Net Weight approx.: 65 kg
- Alphanumeric Display 2x16 characters

CBR (California Bearing Ratio) - IBI (Immediate Bearing Index)

Multispeed Automatic Universal Tester with Touch Screen Digital Speed Control and Data Acquisition

ASTM D1883, ASTM D1559, ASTM D5581, AASHTO T245, EN 12697-34, EN 12697-12, EN 12697-23, ASTM D4123, NF P98-251-1/4, BS 598:107, BS 1377:4, NF P94-078, AASHTO T193, EN 13286-47, ASTM D6927, DIN 1996, UNI CNR 10009, CNR 30, CNR 34

The new automatic MULTISPEED Automatic Universal Tester is a versatile stand-alone machine; an ideal solution for road testing laboratories and generally for any test that requires displacement/speed control. The 50kN capacity and fully variable speed of 0.05 to 51 mm/min make it possible to perform not only CBR and Marshall tests, but also many other applications such as indirect tensile, quick undrained triaxial and unconfined/uniaxial soil tests.

Main Features

- Stand-alone automatic digital load frame
- Closed-loop speed control
- Four channel on board data acquisition
- CBR and MARSHALL test speed can be selected by default
- Speed calibration function by firmware.
- Integrated transducer calibration facility
- Infinitely variable speed from 0.05 to 51 mm/min can be easily set by keyboard
- Selection of maximum platen displacement with automatic stop
- Rapid approach and return function, to reduce the testing time

Technical Specifications

- Maximum capacity: 50 kN
- Infinitely variable test speed from 0.05 to 51 mm/min
- Power: DC motor 750 W
- Data download: using LAN port (ASCII, TXT or Controls format)
- USB port for USB memory stick data storage
- Resolution: 132000 divisions
- Sampling frequency: 50 Hz
- Horizontal clearance (distance between columns): 270 mm
- Maximum vertical clearance (without accessories): 730 mm
- Platen travel: 100mm
- Overall dimensions (l x w x h): 392x495x1213 mm
- Net weight approx.: 65 kg
- Touchscreen graphic display: 240 x 128 pixel
- Large memory data storage in USB pen drive

Accessories for CBR Loading Presses

ASTM C109, EN 12390-5, ASTM C78, ASTM C293, ASTM C348, EN 12697-34, EN 491, ASTM D1883, ASTM D1559, ASTM D1635, ASTM C99, ASTM C880, ASTM D5581, EN 12697-12, EN 12697-23, BS 1377:4, NF P94-078, EN 13286-47, ASTM D2850, BS 598, EN 196, DIN 1996, EN 12372, ASTM C120

50 and 100 kN load frames (motorized or hand operated) are suitable for a wide range of tests on different kind of materials. Each test requires a list of accessories depending on the type of test and on the reference standard.

Impact Soil Tester

Impact Soil Tester is used to obtain an indication of the degree of compaction of soil in road construction. Results can be directly correlated to the CBR test. The unique microprocessor system automatically checks all readings throughout the test and displays the fourth reading as the Impact Value. An essential trench control tool for all cable and pipe laying service contractors.

Main Features

- Results can be directly correlated to the CBR test
- An essential trench control tool for all cable and pipe laying service contractors

Technical Specifications

- Battery operated (rechargeable)
- Graphic Display 128x64 pixel
- Measuring range up to 102 IV (Impact Value)
- Dimensions (approx.): 140x140x700 mm
- Weight approx.: 6.5 kg

Permeability

Permeability Apparatus

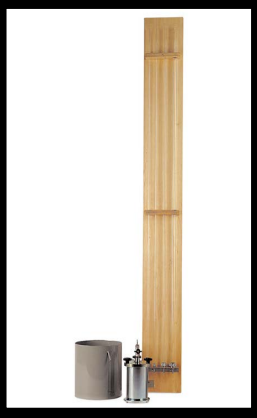
The soil permeability is very important factor to study the behavior of soil in its natural condition with respect to water flow.

Constant Head Permeability Apparatus

BS 1377:5

The constant head method is particularly suitable for relatively coarse grained soil such as sands and gravel. The apparatus consists of a Perspex permeability cell mounted on a detachable aluminium base and head. The cylinder has pressure points at different levels, which have to be connected to the manometer stand and to the constant level tank. Two models available: 75 and 114 mm cell nominal diameter. The stand comprehends 3 manometer tubes, meter scale, nipples and connecting tubing. The Constant level tank is manufactured from acrylic plastic, complete with inlet, outlet, overflow, connecting tubing and attachment for wall mounting.

Falling Head Permeability Apparatus



The Falling Head method is particularly suitable for fine-grained soils such as clay-like or silty soils in the range of $1x10^{-2}$ to $1x10^{-6}$ cm/s. The test is performed with a permeability cell, which has to be connected to a manometer stand. During the test the cell is placed in a soaking tank fit with overflow tube and the saturation is verified with the Vacuum control panel. As an option the apparatus can be completed with a suitable de-airing tank and De-airing system. The permeability cell is made of plated steel. The base and the top are clamped with stainless steel rods. Complete with 75 micron gauze. Supplied complete with 2 m tubing.

Compaction Permeameters

This Compaction Permeameter apparatus is used to control the water supply in the constant or falling head permeability tests on compacted soils. The permeameters comprise valve, water inlet or outlet, mould and collar, filter baseplate. The stand consists of an aluminium panel complete with Perspex tubes and graduated rules for falling head permeability tests and water tank adjustable in height for constant head permeability tests. Including plastic tubing and valves.

Combined Constant Apparatus

ASTM D2434

The Combined Constant apparatus is used for both constant or falling head methods for determining the soil permeability. The apparatus consists of a two section plastic chamber, a plated steel top with gaskets, a plastic funnel reservoir 550 mm max. head with reservoir upright, a 100 cc pipette, and two porous stones 63.5 mm dia. x 12.7 mm thick, 300 micron average pore size. The approx. weight of apparatus is 4.5 kg

Pinhole Test Apparatus

ASTM D4647, BS 1377:5

Certain fine-grained soils with high sodium content are highly erodible by the water flowing through them. During the test the flow of water under a high hydraulic gradient through a cavity in the soil is reproduced. The test apparatus consists of a cylindrical metal container fit one end with water inlet and the other end with an outlet connection, of a standpipe tube with scale and a stand to support the pinhole apparatus. The approx. weight of apparatus is 3.5 kg.

Permeability

Permeability Cells for Soil Samples (Flexible Wall Permeameter)

www.WorldofTest.com/permeability-cells-for-soil-samples.htm

The Permeability Cells apparatus is used to perform permeability test on normal and contaminated soil samples. The permeability cells are available either in brass for normal use or in stainless steel for contaminated materials. Top caps and pedestals are available for normal or contaminated materials. The toxic interface unit is recommended to be fitted between control panel and permeability cells to avoid toxic permeants from entering control panel. This also prevents contact of air with the permeant, thus no toxic or corrosive vapours can escape into the laboratory. The cells have to be completed with top caps and base pedestal plus the other accessories

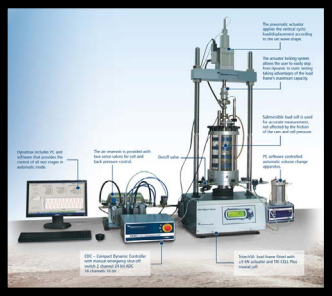
- Dimensions: 300x355 mm (h) approx.
- Weight approx.: 5 kg

Triaxial Tests

Dynamic Triaxial System for Soil Analysis – Dynatriax

ASTM D 5311; ASTM D 3999

www.WorldofTest.com/dynatriax.htm



The Dynatriax Triaxial System reproduces vibration, shock and cyclic forces applied to the soil samples in the laboratory such that the engineers have a better understanding of how a soil behaves in these conditions. It is a Servo Pneumatic system designed to perform static and cyclic stages of a Triaxial test. Base system includes a triaxial load frame 50kN (11000lbf) or 100kN (22000lbf) capacity, fitted with a double acting pneumatic actuator ±5 kN (1100lbf) or ±14 kN (3000lbf) which can generate frequencies of up to 70 Hz; data acquisition, process and control system; control Software for saturation, consolidation, stress path, monotonic and cyclic shear stages; personal desktop computer. The Dynatriax is the only pneumatic system which covers most requirements with three axis control for axial load or displacement, cell pressure and back pressure, user defined wave shapes, Automatic performance of 24 hours 7 days test to maximize the efficiency of the equipment, etc. and meets ASTM D 5311; ASTM D 3999; and other international standards. The dynamic triaxial system developed using the latest technologies and decades of experience in the dynamic soil testing field, is ideal for commercial and research laboratories. DYNATRIAX apparatus is a computer controlled servo-pneumatic systems, designed to perform the static and dynamic stages of a triaxial test. The systems manage three closed loop axis:

1- Vertical load/displacement:

-up to ± 25 mm (± 5 kN double-effect actuator)

-up to ± 15 mm (± 14 kN double-effect actuator)

2- Cell pressure up to 1000 kPa

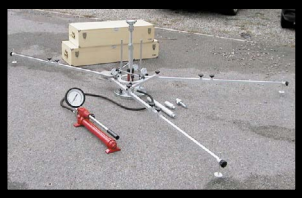
3- Back pressure up to 1000 kPa

The base systems include Tritech 50 or Tritech 100 Triaxial load frame, the Actuator, and the CDC Compact Dynamic Controller for data acquisition, control and processing.

Bearing Capacity

Plate Bearing Test - Swiss Method

www.WorldofTest.com/plate-bearing-test.htm



The Plate Bearing Test - Swiss Method determines the bearing capacity of the soil under field loading conditions. The relatively lightweight and small dimensions of the apparatus make it very easy to use and to move from one place to the other. The measuring bridge made from aluminum alloy, is very light and has telescopic extensions so it can be positioned in a few minutes with minimum effort. The remote load control and gauge is mounted on the pump for recording the load so that they don't have to be near the platen. The deformations are measured with three dial indicators so it is possible to verify the uniformity of deformation in 360° angles.

Technical Specifications	
Loading Ram kN	100
Gauge Range MN/m2	0-0.8
Dial Indicator 30x0.01mm	3
Load Plate dia.mm	300
Carrying Case Dimensions mm	1080x360x200;920x360x200
Total Weight approx (kg)	68

Skid Resistance & Friction Tester

Skid Tester

ASTM E303, EN 1341,EN 1342, EN 1338, EN 1097-8, EN 13036-4

www.WorldofTest.com/skid-tester.htm

Skid Tester is used for the measurement of surface friction properties, the apparatus is suitable for both site and laboratory applications and for Polished Stone Value tests using curved specimens from accelerated polishing tests.

The test equipment is supplied complete with:

- Additional scale for tests on Polished Stone Value specimens
- Thermometer 0 to 220°C for surface temperature measurement
- Washing bottle, 1 l cap. for surface wetting
- Tool set with case for machine assembly
- Rule for sliding length verification
- Carrying case

-Traceable certificate of conformity to ASTM E303 or EN 1097-8

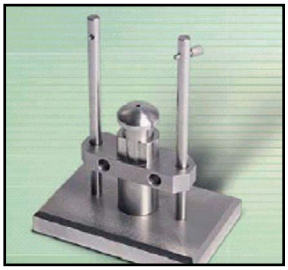
It is also possible to use it for Polished Stone Value specimens, by a metal base plate and of the small rubber sliders

Main Features:

- New low friction release mechanism of the pendulum arm for better accuracy
- Extremely light pointer for high precision results
- Slider lifting system integrated in the pendulum foot, that guarantees reliable adjustment operations
- Stiff and stout twin column structure
- Easy and reliable height adjusting system
- Integrated additional scale for tests on PSV specimens
- Complete with calibration certificate conforming to ASTM E303 or EN 1097-8

Determination of the Voids of Dry Compacted Filler

Filler Compaction Apparatus



EN 1097-4

www.WorldofTest.com/filler-compaction-apparatus.htm

The Filler Compaction Apparatus is used for the determination of the void content of dry compacted filler. It consists essentially of three components:

- A metal base size 100x150 mm
- A cylinder 25 mm int. diameter
- A plunger of a diameter allowing it to slide freely in the cylinder without lateral play.

The approx. weight of the apparatus is 3.5 kg.

Determination of Resistance to Fragmentation (Los Angeles)

Los Angeles Abrasion Tester

ASTM C131, EN 1097-2, EN 12697-17

www.WorldofTest.com/losangelesabrasion.htm

The Los Angeles Abrasion Tester is used to determine the resistance and fragmentation of Aggregates. The testing method determines the degradation when subjected to abrasion, attrition, impact and grinding. The sample is placed in a rotating drum. After a specific number of rotations the sample is removed and examined for wear. Our Abrasion tester consists of a rolled steel drum having an internal diameter of 711mm and an internal Length of 508mm. The drum is rotated at a speed of 31-33 rpm with an electric motor. It also has an automatic counter, which can be pre-set to the required number of revolutions of the drum. The unit is supplied without the abrasive charge, which has to be ordered separately depending on the standard in use. The above standard model can be upgraded with a sound proof and protection cabinet confirming to CE and has to be specified at the time of order as it is to be factory installed. The cabinet is manufactured from sheet steel lined internally with soundproofing material to reduce noise and electric safety device, automatically stops the rotation of the drum when opening the door. The control panel is fitted externally. The Tester confirms to ASTM C131 and EN 1097-2.

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