COMPACTİON FACTOR APPARATUS

Consists of two conical hoppers attached on a cylinder, and everything is fixed on a robust steel frame. Each hopper is equipped with a hinge for a Quick Release mechanism. The apparatus is designed to perform the test in a more precise and accurate way. The compacting factor is the ratio between the weight of the concrete which is partially compacted in the cone to the weight of the fully-compacted concrete in the cylinder. Supplied with a tamping rod include complete with one plasterer's trowel and one tamping rod, 16mm Dia x 600mm long, one end rounded.

CONCRETE AIR INTERMENT METER

With a pressure tight flanged cylindrical measuring bowl of (0.005- 0.007) cubic meter capacity for maximum size of aggregate 38mm. With a pressure tight flanged cylindrical measuring bowl of 0.01 cubic meter capacity for maximum size of aggregate 75mm. With a pressure tight flanged cylindrical measuring bowl of 0.1 cubic meter capacity for maximum size of aggregate 150mm. Spaces: Rubber pressure bulb with tube & gasket for vessel. This apparatus consists of the bowl is fitted with a removable flanged conical cover assembly with the help of a seal, an air valve and a pet cock. A transparent cylindrical stand pipe Calibration cylinder with, spring clamp, Trowel, Tamping rod, (16mm dia & 600mm long) Straight edge, Rubber mallet
BLAİNE’S AİR PERMEABİLİTY APPARATUS

Permeability cell 12.5mm internal diameter
Manometer ‘U’ type mounted with a built in stop cock, Perforated disc, Plunger
Rubber stopper, Rubber tube (30cm) long. Full Packet of 12 filter paper discs
3 Bottles of (100cc) dibutylthalate liquid.
Punch to cut filter paper discs. Non-perforated disc. Suction bulb

LE CHATELİER FLASK & LE CHATELİER MOULD

Made from borosilicate glass. The flask is 243mm in total height
Bulb of 90 mm dia of 250ml approximate capacity. Long neck flask top funnel (50mm dia) with a ground glass stopper. Upper portion is graduated from 18 ml to 24ml with 0.1ml graduation. The bottom neck 11mm internal dia. Bottom of the neck 1ml capacity is marked in between there is 17ml capacity bulb.

Small split cylinder mould (30mm internal dia. And 30mm height). On either side of the split cylinder, two parallel indicating arms with pointed ends are attached. Two glass plates and a lead weight. Set of 6 moulds supplied in a cardboard

CAMBER BOARD
Aluminum size 24 mm x 45 mm of thick gauge and 3 meters long
DIGITAL CEMENT LENGTH COMPARATOR.

ASTM C151; ASTM C490; BS 1881:5; BS 6073 ; EN 12617-4 ; EN 1367-4

Cement Shrinkage Test Se..Length Comparator..Digital Length Comparator (250 mm Gauge Length).25x25x285 mm Two Gang Prism Mould. Steel Insert for 25x25x285 mm Two Gang Prism Mould. Reference Rod 160 mm EN 12617–4 Test set is used to determine the accelerated soundness (autoclave method) and length changes of 40x40x160 mm and other sizes of cement prisms. The set consists of length measuring frame, two or three gang steel mould according to the related standard, steel inserts for moulds and reference rod. The set is available in two models one with 0,002mmx10mm analogue dial gauge, the other one with 0.001mmx20 mm digital dial gauge.

VICAT NEEDLE APPARATUS

By measuring the setting time for concrete/cement via the penetration resistance method (Vicat Apparatus), the time the concrete/cement can stay fresh can be determined. This time indicates the period the mix can stay in the mixer before pouring it into the moulds/frameworks. The apparatus consists of a metallic frame bearing a freely movable rod with a cap at top, 2 vicat mould, split type and glass base plate and one set of needles one each initial needle, final needle and consistency plunger. Vicat mould 60mm top dia, 70mm bottom dia and 40mm height Vicat Mould 70mm top dia, 80mm bottom dia and 40mm height each vicat mould (set of 2)
**VE-BE CONSISTOMETER**

Size 380mm long and 260mm wide, resting upon elastic support at a height of about 305mm. with start/stop switch, cord and plug. swivel arm with funnel and guide sleeve. A graduated rod (division of scale on the rod record the slump of the concrete in 0.1 millimeters . plastic disc... Sheet metal container with lifting handles. Slump cone open at both ends with lifting handles.

Tamping rod of size 16mm dia and 600mm long, rounded at one end

**TAMPİNG ROD**
This is used for compacting concrete into cube moulds. This rod is made of steel, 16mm diameter, 600mm in length & rounded/bullet shaped at one end

**CUBE MOULDS & CYLİNDRİCAL MOULDS**

Cube Mould, cast iron (100 x 100 x 100 )mm  
Cube Mould, cast iron, (150 x 150 x 150 )mm,  
Weight- 7.5 kg -14 kg  
Mould, Cylinder, Cast iron, 15cm dia x 30cm height  
Mould, Cylinder, Cast iron, 10cm dia x 20cm height  
Mould, Cylinder, Cast iron, 30cm dia x 60cm height
MORTAR PENETROMETER

Barrel housing a calibrated spring and a stem graduated from 0-70 kg x 1 kg. Interchangeable penetration needles of areas 645, 323, 65, 32 and 16mm sq. Maximum penetration of mortar 25mm. Needle shanks are marked at every 12.5mm. Wooden carrying case

CONE PENETROMETER

Movable bearing rod. Cone 145mm. long and 75mm. dia. A dial graduated in mm with rack and pinion is provided for measuring the penetration. Conical container: 150mm internal dia X 180mm deep and a platform.

CAPPİNG SET
CONCRETE PERMEABILITY APPARATUS

Brass-gunmetal cell of squares cross section mounted on a stand and a pressure chamber. Copper tubing and T-connector mounted on the stand with sleeve packed valve and rubber hose pipe with end connections. The cell assembly consists of:
- One base plate
- One metal funnel
- One top plate
- A pressure tube
- Measuring cylinder 500cc
- Compressor

Size: 150mm dia X 150mm high

REBOUND CONCRETE TEST HAMMER DİGİTAL- JAMES-USA

Consists of a barrel in which is housed a hammer mass attached to an impact spring which slides on a guide bar. A plunger is attached to the guide bar which is pressed against the surface to be tested. As the piston is pressed against the surface to be tested, on reaching the compressive strength, the hammer mass is released and rebounds to a certain extent (according to the strength of the surface) which is indicated by a rider on a calibrated scale. A lock button fixed on the body of the hammer locks the rider in place and the rider can be recoated to zero position by using the same button. The equivalent compressive strength can be computed from the chart supplied. Each hammer is calibrated against a standard test hammer, and is suitable for specimen of compressive strengths 100 - 700 kg/cm. The instrument, complete with a grinding stone for polishing the test surface, is supplied in carrying case.

Power: (220-240)v 50/60 Hz 1ph
UNIVERSAL SPECIAL CURING TANK

24 Hour cycle from time of mixing. - Controlled 35 °C and 100 °C ± 2 °C Curing Temperature for concrete. - Controlled 27 °C ± 2 °C Curing Temperature for grey cement. The tank has been designed to accommodate 150mm/70.6mm fully insulated, complete with a hinged lid, heater, thermostat and re-circulated pump. Provision of two removable racks allowing free circulation of water around each mould. The pump, drain valves and electrical equipment are housed in a compartment located at one end of the tank. The Tank is heated by an immersion heater under normal conditions and refrigeration system for grey cement the temperature is controlled at 35 °C and 100 °C ± 2 °C / 27 °C ±2 °C, expect for the 15 minutes after immersion of the freshly made specimens. Inside stainless steel material. Insulation material. Dimension Inside 120 x 60 x 60 cm. and covering.

FLOW TABLE MOTORIZED & GILMORE NEEDLE APPARATUS

FLOW TABLE. The flow table consists of a 30cm. dia ground and polished steel plate with three inscribed annular circles. 7, 11 and 19cm. dia. The table top is arranged for a free fall of 12.5mm by a cam action. with one brass conical mould, 65mm internal dia at base and 40mm internal dia. at top, height of the mould 90mm. Power: (220-240)v 50/60Hz 1ph

GILMORE. A base with a vertical shaft and two horizontal arms. The lower arm is adjustable for height. 1 No. Initial Needle 2-3 dia and 100-200 gram 1 No. Final Needle 2-3mm dia. 450gram 1 No. Glass base plate.
DIGITAL UNIVERSAL TESTING MACHINE 400 KN CAPACITY
400KUNIVERSAL HYDRAULIC TESTING MACHINE VERTICAL TYPE

Load Cell (Pressure Transducer): to read load strain gauge type with accuracy of 1%
as with 20000 counts from 0 to maximum load capacity.
Encoder: to measure displacement – rotary type giving linear motion with least
count 0.04mm Control panel: Electronic measuring console with serial port to give
digital and graphical output Software: Menu driven, windows type for both output
and outputs results especially for tensile strength, ultimate load, yield point, cross
head travel / extension on line graph Power: 220-240v 50/60 Hz,1ph

EN ISO 6892-1,
EN ISO 15630-1 and 2, EN ISO 7500-1.

400 kN capacity fully automatic Electromechanical Universal Testing Machines are multi purpose
versatile machines which satisfy the requirement of R&D laboratories, university laboratories, institute
laboratories and quality control laboratories for tensile, compression flexural tests under load or
displacement control for a wide range of materials Electromechanical Universal Testing Machines can
be used for tensile test on any material i.e (metal, plastic, textile, wood) by using suitable accessories.

Those machines can also be used for general compression, flexural, test on steel, soil, concrete,
cement, asphalt and similar materials, by using suitable accessories.
These Testing Machines consist of base containing the transmission components and holds two robust columns connected by upper cross head and digital graphics data acquisition and control system. The upper cross head can be adjusted to set the vertical test space for different tests. User can adjust the vertical test space by also lower crosshead moved by an electromechanical system with a single recirculating ball screw, powered by an servomotor

**Data Acquisition & PC Software**

Digital display graphics data acquisition and control system are designed to control the machine and process the data from encoders, Load cells, installed on the Electromechanical Test Machine frame. It has graphical TFT display of 240x128 pixel and show both load and displacement. The digital unit sends all these information to PC and accepts commands of Start, Stop, and Test Speed etc.

<table>
<thead>
<tr>
<th>Machine Class</th>
<th>Class 1 starting from</th>
<th>Class 1 starting from</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1% of the capacity</td>
<td>1% of the capacity</td>
</tr>
<tr>
<td>Encoder Resolution</td>
<td>0.001mm</td>
<td>0.001 mm</td>
</tr>
<tr>
<td>Encoder Accuracy</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>220-240V, 50-60Hz, 1 phase.</td>
<td>220-240V, 50-60Hz, 1 phase.</td>
</tr>
</tbody>
</table>
SKID RESISTANCE AND FRICTION TESTER

EN 1097-8, 1338, 1341, 1342, 13036-4; ASTM E303. The Skid Resistance and Friction 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 machine must have the following Pointer with 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. Calibrated to BS 1097-8 or ASTM E303. The pendulum have to be supplied with: Additional scale for tests on Polished Stone Value specimens. Thermometer 0 to 220°C for surface temperature measurement. Washing bottle, 11ml cap. for surface wetting.

PYCNOMETER Graduated in mm on each limb and capacity of 5 and 10 ml

LASER DISTANCE METER

Chargeable battery & charger (hand held) Measuring distance up to 100m single handed Laser accuracy 1-2mm. $180^\circ$ inclination censer for leveling & height tracking. Built in compass to determine the heading. Automatic end – piece correction & Pythagoras functions. Line back lit LCD20 reading memory.
The Automatic range of 3000 kN, capacity four column compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are the results of continuous research to upgrade the testing machines with the latest technologies and conform to the latest standards EN 12390-3, 12390-4, BS 1881 and ASTM C39 in terms of its technical properties taking into account client requirements. These also meet the requirements of CE norms for health and safety of the operator.

Testing machines are supplied with EN compression platens as standard. Machines also comply with the ASTM C39 standard when used together with suitable platens.

Tests can be performed by either on BC 100 Unit or on a computer with using free FORE Software. The advantages of performing tests on computer with using FORE Software, such as reporting, graphical output, etc., can be seen at pages 155 and 156.

The FORE Automatic range of 3000 kN, capacity four column compression testing machines allow inexperienced operators to perform the tests. Once the machine has been switched on and the specimen is positioned and centered by the help of centering apparatus. The only required operations are:

- Setting test parameters, including pace rate (only required when the specimen type is changed).
- Pressing the START button on the control unit
- The machine automatically starts the rapid approach, when the specimen touches the upper platen the rapid approach is ended and starts loading at the pace rate that selected by user and stops once the specimen fails.

- Automatically saves the test parameters and test results
All models are supplied in Class 1 starting from 50 kN as standard EN 12390-3, 12390-4, BS 1881 and ASTM C39. FORE range of Semi-Automatic and Automatic Machines can be upgraded with option UTC-0210 special calibration Class 1 starting from 1% of the full range. This exceptional performance enables the machines to be used for a considerable number of applications including:

Automatic Hydraulic Power Pack, dual stage, controlled by BC 100 is designed to supply the required oil to the load frames for loading. The power pack is very silent, even at full load and can load the specimen between 1 kN/sec. to 20 kN/sec, with an accuracy of ±5%. A rapid approach pump is supplied as standard. A safety valve (maximum pressure valve) is used to avoid machine overloading.

The UTC-4840 Automatic Hydraulic Power Pack, dual stage, controlled by BC 100 has the same specifications with UTC-4830 except for high oil capacity. UTC-4840 is used on frames that has bigger pistons. Maximum working pressure of the system is 430 bar.

DUAL STAGE PUMP

1. Low pressure gear pump
2. High pressure durable variable output pump

On the dual stage pump, a high delivery low pressure gear pump is used for rapid approach, while low delivery high pressure radial piston pump is used for test execution. Rapid approach facility of the machine shortens the time interval from when the piston starts moving until the upper platen touches to the specimen, this facility saves a great amount of time in a busy test laboratory.

MOTOR

The motor which drives the dual pump is a 0.75 kW AC motor which is controlled by an Omron J7 motor inverter. The variation in the oil flow is executed with the variation of the rotation speed of the motor.

DISTRIBUTION BLOCK

Distribution block is used to control the oil flow direction supplied by the dual stage pump and the following hydraulic components are fitted to it:

a - Solenoid valve
b - Safety valve (maximum pressure valve)
c - Transducer
d - Low pressure gear pump

e - High pressure radial piston pump

**OIL TANK**

The tank includes enough oil to fill the mechanism which pushes the ram during the test. The level and oil temperature can be seen on the indicator fitted to the tank. The oil capacity of the tank is 20 lt. for UTC-4830 and 32 lt. for UTC-4840. Hydraulic motor oil, number 46, must be used.

BC100 TFT unit is designed to control the machine and processing of data from load-cells, pressure transducers or displacement transducers. All the operations of BC100 are controlled from the front panel consisting of a 800x4-color resistive. The unit can be configured as using for two frames or one frame with three displacement transducers. Easy to use menu options. It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless manner to activate the option or enter a numeric value to set the test parameters. Its specimen setting sub-menu lists different specimen types including but not limited to cube, cylinder, block, beam, beam double upper bearers, cube splitting, cylinder splitting tensile, paving block splitting tensile and kerb flexure. The BC100 digital graphic display is able to draw real-time “Load vs. Time” or “Stress vs. Time” graphics.

BC100 unit offers many additional unique features. You can save more than 10000 test results in its internal memory. BC100 unit has support for various off-the-shelf USB printers, supporting both inkjet. Thanks to its built-in internet protocol suite, every aspect of BC100 device can be controlled remotely from anywhere around the World.

**Main Features**

- Pace rate control from 1 kN/sec to 25 kN/sec for compression of concrete or 50 N/sec to 2.4 kN/sec for cement.
- Can control 2 frames
- Can make test with load control.
- Real time display of test graph.
- CPU card with 32-bit ARM RISC architecture
- Permanent storage capacity up to 10000 test results
- 4 analog channels (depending on the application it would be adjusted to be simultaneous / or not at for different frame load cells or pressure transducers
- Programmable digital gain adjustment for load-cell, pressure transducers, strain-gauge based sensors, potentiometric sensors, voltage and current transmitters.
1/256000 points resolution per channel
10 data per second sample rate for each channel
Ethernet connecting for computer interface
800x480 resolution 65535 color TFT-LCD industrial touchscreen
4 main function keys
Multi-language support
3 different unit system selection; kN, ton and lbf
Real-time clock and date
Test result visualization and memory management interface
Remote connection from through ethernet
USB printer support inkjet and **LASER PRINTERS** (ask for compatible models)
Maximum pressure valves to avoid machine overloading
Piston travel limit switch
Emergency stop button
Software controlled maximum load value

**Data Acquisition & Control PC Software**

The Automatic Compression machine can be controlled (Start, Stop commands) by a **COMPUTER** with the software (given free of charge by **This software provides data acquisition and management for compression, flexure and splitting tensile test throughout the test execution. The advanced functions for data base management provide an easy navigation of all saved data. The test results certificate includes all descriptive information. Therefore, test parameters can be set and details about the test carried out such as client details, test type, specimen type, user info and other information required can be entered and printed out as well as test report and graph.**