ENTEK INSTRUMENTS is a leading pioneer for manufacturing & supply of Testing Equipment for construction building material since 2012. Always having a wide vision to Develop & Design equipments with modern technique a team of engineers are on continual endeavor & innovation. Entek is exporting its equipment in the brand name "**ENTEK**" to around 42 countries directly & also through authorize dealers and representatives. We also supply Civil and Mechanical Lab testing machines adhering to International Specification such as (BS En, ASTM, AASHTO, DIN, NF, IP ,BIS). Apart from our wide range of equipments such as Soil Testing in the Field; Lab Tests for Soil; Geo-technical testing; Fresh Concrete Testing or Strength Testing; NDT for Concrete; Cement Testing; Asphalt Testing; Testing Aggregate properties, Steel Testing & General Laboratory Equipment. The Company follows the Standard Quality Management System as mandated for its registration with ISO 9001:2008 certificate. Our main clientele consist of major Construction companies carrying our Road & Highway construction, commercial buildings & high scrapers, Rail Infrastructure & Bridges, Oil & Gas, Dams & Hydro Projects, Civil Engineering Colleges, Mining Industry & Irrigation sectors.

ENTEK INSTRUMENTS is always engrossed to give its clients continuous sales and service support as this had always been an investment to build a brand value in both domestic and international markets. All products are carefully handled through our quality management system to meet it as per standard specifications. Testing and calibration at each step is performed before final packing and dispatch from our warehouse to the designated consignees. Since inception, what has changed, is the diversification of our Product Range. What hasn't changed, however is our commitment to precision and quality, because

ENTEK
The Quality Instrument Line

Customized solution

Quality Euipments as per the International Standards and also the requirements of its customers and shall ensure their satisfaction at all times through continual improvement with the effectiveness of Quality Management System.

INDEX

- □ Road and Highway Construction
- □ Construction and Building Materials
- □ Civil and Mechanical Engineering
- □ Testing Training
- □ Civil and Mechanical Engineering
- □ Lab Set-up
- □ Calibration
- □ Machine Repair/Up gradation

AGGREGATE TESTING EQUIPMENTS

Mineral aggregates are fundamental materials that are used in all areas of construction industry such as concrete, mortars, bituminous mixtures, surface treatments for roads, airfields and other trafficked areas, railway ballast, unbound and hydraulic bound mixtures in civil engineering works and road constructions, which comprise our modern world as buildings, highways, dams, railways etc. Thus it is crucial to determine the properties of aggregates according to related EN, ASTM, AASTHO, BS standards.

In the majority of cases the EN Standards correspond to other reference Standards as for example ASTM and AASHTO and, apart from a few exceptions there is almost no difference in the specification of test apparatus.

Determination of Flakiness

Bulk Density, Voids and Bulking

Specific Gravity & Water Absorption Sampling

Mechanical Properties of Aggregates

Abrasion Testing

Crushing and Grinding

Tile Abrasion

THICKNESS GAUGE

IS 2386 (PART-1) & BS 812
Specification:
Used for determining the Flakiness Index of Aggregates. It Consists of a frame with a sliding panel. The Panel has slots of Different Standard Lengths and Widths accurately Cut.

LENGTH GAUGE

IS 2386 (PART-1) & BS 812
Specification:
Consists of a hard wood base with vertically mounted metal studs as Specified in the IS 2386 (Part-1) & BS 812.

GRID SIEVES

EN 933-3; NF P18-561; UNI 8520-18; NLT 354
For determination of particle shape Flakiness Index & Elongation of Aggregates are suitable only for hand sieving. these are made using aluminium frames and stainless steel rods of 5 mm dia. and comply fully with EN933-3:1997. Make ENTEK size slot width 50.0, 40.0, 31.5, 25.0, 20.0, 16.0, 12.5, 10.0, 8.00,
6.30, 5.00, 4.00, 3.15, and 2.50 mm (set of 14 pcs)

FLAKINESS SIEVE SET

BS 812-105.1
Aggregate particles are considered as flaky when their thickness is less than 0.6 of their mean sieve size. Aggregate to be classified is separated into seven sieve fractions from 6.3 to 63 mm and each fraction is examined separately. The dimensions of each sieve comply with the relevant international standard, manufactured from heavy gauge steel sheet and coated with electrostatic paint. The accuracy of the slot size is better than 0.1 mm.
Flakiness index sieve set consists of 7 sieves.
For sample preparations 6.3, 10, 14, 20, 28, 37.5, 50 and 63 mm aperture size test sieve should be ordered seperately.

	Slot Size (WxL)	Weight (approx.)	Dimensions
A	4.9x30 mm	1.5 Kg	300x220x80 mm
B	7.2x40 mm	1.6 Kg	320x240x80 mm
C	10.2x50 mm	1.9 Kg	300x220x80 mm
D	14.4x60 mm	2.0 Kg	360x260x80mm
E	19.7x80 mm	2.2 Kg	390x280x80mm
F	26.3x90 mm	2.6 Kg	420x300x80 mm
G	33.9x100 mm	2.9 Kg	470x320x80 mm

SHAPE INDEX CALIPER

EN 933-4, DIN 4226, CNR NO.95, NLT 354

Shape Index Caliper is used for the determination of the shape factor of aggregates. Measurement range is 200 mm and graduated with 0.05 mm increments.

Dimensions : 450X150X50 mm Weight (approx.) : 0.4 Kg

INDEX APPARATUS (FLOW COEFFICIENT OF FINE AGGREGATES)

Efflux Index (Flow Coefficient of Fine Aggregates) apparatus is used to obtain information about the shape and the angularity of grains of fine aggregates.

The flow coefficient of an aggregate is the time, expressed in seconds, for a specified volume of aggregate to flow through a given opening, under specified conditions using a standard apparatus.

Efflux index (flow coefficient of fine aggregates) apparatus consist of two funnels with different opening, cylindrical hopper, metal stand with a shutter and metal container.

Dimensions (in mm) : 150 x 180 x 410 Weight Capacity : 5 Kg

AVERAGE LEAST DIMENSION

Average Least Dimension (ALD) device complete with ALD box - adjustable spacer – fine aggregates 2-9 mm, 1 x spacer set-fine aggregates spare case, spacer set extension 10-18mm.

Bulk Density, Voids and Bulking

CYLINDRICAL MEASURES

IS 2386 (PART-III) & BS 812

Specification:

It Determines Bulk Density or unit weight of aggregates. It consists of a Calibrated Cylindrical Measures of sheet iron with handles. Capacities available 3, 5, 7, 10, 15, 20 & 30 liters.

Complete with One Tamping Rod 16mm dia x 600mm long both ends rounded.

DENSITY BASKET

IS 2386 (PART-III) & BS 812.

For Density Tests on Aggregates as per Procedure Laid Down.

Specification:

Made of Brass / GI with Stainless steel Wire Mesh 6.3mm / 4.75mm size Ruggedly Constructed, Approximately 20cm dia x 20cm high. Complete with Handle.

Note: Customize sizes also available

entekindia@gmail.com

SPECIFIC GRAVITY AND WATER ABSORPTION OF AGGREGATES

IS 2386 (PART III) & BS 812

The buoyancy balance system consists of a rigid support frame, incorporating a water tank mounted on a platform.

A mechanical lifting device is used to raise the water tank through the frame height immersing the specimen suspended below the balance.

The balance supplied may also be used as a standard weighing device, thus providing a versatile and comprehensive weighing system in the laboratory

Specification:

The outfit comprises of

- Electronic balance, capacity 5 kg. Least Count 0.1gm, provision is made in this balance to suspend density basket under material pan. This balance is mounted on an angle iron frame stand. — 1 No.
- Density basket. — 1 No.
- Air tight container to suspend density basket. — 1 No.
- GI Tray of area not less than 650 cm sq. — 1 No.
- Absorbent cloths 75cm x 45cm. — 2 Nos.

Sampling

RIFFLE SAMPLE DIVIDER

IS 1607-1960

Used for sampling Aggregates, Ores, Refractory .

Specification:

It consists of a sheet metal box mounted on Legs and fitted with a series of chutes of equal width which discharge the material alternatively in Opposite Directions into separate pans. The chutes of the Riffle are steep enough to allow rapid flowing of the Materials.

The unit offered are supplied in a range of sizes from 7 mm to 75 mm

RIFFLE SAMPLE DIVIDER

BS812

Used for Sampling Aggregates, Ores, Refractory

Specification:

For the rapid preparation of samples, i.e. division into two representative portions. Detailed below is a range of dividers, each constructed of heavy gauge sheet metal with particular attention given to reinforcement of the partition to maintain the accuracy of the slot dimensions.

The unit offered are supplied in a range of sizes from 7 mm to 75 mm

Model No.	Slot Width	No. of Slots (Ltrs.)	Approx. Capacity	Weight Kg.
A	7	12	0.3	1.5
B	13	12	2.0	6.0
C	15	12	2.0	8.0
D	19	10	4.0	9.0
E	25	10	4.0	11.5
F	30	10	4.0	17.5
G	38	8	11.0	17.5
H	50	8	14.0	22.5
I	64	8	18.0	27.0
J	75	8	22	3.5.0

SAMPLE SPLITTER

ASTM C 136

Specification:

Designed for the reduction of test samples which are too large in volume to be conveniently handled. It handles any material from Sand sizes up to dia. 108 mm. Each Chute bar is 12 mm wide so that openings of 12·24·36·48-60·72-84-96-108 mm are possible. Supplied complete with two collecting pans. Clam shell hopper: 30 litres capacity. Very sturdily constructed, it is totally Cadmium Plated for rust protection.

Mechanical Properties of Aggregates

AGGREGATE CRUSHING VALUE APPARATUS

IS 2376 (PART-IV) & BS 812:111

For Measuring of Resistance of Aggregate to Crushing.

Specification:

The Aggregate Crushing Value (ACV) test set provides a relative measure of the resistance of an aggregate to crushing under a gradually applied compressive load. Each set consists of steel cylinder, plunger, base plate, cylindrical measure and tamping rod. All parts of the apparatus are powder coated or galvanized steel, heat treated and ground before manufacturing to make it durable and reliable.

Specification:

Consists of M.S. Cylindrical Container 150mm +/-0.5mm dia x 130mm to 140mm high with base plate 200 to 230mm/sqr x 6mm thick. A Plunger of 148mm +/-0.5mm dia x 100 to 115mm high. Supplied complete with Tamping Rod, 16mm dia x 600mm long, both ends rounded, 1 no. Metal Measure 115+/- 0.5mm dia x 180 +/- 0.5mm high.

Note:

On Special Request Aggregate Crushing Value Apparatus having 75mm dia or 300mm dia cylinder size can be supplied.

AGGREGATE IMPACT TESTER WITH BLOW COUNTER

IS 2386 (PART IV) 9377 & BS 812:112

It is robustly designed to determine the aggregate impact value (AIV) of aggregates which provides a relative measure of the resistance of an aggregate to sudden shock or impact. The counter fitted to the machine automatically records the number of blows delivered to the sample, manufactured from heavy duty plated steel to resist corrosion.

Specification:

The instrument consists of a circular base with Two vertical guides. The Hammer of weight 13.75 +/-0.25kg can be raised to fall freely down the vertical guides. The Height of fall can be adjusted through 380+/-5mm. The Hammer is provided with a locking arrangement.

The hammer falls freely to the base and is removable for employing. Supplied complete with metal measure 75mm dia x 50mm high

(For specimen preparation) and Tamping Rod 230mm long x 10mm diameter.

A Blow Counter to count the number of strokes is fitted on top of the equipment.

ACCELERATED POLISHING MACHINE

- High ground steel main spindle running in precision sealed ball bearings additionally protected by a labyrinth seal spindle axially loaded to eliminate end play
- Adjustable 3 phase motor speed control with adjustable timing belt drive, reducing power consumption and improves control
- Inverter drive to motor for precise speed control
- Digital display preset timer and revolution counter
- Robust welded steel mainframe, standing on adjustable pads
- Specimens manufactured and easily removed from precision machined moulds
- 14 Specimens located on 'Road Wheel' by rubber rings and held by simple side fixing
- Water gravity fed from high level tank through calibrated flow meter
- Used abrasive and water collected in easily removable tray
- Loaded tyre raised and lowered to the running surface by mechanical lifting device
- Protection by covers and guards may be easily removed for maintenance

Specifications

Road Wheel Speed	320 ± 5 rev min -1
Tyred Wheel Set Diameter mm	200 ± 3
Tyred Wheel Set Width mm	38 ± 2
Tyred Wheel Hardness	(69 ± 3) mm IRHD
Applied Load on the Wheel	(725 ± 10) Newton
Electrical Supply	230v / 110v. 50/60 Hz Single Phase 13 amp
Dimensions mm (WxDxH)	810 x 790 x 1230
Water Tank Height cm	155
Palletised Dimensions mm (WxDxH)	1200 x 800 x 1280
Weight (max) Kg	210

SKID RESISTANCE AND FRICTION TESTER STANDARD

EN 13036-4 (Also Conforming to EN 1097-8, ASTM E 103) 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 equipment is supplied with:

- Additional scale for tests on polished stone value specimens
- 6 rubber sliders for site use, complete with conformity certificate
- Thermometer -10 to +110°c for surface temperature measurement
- 1 litre washing bottle, for surface wetting
- Tool set with case, for machine assembly
- Rule for sliding length verification

Specification:

Rocker weight	:	1500 +/- 30 g
Distance between rocking centre & center of gravity	:	410 +/- 5 mm
Positive static pressure on pavement	:	22.2 +/-0.5 kn
6 rubber slider and base plate dimension (mm)	:	700×360×700

Abrasion Testing

LOS ANGELES ABRASION TESTING MACHINE

IS 2386 (PART IV) ASTM C 131, AASHTO T-96

Used for testing Crushed Rock, Crushed Slag, Crushed and Uncrushed Gravel for Resistance to Abrasion.

Specification:

The machine consists of a hollow cylinder mounted horizontally on a study frame on Pillow block bearings. There is an opening which can be closed with a dust tight cover to facilitate charging and discharging the drum with the material under test. A detachable shelf which extends throughout the inside length of the drum which catches the abrasive charge and does not allow it to fall on the cover. The drum is rotated by an electric motor through a heavy reduction gear at a speed of 30-33 R.P.M. A revolution counter is fitted to the frame. A tray is supplied for collection of the material at the end of the test. Complete with Abrasive Charge consisting of a set of Twelve hardened steel balls, approximately 48mm dia. Suitable for operation on 440 V, 3 Phase, 50 cycles, A.C. Supply.

DIGITAL LOS ANGLES ABRASION TESTING MACHINE

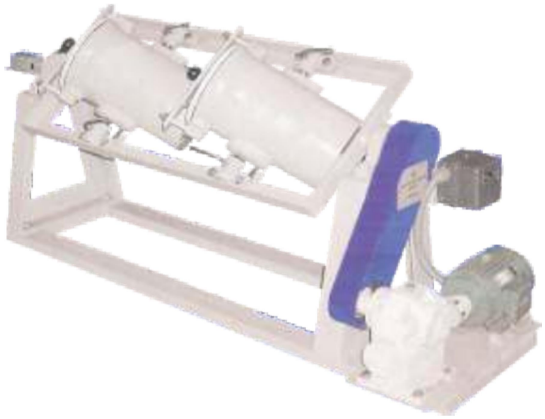
EN 1097-2, 12697-17, 13450; ASTM C131, C535; AASHTO T96
The machine consists of an electronic control unit and a rolled steel drum having an inside diameter of 711 mm and internal length of 508 mm. The drum is rotated at a speed of 31-33 r.p.m. The internal shelf provided with the machine confirms to ASTM, AASHTO and EN standards. The machine is equipped with an automatic counter, when the preset revolution count is reached, the machine will stop automatically. The drum is equipped with an interlock device which allows the operator to lock the drum into position for easy loading/unloading of the sample. Power consumption: 750W

DORRY ABRASION TESTING MACHINE

BS812
For Testing Aggregates for Resistance to Abrasion.
Specification:
It consists of a disc rotating about a shaft connected to a reduction gear box coupled to a motor. The disc rotates at 28-30 RPM. Under the rotating disc is a tray with an outlet to facilitate the removal of sand. Two Conical Hoppers are mounted on a bracket fixed to the circular tray. An arrangement is made for start and stop the flow of sand. Two containers with weights are supplied to keep the specimens pressed against the rotating disc. Suitable for operation on 220 V, 50 cycles, A.C. Supply.

DEVEL ATTRITION TESTER

ASTM D2-33 & IS 2386 (PART IV)
For The Determination of Resistance of Aggregates to Wear by Abrasion.
Specification:
It consists of two hollow cylinders closed at one end and provided with Fitting covers at the either end. These cylinders are mounted an a shaft at angle of 300 with the axis of rotation of the shaft. The shaft rotates at 30-33 RPM. Through a reduction gear operated by a motor and is provided with a revolution counter. Complete with Abrasive Charge consisting of 12 Nos. Hardened steel Balls of 48mm dia. Suitable for operation on 440 Volts, Three Phase, 50 Cycles, A.C.supply.
Note : Option of Digital Preset Counter can be provided at an Extra Cost

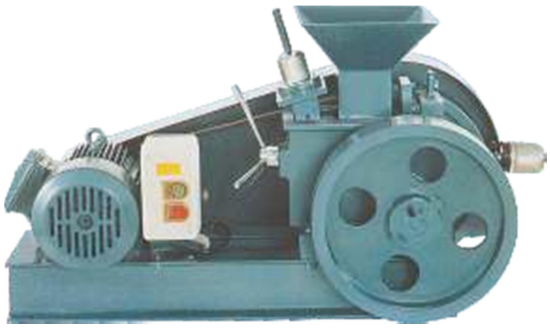


Crushing and Grinding

JAW CRUSHER

Features:

- Compact and rugged for laboratory and small production units
- Designed for speed crushing
- Discharge opening adjustment range: 3-10mm
- Manganese steel jaws adjustable up to 6 mm opening
- 250 kg materials can be crushed in approx eight hours
- Supported with strong steel frame
- Voltage: 440 V, Three Phase A.C. Supply



Laboratory Jaw Crusher Size		Feed Size	Discharge Size	Motor	Capacity
4" x 6"	100x150mm	25 to 30mm	6mm to 20mm	3 H.P . 3 Ph.	150-200Kg/hr.
6" x 8"	150x200mm	45 to 50mm	10mm to 22mm	5 H.P . 3 Ph.	300-400Kg/hr.
8" x 12"	200x300mm	65 to 70mm	12mm to 25mm	7.5 H.P . 3Ph.	400-500Kg/hr.
12" x16"	300x400mm	90 to 100mm	15mm to 30mm	10 H.P . 3 Ph.	600-750Kg/hr.
15" x24"	375x600mm	100 to 150mm	25mm to 55mm One Point Setting	15 H.P . 3 Ph.	1 Ton/hr.

PULVERISER

- Designed for grinding materials to produce fine mesh samples Ideal for use in Cement and Chemical Industries
- Self contained grinder with a rotating disc having planetary movement in vertical plane
- Reduces about 450g quartz type material to 100 mesh in one minute
- Dia. of grinding wheel: 175mm
- Material of grinding wheel: High Carbon Steel having 53-60 HRC hardness
- Input of material: ‘‘6mm
- Suitable for operation with 440V, Three Phase, A.C. supply

Tile Abrasion

TILE ABRASION TESTING MACHINE

IS 1237, IS 1706

Specification:

This is used for determination of resistance to wear for Cement & Concrete flooring tiles. Tiles specimen of size 7.06 cm x 7.06 cm is pressed face-wise under specific load on a grinding path and abrasive powder is evenly spread on the rotating grinding disc the second parallel side of the tile is subjected to wear for similar number of rotations. The wear of the tile is measured on a thickness gauge specifically made for the purpose. The machine consists of a disc rotating at a speed of 30 R.P.M. in a circular tray. A bracket is provided to hold the specimen. A counter balance lever loads the specimen. Load applied is 30 Kgf. A funnel is fitted to evenly spread abrasive powder on the grinding path. A Pre-set Counter automatically stops the machine after 22 revolutions. This counter is Re-adjustable. The machine works on 440 V A.C. Three Phase electrical supply. On request machine to operate on 230 V A.C. Supply can also be supplied.

BITUMEN / ASPHALT TESTING EQUIPMENTS

Bituminous materials, a by-product of the oil distillation process, look set to remain as a consti- tuent material of road paving for some considerable time to come, being used to withstand the flexural and compressive stresses caused by traffic hence the main area of usage of bituminous mixtures is in road construction. The title of bituminous mixtures is called Asphalt in USA. Bituminous mixtures consist of essentially two ingredients, aggregate and binder. The major difference between asphalt and concrete is that bitumen and bituminous materials are used as binder in asphalt

- Softening Point
- Distillation
- Penetration
- Crushing & Grinding
- Binder Extraction
- Viscosity
- Paving Mix Tests,
- Marshall Stability & Compaction
- Ductility
- Surface Regularity
- Flexure
- Core Drilling
- Compaction
- Asphalt Ovens
- Asphalt Density

RING AND BALL APPARATUS

IS 1205 1985, IP 58/63 & ASTM D 36

This apparatus is used to determine Softening point of Bitumen. It is that temperature at which a sample of bituminous material loaded by a 9.5mm dia steel ball, drops a specified distance when heated under specified conditions.

Specification:

The apparatus consists of steel bracket with a sliding plate support. That support has two holes of 10mm dia on which a ring and ball guide can be kept. A central hole on this plate is for inserting thermometer. Supplied with a glass beaker approximate 600ml, high and a hand stirrer and 2 Nos. 9.5mm dia steel balls.

RING AND BALL APPARATUS (ELECTRICAL)

ASTM D36, AASHTO T 53, BS 2000 Electrical heating, with a Heater and Energy Regulator, Suitable for operation on 230V, 50Hz, Single Phase, A.C. supply. Each unit is supplied with bath of heat resistant glass and the following.

A	Tapered Rings	2 Nos.
B	Ball Centering Guide	2 Nos.
C	Steel Ball, of 9.5mm dia.	2 Nos.
D	Ring Holder	1 No.
E	Electric Heater (Hot Plate)	1 No.

Essential Accessories:

F	Thermometer IP 60° C, Range : -2° C to 80° C	
G	Range: 30° C to 200° C	

RING & BALL APPARATUS (SEMI AUTOMATIC)

Ref. Standards - IS:1205, ASTM D 36, E 28, IP 198, IP 58, AASHTO T53, BS:2000, EN 1427

For determining the temperature at which a sample of bituminous material loaded by a 9.5 mm dia steel ball, drops a specified distance when heated under specified conditions.

Ring and Ball Apparatus

The new design of Ring and Ball Apparatus is compact user friendly and has better aesthetics. It has magnetic stirrer with heating facility and digital display of temperature, the heating can be adjusted through knob.

Suitable for operation on 220V, 50Hz, single phase, AC supply. Each unit is supplied with a bath of heat resistant glass and the following:

A	Tapered Rings	2 Nos.
B	Ball Centering Guide	2 Nos.
C	Steel Balls of 9.5mm dia	2 Nos.
D	Ring Holder	1 No.
E	Electric Heater (Hot Plate)	1 Nos.

FRAASS BREAKING POINT APPARATUS

EN12593

Fraass Breaking Point Apparatus

A Stainless Steel Plaque

B Frass Apparatus (pack of 10) Dry ice maker

The Breaking Point Apparatus is used to determine the breaking point of solid and semisolid bitumen.

The Fraass Breaking Point is the temperature at which bitumen first becomes brittle, as indicated by the appearance of cracks when a thinfilm of the bitumen on a metal plaque is cooled and flexed in accordance with specified conditions.

The apparatus consists of stainless steel plaque, cooling and bending apparatus, thermometer IP 42C (-38°C/+30°C), plate and stand.

WATER IN BITUMINOUS MATERIAL (DEAN-STARK)

ASTM D 95,D244

Specification:

Used to determine the water in petroleum products or bituminous materials by distilling them with volatile solvent. The equipment comprises electric heater with thermoregulator, glass still, support stand, condenser, receiving trap, clamp.

DISTILLATION FOR CUT BACK BITUMEN

The apparatus consists of a heavy gauge shield, lagged with asbestos cover in two parts and wire gauge. The shield is supported on a platform with chimney arranged for fitting to stand. Complete with one distillation flask of 500 ml and one 100 ml crow receiver but without thermometer. Electric hot plate heated with energyregulator. Thermometer ASTM 8°c- 2 to +400°c SUBD. 1°c.

STANDARD PENETROMETER

ASTM D5, BS 2000

Used to determine grade of bitumen. The penetration tests determine consistency of bitumen for the purpose of grading. Depth in units 1/10 of millimeter to which a standard needle having a standard weight will penetrate vertically in a duration of five seconds at a temperature of 25° C determines penetration for gradation.

Specification:

It consists of a vertical pillar mounted on a base provided with leveling screws. The head, together with dial plunger rod a cone (or needle) slides on a pillar and can be clamped at any desired height. A rack and pinion and pointer assemble provides fine adjustment of needle or cone tip to sample. It incorporates a clutch mechanism. Which makes reading of penetration and subsequent resetting a simple and accurate operation. The dial is graduated in 400 1/10 and the millimeter subdivisions and the needle pointer against figures makes easy reading.

Supplied with a bitumen penetration needle, ring weight one each 50 gms. and 100 gms. two sample containers.

Accessories:

Penetration cone for empirical estimation of penetration of lubricating grease, petroleum jelly etc.

DIGITAL PENETROMETER

IS 310, 1203, 1448, IP 60, 49, 50 ASTM D5, 217, D637, BS 2000-49

Same as but the unit is compact with timer to control duration of penetration. The instrument is provided with lead screw gear arrangement, Leveling screws, Spirit level and a digital preset timer.

SEMI-AUTOMATIC PENETROMETER

BS 1377:2; NF P94-052-1; CEN ISO/TS 17892-6, 17892-12

The Semi-Automatic Penetrometer for Liquid Limit consists of a cast iron base with course and fine leveling screws, a digital penetration measurement gauge 0.01 mm resolution/readibility and an automatic penetration timer unit.

The is equipped with a digital, 99 second timer, which can be set to the standard 5 second free-fall time or to some other setting for customized tests. When engaged the timer will allow the needle to free fall into the sample for the specific time interval and then lock the needle from advancing while providing a direct reading of the test results.

320 g weight should be added to the 30° angle cone to get a total weight of 400 g for the shear strength test.

Semi-Automatic Penetrometer for Liquid Limit supplied complete with:

- Automatic Penetration Timer Unit
- 30° Penetration Cone
- Sample Cups, 3 pcs. Aluminium, Ø55 mm x h:35 mm.

REFLUX EXTRACTOR 4000 GMS

ASTM D 2172·AASHTO T 164

Specification :

The simple apparatus working on the same operation principle of consisting of cylindrical glass jar supporting two metal cones of stainless steel cloth and a metal condenser on top of the jar. Supplied complete with 100 filter papers & wire gauge, Hot Plate.

Note: Spare Cylindrical glass jar can be supplied at an extra cost.

HARDNESS TESTER FOR MASTIC ASPHALT

IS 1195

Specification:

For determining the hardness number of Mastic Asphalt for flooring. It consist of an internally insulated cabinet to the base of which is fitted a water bath having two taps. The bath is heated by an immersion heater and the temperature is controlled with the thermostat at 35 ° +/· 0.5° C. A 6.5mm dia pin is loaded on the specimen by means of a lever to give a 31.7 Kg weight. A dial gauge 0.01 x 25 mm is provided to record the penetration of pin into the specimen.

STRIPPING VALUE APPARATUS

For determining stripping value of bituminous mixes having aggregate size: 1.0mm to 75micron.

Specification:

A circular tray rotates in a vertical plane at a rate of approximately 100 R.P.M. by an electrical geared motor. 4 bottles of approximately 400 cc are mounted on this circular tray at an angle of 900. To each other with their mouth towards center of the tray. A time switch is provided. Suitable for operation on 230 V A.C. Single Phase.

CENTRIFUGE EXTRACTOR (HAND OPERATED)

ASTM D2172, AASHTO T-58, T-164.

Specification:

The Instrument is used for determination and checking of Bitumen percentage in Bituminous mix, the mix is added with a solvent and dissolved bitumen is removed by centrifugal action. Consists of a removable Aluminum rotor bowl, Capacity 1500 gms.

With a cap and tightening nut. The bowl assembly is mounted on a vertical shaft, which protrudes from a cast housing. This shaft and thus the bowl is rotated fast manually by enclosed gears in the cast body and handle. Solvent is introduced during the test through the holes in the cap of the housing. A drain is provided to collect dissolved Bitumen coming out of the rotating bowl and getting collected in the housing.

CENTRIFUGE EXTRACTOR (MOTORISED)

ASTM D2172 AASHTO T-58, T-164

Specification:

Centrifuge Extractor, Electrical Operation, Capacity 1500g, with a Dimmer stat for speed control from 2,400 to 3,600 rpm. Suitable for operation on 230V, 50Hz, Single Phase, A.C. supply.

Optional Extra:

A Filter Paper Discs, Set of 25

CENTRIFUGE EXTRACTOR (MOTORISED)

ASTM: D2172 AASHTO: T-58, T-164

Specification:

Used for the determination of bitumen percentage in bituminous mixtures. It consists of a removable, precision machined aluminium rotor bowl (accessory 1500 or 3000 g capacity), housed in a cylindrical aluminium box. The separate control panel incorporates an electronic card fitted with AC drive that automatically drives the bowl speed rotation ramp from 0 to 3600 R.P.M. as requested by Standards, with automatic fast stop bowl rotation at the end of the test. Supplied complete with speed regulator and digital display monitoring the frequency. Power supply: 230 V A.C. Single Phase.

FILTERLESS CENTIFUGE EXTRACTOR

- The equipment is in accordance with EN 12697-1, EN 13108
- Centrifuge is designed for proper separation of the filter quickly without fillers or binders containing suspended sediment mixtures
- Is not required no filter, no dispersion of the material, which ensures maximum accuracy so
- Solution is poured into a funnel and falls in container dia test. 70x200mm that rotates, due to centrifugal effect, the liquid rises vertically, leaving the pot filler and mineral particles
- The centrifuge is supplied complete with aluminum tank, two sites of 2mm and 0.063mm
- Rotation speed is 11,500 rpm and extractive capacity is up to 100 g of filler per test
- 230v, 50hz, 600w

Viscosity

KINEMATIC VISCOMETER BATH

This bath is designed and developed under the strict supervision of our experienced professionals in accordance with the international quality standards. Our offered bath is thoroughly checked on various parameters to ensure zero-defect. This bath is widely used in national laboratories and pharmaceutical industries.

Features:

- Intelligent signal sampling for accurate data measuring and parameter reading
- Accurate viscometer for improving experimental efficiency
- High precision digital display
- Ideal for controlling the temperature accuracy
- Durable glass bath for optimum heat preservation
- Desktop based all-in-one design for easy operations and portability
- Electric stirrer for ensuring uniform temperature of bath
- Easy cleaning and drying of viscometer tubes

Other Information:

The accompanying absolute kinematic viscosity bath are utilized to measure supreme thickness of consistency reviewed clearing bitumen (IS:73:2006) at 60°C as per IS:1206 (part II) (like ASTM D 2171), which utilizes a vacuum slender viscometer.

Complete absolute viscosity testing equipment adjusting to IS: 1206 (part II) method for testing tar and bitumen materials: determination of absolute viscosity with the accompanying segments:

Consistent Temperature Bath - a suitable shower for drenching of no less than 2 vacuum fine viscometer tubes with a computerized temperature controller. The precision of the temperature in the shower will be + 0.1oc all through the shower.

Vacuum System - capable of keeping up a vacuum inside + 0.05 cm of the coveted level the system will comprise of vacuum pump, dampness trap, vacuum controller, drain valve, all interconnecting tubing/channeling, and some other frill as required to finish the vacuum framework.

Thermometer for Bath - mercury in glass, run 37.8 to 82°c, and graduations of 0.2°c

Timing Device - a stop watch is fit of perusing up to 1 second.

Cannon - manning vacuum viscometers - viscometer holder and silicone stopper. Size 12 and size 13 (one every) [size 12 is suitable for testing VG-10 and size 13 is suitable for testing VG-20, VG-30, and VG-40 bitumen.

SOLVENT RECOVERY UNIT

On-flammable solvent liquids used for the binder extraction test can be successfully recovered using the solvent recovery unit.

The recovery unit consists of two stainless steel chambers, one for the dirty used solvent and the other for the cleaned recovered solvent. Solvent in the left-hand side chamber is distilled by an electrical heater and then passes through a water cooling system and drops into the second chamber ready for re-use. A temperature switch automatically stops the heating elements when the recovery process is completed. The unit is supplied complete with 10 m plastic tubing, tube clamps, sieve insert 0.6 mm opening and one lid.

The solvent recovery unit is supplied complete with:

- ☐ Plastic tubing, 10 m
- ☐ Tube clamps
- ☐ Sieve insert, 0.6 mm
- ☐ Lid

Specifications:

Dimensions	:	400 x 320 x 650 mm
Weight (approx.)	:	17 Kg
Power	:	1200 W
Max. Tempature	:	150°C

SAY BOLT VISCOMETER

ASTM D88, D244, AASHTO T72

Say bolt Viscometer, Electrically Heated, ASTM D88, D244, AASHTO T72 for the empirical measurement of Say bolt Viscosity of petroleum products at specified temperatures between 70°F and 210°F. This is also used for determining the Saybolt Furol Viscosity of bituminous materials at temperatures of 250, 275, 300, 350, 400 and 450°F. It comprises one each of Cylindrical Oil Cup, Universal Tip, Furol Tip, Bath Fitted with immersion Heater mounted on a stand. Dimmer stat for temperature control, Stirrer with shield. Complete with insulated handle and thermometer support receiving flask, withdrawal tube, filter funnel, thermometer support for cup and circular spirit level. Suitable for operation on 230 V 50 Hz, Single Phase, A.C.

Optional Extras:

A	Brass Oil Tube	J	ASTM Thermometer Type 20F Range: 134°F to 148°F
B	Receiving Flask, 60ml	K	ASTM Thermometer Type 21F Range : 174°F to 188°F
C	Universal and Furol Tip (Set of 2)	L	ASTM Thermometer Type 22F Range : 204°F to 218°F
D	Filter Funnel	M	ASTM Thermometer Type 77F Range: 245°F to 265°F
E	Thermometer Support	N	ASTM Thermometer Type 77F Range: 295°F to 315°F
F	Heating Coil	O	ASTM Thermometer Type 78F Range: 345°F to 365°F
G	ASTM Thermometer Type 18 F Range : 66°F to 80°F	P	ASTM Thermometer Type 80F Range : 395°F to 415°F
H	ASTM Thermometer Type 19 F Range: 94°F to 80°F	Q	ASTM Thermometer Type 81F Range: 445°F to 465°F
I	ASTM Thermometer Type 19 F Range: 120°F to 148°F		

SAYBOLT TWO-TUBE DIGITAL VISCOMETER

ASTM D88, AASHTO T72

The Saybolt Viscometer is used to determine empirical measurement of Saybolt Viscosity of petroleum products at specified temperatures.

The viscometer can be used for temperatures between 21 to 99°C (70 to 210°F) the viscometer includes water- oil bath, stirrer, cooling coil, electric heater with digital thermo regulator, furol orifice, universal orifice, thermometer support and 2 x 60 ml glass Saybolt Viscosity Flask.
Viscosity thermometer set consists of 6 thermometers with the temperature ranges; 19 to 27°C, 34 to 42°C, 49 to 57°C, 57 to 65°C, 79 to 87°C (250 mm length) and 95 to 103°C where each thermometer with 0.1°C subdivisions.
Filter funnel, withdrawal tube and thermometer set should be ordered separately.
Supplied complete with:
Universal orifice Furol
orifice Thermometer
support Heat transfer oil,
5 lt
Key Saybolt Viscosity Flask, Glass, 60 ml, 2 pcs.
: Saybolt Two-tube Digital Viscometer 220-240 v 50-60 Hz
A : Filter Funnel with Wire Mesh and Clip
B : Withdrawal Tube
C : Saybolt Viscosity Thermometer set, 6 Pcs.
D : Saybolt Viscosity Flask, Glass, 60 ml

Dimensions	: 450 x 300 x 550 mm
Weight (approx.)	: 10 Kg
Power	: 750 W

STANDARD TAR VISCOMETER

Electrical Heating with Immersion Heating Elements and Dimmer stat for controlling the temperature. Suitable for operation on 230V, 50Hz, Single Phase,
A.C. supply. Supplied complete with 10mm cup and valve.
A
B
C
D

Optional Extras:
E Thermometer IP 8C, Range: 0° to 45° C
F Thermometer IP 9C, Range: 40° to 85° C
G Thermometer IP 10C, Range: 76° - 122° C

MARSHALL STABILITY TEST APPARATUS

ASTM: D 1559 T- 62. BS 598-107
Marshall Apparatus Consists Of:

- Robust construction
- 50KN capacity
- Rate of travel 50.8mm/min
- Safety cut-off switch

It consists of body housing, a geared screw jack and motor drive mechanism suitable for operation on 230 V, 50Hz, Single Phase, A.C. supply.

A	MARSHALL LOAD FRAME		1 No.
B	Breaking Head Stability Mould, with a dial gauge (having 25mm travel and 0.01mm least count), for flow measurement		1 No.
C	Compaction Mould, Steel cylindrical		3 Nos.
D	Base Plate		3 Nos.
E	Extension Collar		3 Nos.
F	Compaction Pedestal, Manual Operation, Comprising a steel plate capped on a wooden post. A Mould Clamp is fitted to the top of the plate .		1 No.
G	Compaction Hammer, satisfies BS 598. The hammer has a 4535 g sliding weight with a free fall of 457 mm	2 Nos.	
H	Load Transfer Bar		1 No.
I	Paper Discs, Non absorbent, 11 cm diameter pack of 100 No.		1 Pkt.

AUTOMATIC MARSHALL STABILITY TEST MACHINE

A	Automatic Marshall Stability Test Machine, 50 KN, 220-240 V 50-60 HZ
B	Breaking Head (Stability Mould) 4”
C	Linear Potentiometric, Displacement Transducer, 25x0.001 mm with Bracket for A and B
D	Indirect Tensile Splitting Device for Compacted Bituminous Samples 100 mm (4") Dia.

EN 12697-34, 12697-23, 12967-12, ASTM D1559, D5581, D 6927; AASHTO T245
The 50 kN capacity Automatic Marshall Stability Test Machine is used to determine the maximum load and flow values of bituminous mixtures. The machine comprises of a robust and compact two column frame with adjustable upper cross beam. The unit is a bench mounting compression frame with motor and worm gear housed within the base unit. The speed of the lower platen can be adjusted between 6 mm/min to 60 mm/min using the data acquisition and control unit. For safety, the up and down travel of the lower platen is limited the use of limit switches. Rapid adjustment of the platen is controlled using the up and down buttons on the front panel of the machine. The machine can be hand operated by a lateral hand wheel for calibration purposes.

The measuring system consists of a 50 kn capacity strain gauge load cell fitted to the upper cross beam to read stability values and the 25 x 0.001 mm linear potentiometric displacement transducer fitted to the breaking head. The Automatic Marshall Stability Machine is suitable for testing 6" dia. 4" dia. specimens conforming to ASTM D5581

The Automatic Marshall Stability Test Machine is supplied complete with:

- Load cell, 50 kn
- Llinear potentiometric displacement transducer with bracket, 25 x 0.001 mm
- PC software
- Connection cable
- Hand wheel for manual control
- Breaking head, 4

Main Features

- Automatically calculates flow and stability values
- Can make test with displacement and limited 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, 2 channels are active for marshall test
- 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 lb
- Real-time clock and date
- Test result visualization and memory management interface
- Remote connection through ethernet
- USB flash disc for importing test results and for firmware
- USB printer support for inkjet and laser printers (ask for compatible models)
- Camera support for real-time video recording during test (ask for compatible models)
- Free of charge PC software for the test control and advanced report generation

MIXER WITH HEATING JACKET

A 6-litre Mixer Used in conjunction with an Iso Mantle, is suitable for mixing samples of asphalt.
Bench mounting Mixer, 6 liter nominal capacity. Supplied with bowl, beater and whisk. Motorised with two speed operated on 230 V A.C., Single Phase.

entekindia@gmail.com

DUCTILITY TESTING APPARATUS

IS 1208-1058, ASTM D 113, IP32, 55, AASHTO T 51

Designed to test three specimens simultaneously. The machine consists of a carriage moving over a lead screw. An electric motor driven reduction gear unit ensures smooth constant speed and continuous operation. The entire assembly is mounted with a stainless steel lined water bath completely encased in metal bound hardwood. It is equipped with an electric pump circulator and heater. The temperature is controlled thermostatically. Two rates of travel i.e. 50 mm/min and 10 mm/min are provided. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.

Complete With:

A Ductility Mould, with Base Plate 3 Nos.

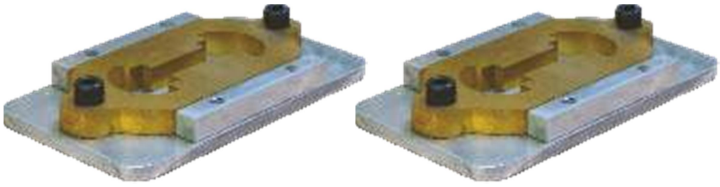
B Thermometer IP 38° C, Range: 23° C to 27° C

REFRIGERATED DUCTILITY TEST

With refrigeration system and micro-processor based digital temperature controller. Ductility is defined as distance in cm to which a standard briquette of bitumen can be stretched before the thread breaks. The briquette is stretched at a rate of 50 mm/min. ± 2.5 mm per minute at a temperature of 27°c ± 0.5°C. The machine is having built in refrigeration system to work a below ambient temperature up to 8°C in tropical conditions. The machine will operate at 27°C with control accuracy of ± 0.5°C as per the requirement of IS. The apparatus consists of water bath with a heater, and a circulating pump to maintain uniform water temperature. One half of the briquette moulds is fixed in a fixed plate in the water bath, the other half of the briquette mould is fixed to a carrier which slides over a rotating threaded shaft with a clutch, the motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath. A pointer fixed to the carrier moves over. A scale graduated from 0-100 cm x 1 mm fixed on the bath with "0" (zero) of the scale towards the fixed plates side. The rotating shaft has 2 speeds of travel for the bracket, 5 cm/min. And 1 cm/min. Selected by a clutch. Water bath inside is of stainless steel with insulation and water drain cock . A heater with is fitted inside the water bath. The temperature is controlled by dual display microprocessor based auto tuning PID digital temp. Indicator cum controller. Control switches for motor, stirrer, heater and indicator lamps are fixed at a convenient place on the water bath. Complete with three briquette moulds and one base plate, all supply single phase. As per IS 1208.

ELASTIC RECOVERY MOULD

A set of three moulds as per IRC-SP-53-2002 made of brass / gunmetal with the shape, dimensions and tolerances. The ends B & B` are known as clips, and the parts A & A' are known as sides of the mould. The dimensions of the mould shall be such that when properly assembled it will form a briquette specimen having the following dimensions.
Total length : 75 ± 0.5 mm



A = 36.5 ± 0.1 MM
B = 30.0 ± 0.1 MM
C = 17.0 ± 0.1MM
D = 10.0 ± 0.1 MM
E = 10.0 ± 0.1 MM

Surface Regularity

STRAIGHT EDGE (3 Meters)

A straight edge approximately 3 meters in length may be used to determine lateral surface regularity of a road surface. This lightweight apparatus is made up of mild steel or aluminum as per customers requirement and is equally supported at both ends producing a set height between the road surface & the beam. Any vertical irregularity is measured using incremented wedges.

TRAVELLING BEAM DEVICE

The Travelling Beam Device is used to check for any irregularities in both concrete and bituminous road surfaces. A sensing unit comprising a wheel connected to an indicator provides a magnification of 4:1. Deviation of the surface from a straight-line is shown on a scale calibrated in increments of 2 mm in the 0-10 mm range and 5 mm increments in the 10-25 mm range. It comprises a manual dye marker which is used to mark irregular surface sections when found.

BENKELMAN BEAM

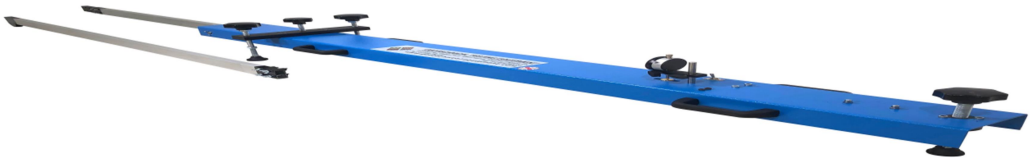
AASHTO T 256

- Lightweight Aluminium construction
- Ease of Transportation
- Unique Telescopic Design Simplifying Field set up
- Compact, Thereby reducing the amount of storage space needed

Benkelman Beam utilizes the technique of using balanced beam in conjunction with a suitable vehicle to measure road flexure

The improved Benkelman Beam is a convenient, accurate device for measuring the deflection of flexible pavements under moving wheel loads. Operating on a simple lever arm principle, the unit consists. Supplied with carrying case

Note: Benkelman Beam with Digital Dial Gauge also available at an extra cost



Core Drilling

PAVEMENT CORE DRILLING MACHINE

Specification:

The Pavement Core Drilling Machine is petrol engine powered. Road/Building drill has been designed specifically for the purpose of drilling test cores from or holes in, Roads, Airport Runways, Bridges etc.

The Machine comprises of two vertical support columns, which carry the Drill head/Engine assembly with the help of screwed spindle.

The 5 HP petrol engine with pulley mechanism works with minimum vibrations. The double precision bit advances with screwed spindle, which provides a constant, accurate drill pressure, minimum core chipping & long bit life.

The complete assembly is supplied on a rigid metal base with leveling facility and is suitable for vertically down coring applications only.

Bit Diameter	Varying from 25mm to 150mm
Maximum depth of core	700mm
Drill Speed	475 & 800 R.P.M.
Guide Shafts	50mm dia
Screwed Spindle	20mm dia
Water Tap	12mm
Drill Wrenches	Included
Water Tank	Included
Levelling Pads	Included

AUTOMATIC COMPACTOR FOR BITUMINOUS MIXES

BS 598-107

- Rugged construction to withstand hard work
- Fully automatic and easy to operate
- Uniform compaction
- Automatic Preset Blow Counter

Specification:

The Automatic Compactor eliminates the laborious process of manual compaction and an even degree of compaction is achieved. The driven mechanism lifts the weight of 4.5kg and drops it through a correct height of 457 mm.

The rammer foot is removable, which facilitates preheating. A compaction pedestal with specimen holder is fixed to the base. An Automatic Blow counter enables the number of blows to be present before each test and automatically stops the machine on completion. Suitable for operation on 230 V, 50 Hz, Single Phase, A.C. supply.

Note: Also available for modified compaction test (10.2 Kg.)

PRD MOULD BS 590:10

This mould, vertically split on one side foreseen of clamp attachment to the box plate. Plated against corrosion, is utilized for determining the degree of compaction of Bituminous pavements for quality control purpose

LOSS ON HEATING / THIN FILM OVEN

BS 2000·45 ASTM D6, D 1754 AASHTO T 47, T 179

This dual purpose oven is designed to determine the loss in weight of bitumen and flux oils (Loss on Heating test) and the effect of heat and air on asphaltic materials (Thin Film test).

The unit is heavily insulated and has a double glass door for viewing the test chamber thermometer and samples.

Temperature is controlled at 163° C ± 1° C by means of a variable temperature controller and thermostat. Two rotating platforms are supplied with each oven: One accepts 9 standard penetration cups for the loss on heating test, the other accepts two 140mm diameter test pans for the thin film test. The platforms are rotated at 5 to 6 rpm by an external motor.

(A)

Chamber Dimensions: 350 x350 x350 mm (LxWxH)

Series Loss on Heating / Thin Film Oven Operating Voltage 230V A.C. Single Phase

(B)

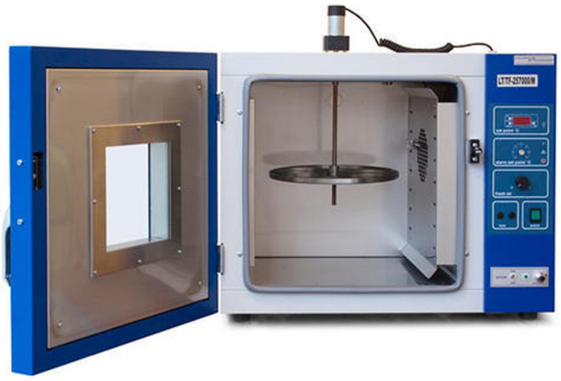
Aluminium Test Pan 140 mm diameter x 9.5mm deep.

ASPHALT CONTENT TESTER

Asphalt Content Tester is used to determine the asphalt content of hot mix asphalt(HMA) and pavement samples by removing the asphalt in an ignition furnace by means of sample heating not by means of solvent. Standard followed is ASTM D6307 & EN 12697 39. Sutiable for operation on 415 V 50 Hz 20 ampere three phase ac power supply. Maximum weight specimen is 4000 gms, suggested weight of specimen is 1000 gms to 1500 gms. Balance provided is 10 Kg x 0.1 gms, working temperature of furnace is 800° C, standard working temperature is 538° C. Testing time is 20-30 minutes. Size of the furnace: 350 mm length x 430 mm width x 300 mm height.

ROLLING THIN FILM OVEN

The superpave PG binder specification looked for tests which would closely simulate field performance. Hotmix asphalt binder experiences significant aging during the manufacturing and laying process. Investigating this phenomenon within a laboratory environment, with a repeatable and simple test is very useful within the design process. The rolling thin film oven (RTFO) test is used to measure the effect of heat and air on a moving film of semi- solid asphalt binder. The results of this treatment are determined from measurements of the binder properties before and after the test. Repeatability of the test is directly related to the accuracy with which the oven temperature can be maintained and the reproducibility of the thermal rise time of the system. Superaccurate P.I.D. Controller



- Low thermal mass RTD
- Over temperature safety cut-out
- Double walled temperature cabinet
- Unique temperature control suppression

Construction	: Double-walled construction, 16-gauge welded steel exterior, 18-gauge corrosion resistant stainless steel interior
Insulation	: 89 mm of high density fiberglass insulation
Controller	: Programmable microprocessor UL listed
Temperature display	: Measured temperature – 4 digit red LEDs Temperature set point – 4 digit green LEDs
Thermal Protection	: Prevents oven from overheating in the event of control failure
Temperature Range	: Ambient to 200°c
Vents	: Double exhaust vents for dissipation of expended volatile from specimen
Air Flow Adjustment	: Needle valve (long taper)
Air Pressure Gauge	: Range 0 – 100 PSI
Heat Exchanger	: 5/16 inch dia. copper tube
Electrical Supply	: 230 V AC 50 Hz single phase
Dimensions	: 1016x660x915mm (wxdxh)
Estimated Weight	: 100 Kg

ASPHALT MIXER THEORETICAL DENSITY METER

Asphalt Mixer theoretical density meter as per ASTM D 2041-03. This equipment is used for determination of theoretical density of asphalt mixer by vacuum method for application such as asphalt mixer design, road condition investigation ,calculation of porosity and compactness in road construction quality management. This equipment has a main body fitted with a vacuum gauge of Wika make Germany, 2 vacuum containers made of acrylic pipe & a vibratory table under with complete control panel. The Vobratory table operates on manual and automatic mode to release the entrapped air from the asphalt sample kept inside the vessels. It is suitable to work on 230 VAC single phase 50Hz. Vacuum range 0-100 KPA (0-750 mm Hg) vibration loading is 10 kg. no of samples tested is 2.

CEMENT TESTING EQUIPMENTS

Cement is the binder used to create concrete and mortar. The manufacture of cement requires stringent control and a number of tests are performed in cement plant laboratories to ensure that the cement is of the desired quality that conforms to the requirements of the relevant standards.

The most important use of cement is the production of concrete and mortar, which are the combination of cement and an aggregate to form a strong building material that is durable in the face of normal environmental effects. The current Standards have drawn on the know-how of the various national bodies in order to arrive at a unified Standard. We propose a vast range of machines that satisfy, practically all requirements.

- Sampler
- Fineness
- Consistency & Setting-Time
- Flow and Workability of Mortar and Lime
- Soundness of Cement and Hydrated Lime
- Tensile and Flexural Strength
- Moulding & Sample Preparation
- Building Lime, Grout & Mud Testing
- Cement Compression / Flexure

entekindia@gmail.com

CEMENT SAMPLER

IS 7535 1986, ASTM C 183, AASHTO T 127

Specification:

This is a brass tube approximately 53cm long and 2.8cm I.D. with a wooden handle. Total length approximately 73cm. The tube has the sharp angular edge which conveniently pierces cement bags. An air hole of approximately 3mm dia is drilled on the tube near handle. Total sample collected at one time is 300 cm approximately.

Fineness

BLAINE'S AIR PERMEABILITY APPARATUS

IS 4031, 5516, 1727 & 4828, ASTM C-204, BS 4359-2

Specification:

Designed to find out specific gravities of semi liquids like mud and other liquids having densities in the range 0.8 to 2.5. It has a stainless steel bam calibrated specific gravities from 0.8 to 2.5. A stainless steel cup with lid and overflow vent is fitted on one side of the beam. A counter weights with cursor slides over the graduated scale. The beam has a knife-edge at centre which rests in a fulcrum fitted in the stand. Leveling screws and spirit level are fitted to the stand.

Spares & Accessories:

Punch to cut filter paper discs. Non-perforated disc. Suction bulb, Mercury.

DIGITAL BLAINE AIR PERMEABILITY APPARATUS

For the Air Permeability measuring of cement specimen. The testing conforms with the requirements of ASTM C204, BS 4359-2 Specifications:

Inside diameter of permeability cell	φ12.7mm
Height of sample in the cell	15mm
Perforated disk	35
Diameter of the hole	φ1.0mm
Thickness of disk	1.0mm
Power	220v 50Hz 25w

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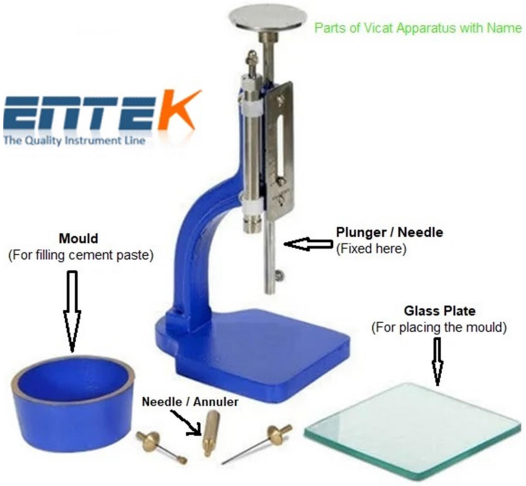
VICAT NEEDLE APPARATUS WITH DASHPOT



IS 4031, 2645, 2542 (PART-1), 1727, 5513 & 712. BS 12, 146, 915, 1370, 4027, 4246, 4248, AASHTO T 129, E 131.

This instrument is used for determining the normal consistency and setting times of cement and 'A' class limes.

Specification:

The apparatus consists of a metallic frame bearing a freely movable and with a cap at top, one vicat mould and glass base plate and one set of needles one each initial needle, final needle and consistency plunger. It comes with a dashpot which facilities gentle lowering of the needles.

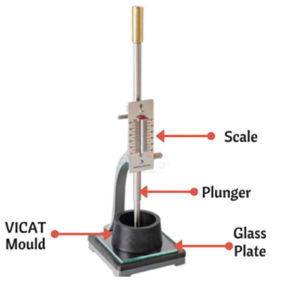
Accessories :

Mild steel base plate 5 inches x 5 inches.

Fulcrum mould, brass, 80mm i.d. base dia x 70mm i.d. top dia, 40mm height.

Note: 1) Normally set of needles and mould which meet is requirements as per I.S. 5513 are supplied. While ordering please specify the specification code of the instrument required.

2) Vicat needle apparatus for determining consistency of hydraulic cement. Gypsum plaster, lime etc.
As per ASTM C 187-58 C 472-62 C 110-58, IS 2542 (Part-1) can also be supplied.



RING MOULD

IS 712 1956, ASTM C 187

Consists of mould 100mm x 5mm. Deep and a glass base plates. Used to determine soundness of hydrated lime

GILLMORE NEEDLE APPARATUS

ASTM C 266

This instrument is used for determining the time setting of hydraulic cement.

Specification:

A base with a Vertical shaft and Two horizontal arms. The lower arms is adjustable for height. 1 no. Initial needle 1/12-inch dia ¼ lb. Wt. 1 no. Final needle 1/24 inch dia. ¼ lb. Wt. 1 no. Glass base plate. Complete as above.

Flow and Workability of Mortar & Lime

FLOW TABLE

IS:6932 (PART VIII), ASTM C 230, BS 4551:1

Flow Table is used for determining the work-ability of building limes.

Specification:

The flow table consists of a 30 cm dia polish steel plate with 3 engraved annular circles 7, 11 and 19cm dia. The table top is arranged for a free fall of 12.5mm by a cam action. Supplied complete with one brass conical mould, 65mm i.d. at base and 40mm i.d. at top, height of the mould 90mm.

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FLOW TABLE (MOTORISED)

IS 1199-1959, ASTM C-124, AASHTO-T-120.
It is used for determining the flow of cement concrete.

Specification:

Consists of a steel table top 76.2cm (30 inch. Dia) Finely machined. The integral cast ribs are designed for support and strength. The stand is fabricated out of cast iron and is of study construction. Holes for mounting in foundations are drilled in the base plate. The ground and hardened steel cam is designed to fit and drop the table by 12.5mm. Electrically operated to raise and drop the table top, approx. 15 times in 15 seconds, Suitable for operation on 230 Volts, 50 cycles, A.C. supply. Supplied with one conical mould with two handles, 12cm height, having 17cm. Inside Dia. at the Top and 25cm inner dia. at the base. Complete with a tamping rod 16mm dia x 600mm long one end rounded.

FLOW TABLE

IS 5512 & BS 4551-1
This used for measuring the consistency of pozzolana and also cement mortar and hydrated lime.

Specification:

It consists of a machined brass table top 250+/- 2.5mm dia. Mounted on a rigid stand. The table top is reinforced with equally disposed ribs and allowed to conical brass mould 100mm i.d. top dia and 50mm high.

Accessories:

Mild steel plate 25mm thick & 250mm square for fixing to underside of the base.

FLOW TABLE (MOTORISED)

IS 5512 & BS 4551-1

Specification :

Same as Hand operated but electrically operated. Fitted with a motor, connected to the cam shaft through a reduction gear to give approximately 100 R.P.M. Suitable for operation in Single Phase 230 V A.C. 50 Cycles, Supply.

Soundness of Cement and Hydrated Lime

LE CHATELIER MOULD

IS 269, 712, 5514, 1727 , 2645, 6932 (PART IX) BS 6463
It is used for the determination of soundness by expansion method of ordinary and rapid hardening Portland cement , low heat Portland cement and class 'A' Limes.

Specification:

It consists of a small split cylinder forming a mould. On either side of the split cylinder. Two parallel indicating arms with pointed ends are attached. Supplied complete with two glass plates and a lead weight.

LE CHATELIER FLASK

IS 4031 1968, ASTM C 188

Specification:

Used for finding specific gravity of hydraulic cement. Made from Borosilicate glass. The flask is 243mm in total height, having a bulb of 90mm dia of 250ml approximate capacity. The long neck of the flask has at top a funnel of 50mm dia in that fits a ground glass stopper. The neck has over-all 11mm i.d. upper portion is graduated from 18ml to 24ml with 1ml graduation. Just at the bottom of the neck 1ml capacity is marked in between there is 17 ml capacity bulb.

SHRINKAGE BAR MOULD

IS 4031, 10086, ASTM C 227. & BS 1881.

The mould is used for casting specimens of cement & aggregate combinations for measuring the potential expansive alkali reactivity. Size of the mould is 25 x 25 x 282 mm and effective size is 25 x 25 x 250 mm.

Available Models:

A : Shrinkage Bar Mould - One Gang (One Compartment)
B : Shrinkage Bar Mould - Two Gang (Two Compartment)
C : Shrinkage Bar Mould - Three Gang (Three Compartment)
D : Shrinkage Bar Mould - Four Gang (Four Compartment)

Spares: Stainless steel smooth or knurled and threaded reference pins as required. Supplied in Packs of one dozen.

LENGTH COMPARATOR

IS 1199-1959, IS 4031 1968 BS 1881, ASTM C 151, C490.

It is used to measure the dying shrinkage of concrete autoclave expansion of Portland cement and potential expansive reactivity of cement aggregate combinations in mortar bars during storage, on self-drying.

Specification:

The instrument consists of a channeled or a round base over which two vertical pillars are fixed. An adjustable cross plate is at the top. A dial gauge, reading to .002mm x 5mm. Can be located upon a 6.5mm. dia ball or other reference point cemented in the specimen. On the base there is similar recessed seating in which can be placed a second ball or reference point in the specimen.

Complete with a stainless steel standardization bar with insulated grip and with 6.5mm dia. Balls mounted in the ends. The unit can be supplied with an Electronic Dial Gauge at extra cost if indicated at the time of placing the order.

VOLUME CHANGE APPARATUS

ASTM C 490, IS 4031 & BS 1881.

The instrument is used for determining the volume change of cement concrete.

Specification:

The apparatus comprises of one mould effective gauge length complete with base plate, four reference pins, one length comparator frame, one stainless reference bar with insulated grip, and one dial gauge, 0.002mm x 5mm

LABORATORY CEMENT AUTOCLAVE

IS 4031-1968, IS 1624-1960 & ASTM C 151, C 141

Specification :

The autoclave is suitable for conducting accelerated soundness tests on cements or the autoclave expansion test requiring constant steam pressure with the correspondent constant pressure. It consists of a stainless steel cylinder with a welded heat insulated metal housing attractively finished. The attached control unit encloses a sensitive pressure regulator and pressure gauge. Power switches and pilot lights for controlling the electric heating units. Inside chamber dimensions 10.5 cm diameter x 40.5cm height suitable for operation on 230 V, 50 Hz Single Phase A. C. supply. Supplied complete with test bar holder, special rack to hold specimens above water level in the autoclave and in a vertical position to expose them in the same manner. A Digital PID Controller is fitted for controlling the desired temperature.

Note: Ordinary laboratory cement autoclave with mild steel chambers are also available.

HEAT OF HYDRATION APPARATUS

IS 11262-1985, ASTM C 186

Specification:

This equipment is required to determine the heat of hydration of cement as expressed in calories per gram.

The equipment comprises of the following:

1. A wide mounted double walled vacuum flask with a stop cock 38 mm & a insulating container for the flask
2. A Beckman thermometer (Range 5° C) held tightly by the cock stopper in such a way as to avoid accidental contact with the stirrer blade & the reading lens. To facilitate the easy removal the cock stopper is in two halves.
3. A constant speed stirrer (double bladed propeller type) extended to within 38 mm from the bottom of the flask.
4. A funnel (Gooch type) with a stem of 6 mm inner dia & a body approx 25 mm long and 25 mm dia. is fitted to the cock stopper for introducing the sample.

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All the above to combine to form the calorimeter for the determination of heat of hydration of cement.
Suitable to operate on 230 V A.C. 50 Hz

Tensile and Flexural Strength

TENSILE STRENGTH TESTER (ELECTRICALLY OPERATED)

BS12

The instrument employs a friction free, accurate, double lever system, the load being applied by means of sliding weight on the top lever. The capacity of the units is 900 kgs. After fixing the briquette in the jaws, the machine is switched on. The sliding weight slides over the calibrated lever thus applying tension to the specimen. A micro switch fitted instantly stop the machine on failure of the briquette and on failure the tensile load is accurately 0.5kg. By means of a marker provided on the sliding weight to its zero position. Suitable for operation on 230 V, 50 cycles, Single Phase, A.C. supply. Supplied complete with one brass briquette mould and one base plate.

BRIQUETTE MOULD (SINGLE)

IS 269 1958, BS12
Specification:
For casting of cement briquettes for tensile strength tests. It is a two part split mould made of gun metal.
Two thumb screws facilitate easy and quick assembling and dismantling of the mould. The minimum cross section of the briquettes cast is 25.4 mm x 25.4 mm. Supplied complete with a steel base plate.

BRIQUETTE MOULD (THREE GANG)

IS 269 1958, Bs12
Specification:
For casting three cement briquettes at a time for the tensile strength test on cement.

STANDARD SPATULA

IS 4031, 269, BS 12
This is for use while casting a cement briquette.
Specification:
The standard spatula consists of a steel blade, of a special shape. A wooden handle is fixed to the stem of blade. The weight does not exceed 340 gms.

JOLTING APPARATUS

IS 1727 1967, IS 4031 1968, ASTM C 394, C 64

For making standard rectangular specimens of 40 x 40 x 160mm. of Portland and pozzolana cement mortar for determining the transverse strength.

Specification:

The jolting apparatus consists of a rectangular table rigidly connected by two support arms to a spindle at a horizontal distance of 800 mm from the centre of the table. There is a projecting lug with a plane face on the upper face of the table beneath which is a stop with a rounded upper surface. The table can be raised and allowed to fall freely on the stop by a cam which is connected to a motor and gearbox through a V-belt an pulleys. The cam rotates at a rate of 60 Rev/Min. A stroke counter fitted with micro-switch is provided which stops the machine after 60 Jolts. Locating pins are provided for mounting the mould compartments on the table. The mould surmounted by the hopper can be clamped rigidly to the table. Supplied complete with mould and hopper. Suitable for operation on 230 Volts, Single Phase, A.C. Supply.

A Digital Preset Counter can be supplied at an extra cost.

Spares and Accessories :

(1) Steel mould with base plate having three compartments each having 40 x 40 x 160 mm, internal dimensions.

(2) Apparatus for de-moulding the specimen.

PRISM MOULD THREE GANG

IS 1727 1967, IS 4031 1968, ASTM C 394, C64

Specification:

It is supplied complete with base. All parts are marked with the identification number for correct assembly. Each mould is individually verified in the dimensional tolerances, hardness, squareness, flatness & roughness. Size: 40.1 X 40 X 160 mm

MORTOR MIXER

IS 4031, 1727 & BS 3892

It is used for mixing cement pastes, mortars and pozzolana.

Specification:

The apparatus consists of an epicyclical type stainless steel paddle imparting both planetary and revolving motion, by means of gears. It has two speeds of 140 + 5 R.P.M. and 285 +10 R.P.M. With planetary motions of approximately 62 R.P.M, +5 R.P.M. and 125 R.P.M. +/- 10 R.P.M. Respectively. The stand of the mixer has arrangement to raise or lower the bowl. Complete with stainless steel bowl of about six liters capacity. Suitable for operation on 230V, 50 cycles, Single Phase A.C, Supply.

FULLY AUTOMATIC MORTAR MIXER

EN 196-1, 196-3, 413-2, 459-2, 480-1, 1015-2, 12617-4; ASTM C187, C305; AASHTO T129, T131, T162

The mixer has been designed to mix mortars and cement pastes primarily to the requirements of standards. The mixing paddle has a planetary motion and is driven by a motor with a microprocessor based speed and preset

programs to meet all listed EN and ASTM standards, custom designed programs or manual mode. The mode button is used for the fast selection of different programs. The mixing paddle revolves at a rate of 140 rpm. with a planetary motion of 62 rpm. in low speed. In high speed, the paddle revolves at the rate of 285 rpm. with a planetary motion of 125 rpm. An automatic sand dispenser is supplied with the machine and the sand is automatically discharged. Custom design allows 6 programs to be set by the operator, where the motor speed, sand dispenser position and duration of the mix can be set. For the mix where the motor speed is selected as zero, the bowl can be lowered without interrupting the rest of the program. On the display the user can see the mix time and the machine is equipped with lamp in order to warn the user for critical time periods.

The Automatic Programmable Mortar Mixer is supplied complete with:

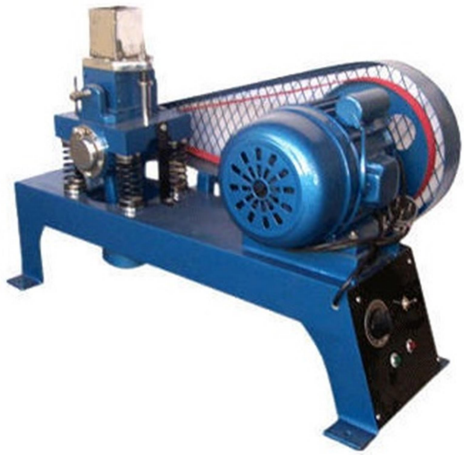
Bowl: 5lt (approx.)
Beater
Dimensions: 300x555x610mm
Weight (approx.): 56 kg
Power: 200 W

VIBRATING MACHINE

IS 4031 1968, IS 1344 1959, BS 4550.

Concrete moulds are easily cast by using a tamping bar or a vibrating table. However air trapped in cement mortar paste can not be thus removed while casting cement mortar moulds. Easy method is to impart greater vibrating of lesser amplitude to the mould while casting This is achieved in a vibrating machine.

Vibrating machine is used for the preparing of mortar cubes for the determination of compression strength of ordinary and rapid hardened Portland cement, low heat Portland cement, Portland blast furnace cement and high alumina cements.



Specification :

The machine consists of a vibrating frame assembly and an electric motor mounted on a sturdy base.

The complete frame assembly consists of a vice to hold a 70.6 mm cube mould and two studs threaded at top and a hopper to feed the sample in the mould. This assembly is supported on four springs and has an in built rotating shaft which rotates eccentrically and thus imparts vibrations to the entire frame. A balance weight is an integral bottom part of the frame. The centre of gravity of the assembly is brought to the centre of the eccentric shaft within a distance of 25 mm below it. The electric motor drives the shaft of the frame and thus imparts required vibration to the moulds.

The frequency of vibration is 12000 +/- 400 Vibration Per Minute. Supplied complete with on 70.6 mm Cube Mould with loose base plate, a time switch 0-5mins x 1mm.

Spares: Set of springs, belt and belt guard.

Optional: Digital Preset Timer can be supplied at an extra cost.

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GAUGING TROWEL

BS 12, IS 4031
Specification:
Weight approximately 210 gms.. Best quality with hard wood handle blade length 200mm.

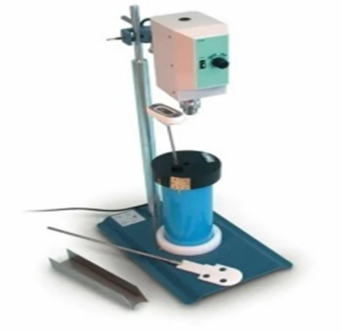
Building Lime, Grout and Mud Testing

PLUNGER PENETRATION APPARATUS

EN 413-2, 459-2, 1015-4
The plunger penetration apparatus is used to determine the consistency of fresh mortar, building lime and masonry cement. The test apparatus consists of a base to place the test cup and a vertical column holding the penetration plunger assembly. The drop default height is adjusted to 100 mm. The plunger assembly weight is 90 g. The plunger penetration apparatus is supplied complete with:

- Test Cup, Ø 80 mm X 70 mm
- Tamper

APPARATUS FOR REACTIVITY OF QUICKLIME



EN 459-2; NF P98-102
The reactivity of quicklime apparatus is used to determine the reactivity of ground quicklime on slaking.
The apparatus consists of a dewar flask of 1 liter capacity, thermometer, electric stirrer, base stand and the related accessories.

SLAKING VESSEL

Slaking Vessel is used to determine the yield of lime by leaving the lime sample to slake into. Stainless steel made and double walled insulated. The cylinder has inside dimensions dia. 113mm by 140 mm deep. Supplied complete with cover.

MARSH FUNNEL WITH MEASURING CUP

ASTM D 2419, AASHTO T 176
This cone is used to find out viscosity of bentonite slurry and similar material. The marsh cone is 6 inch in diameter at the top and 12 inch long, and tapers to join a tube 2 inch long and 3/16 inch inside dia. The capacity of the funnel is 1500cc. Time in seconds required to flow out 1000cc of slurry from cone is measured as funnel viscosity of the material.

SAND CONTENT KIT

ASTM D 4381

One of the primary functions of a drilling fluid is to carry drilled solids from the well bore. These solids are a contaminant, and if left in the system, can lead to numerous problems. The ofite sand content kit determines the volume percent of sand-sized particles in the drilling fluid. Api defines sand-sized particles as any material larger than 74 µm (200-mesh) in size. The test can be performed on low solids fluids as well as on weighted fluids. The kit consists of a glass tube graduated to read percent (%) by volume, a funnel, and a 200-mesh sieve contained in a cylindrical shaped holder.

Consists of sand content kit, complete, with sieve, funnel, graduated tube, wash bottle & carrying case

BENTONITE SLURRY SAMPLER 50 METERS

3.50 (3-1/2") white PVC, double check ball bailer, slurry sampler bailer
diameter: 3-1/2"
overall length: 20"
chamber length: 12"
construction: PVC body and lifting bail
Fdot approved: yes, for drilling fluid slurry testing

MUD BALANCE

Designed to find out specific gravities of semi liquids like mud and other liquids having densities in the range 0.8 to 2.7. It has a stainless steel bam calibrated specific gravities from 0.8 to 2.7. A stainless steel cup with lid and overflow vent is fitted on one side of the beam. A counter weights with cursor slides over the graduated scale. The beam has a knife-edge at centre which rests in a
fulcrum fitted in the stand. Leveling screws and spirit level are fitted to the stand. Supplied complete with wooden box.

FLOW CONE

EN 445

Flow cone apparatus is used for determining the flow properties of grouts, mortars, muds and other fluid materials.

The flow cone apparatus is supplied complete with:
Cone, Sieve : 1.5 mm Cup : 1 ltr
Nozzle : 10 mm
Fitting bush
Stand

	Flow Cone Apparatus
A	Flow Cone
B	Ø:8 mm Nozzle
C	Ø:9 mm Nozzle
D	Ø:40 mm Nozzle
E	Ø:11 mm Nozzle
F	Ø:13 mm Nozzle

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WET SIEVING APPARATUS

EN 451-2

The wet sieving apparatus is used for determining the fineness of fly ash. The apparatus comprises of a special stainless steel sieve, 0.045 mm opening, a spray nozzle ø 17.5 mm with 17 holes ø 0.5 mm oriented and spaced to conform to the standards. Supplied complete with a pressure gauge ø 80 mm and fittings for connection to the water supply.

AUTOMATIC CEMENT COMPRESSION & FLEXURE TESTING MACHINES

EN 196-1, 459-2, 1015-11, 13454-2; ASTM C109, C348, C349; BS 3892-1, 4551-1

The Automatic range of single testing chamber and double testing chamber compression and flexure testing machines have been designed for reliable and consistent testing of mortar samples. These compression and flexure testers are the results of continuous applications and research studies to upgrade the machines with the latest technologies and conform the current standards in terms of its technical properties taking into account client requirements by using suitable accessories. These machines also meet the requirements of CE norms for safety and health of the operator.

Compression and flexture jigs, distance pieces, and also removable transparent front-rear safety doors (should be factory installed) should be ordered separately.

The automatic cement compression and flexure testing machines allow less experienced 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 automatic cement compression and flexure testing machines consist of very rigid two column single or double chamber frames, automatic hydraulic power pack with data acquisition and control system.

Power Pack

Automatic Hydraulic Power Pack, dual stage, controlled by control panel is designed to supply the required oil to the load frames for loading. Very silent power pack can load the specimen between 50 N/sec to 2.4 kN/sec with an accuracy of ±5%. A Rapid approach pump is supplied as standard. Safety valve (maximum pressure valve) is used to avoid machine overloading.

Motor

The motor which drives the dual pump is an AC motor, 380 V, 50-60 Hz, 3 phase, 1 hp and 0.75 kW and it is controlled by motor inverter. The variation in the oil flow is executed with the variation of the rotation speed of the motor.

Distribution Block

A distribution block is used to control the oil flow direction supplied by the dual stage pump, the following parts are fitted to the distribution block;

a - Solenoid valve

b - Safety valve (maximum pressure valve) c - Transducer

d - Low pressure gear pump

e - High pressure radial piston pump

Dual Stage Pump

The dual stage pump is formed by two groups

Low pressure gear pump

High pressure radial piston pump.

On the dual stage pump, a high delivery, low pressure gear pump is used for rapid approach, while a low delivery, high pressure radial piston pump is used for test execution. The Rapid approach facility shortens the time interval from piston start until the upper platen touches to the specimen. This excellent feature helps to save a lot of time when a large number of specimens are going to be tested.

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. It has 20 L capacity. Hydraulic motor oil, number 46, must be used.

Dimensions : 360 x 380 x 900 mm
Weight (approx.) : 80 kg
Power : 750 W

Maximum horizontal clearance for placing sample is limited with the border of the platens. Sample must be placed such that its ends will not overlap the ends of platens and it must be centered perfectly. The suitable vertical clearance for specimen can be adjusted with distance pieces.

Model	ETK101	ETK102	
Test Type	Compression	Flexure	Compression
Capacity	250 kN	15 kN	250 kN
Class 1 Measuring Range	2.5 to 250 kN	0.5 to 15 kN	2.5 to 250 kN
The roughness value for texture of loading and auxiliary platens	≤3.2 µm	≤3.2 µm	≤3.2 µm
Lower Platen Dimensions	165 mm	165 mm	165 mm
Upper Platen Dimensions	165 mm	165 mm	165 mm
Maximum Vertical Clearance Between Platens	263 mm	263 mm	263 mm
Piston Diameter	160 mm	80 mm	160 mm
Maximum Piston Movement	50 mm	50 mm	50 mm
Horizontal Clearance	300 mm	200 mm	300 mm
Power	750 W	750 W	
Oil Capacity	20 L	20 L	
Maximum Working Pressure	125 bar	30 bar	125 bar
Rapid Approach Rate	50 mm/min	80 mm/min	50 mm/min
Dimensions (WxLxH)	830x500x1650 mm	1050 x 500 x 1650 mm	
Weight	265 kg	410 kg	

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CONCRETE

CONCRETE TESTING EQUIPMENTS

Concrete is a composite construction material made primarily from aggregate, cement, and water in order to obtain a robust stone like material. There are many formulations of concrete that provide various properties. Concrete is the most widely used man-made product in the world as the main building material. The quality of concrete is important in planning earthquake resistant structures that minimize damage, preventing injury and human loss. Due to this reason, concrete must be closely controlled according to the relevant standards in every stage of production by experienced people using quality test equipment.

Entek also proposes a vast selection of NDT Instruments and apparatus with precise indications concerning the product use and the relative applications.

- Consistency&workability
- Penetration
- Mixing Equipment
- Moulding Equipment
- Capping
- Curing
- Concrete Compaction

- Test on Hardened Concrete
- Density of Concrete
- Compression & Flexural Strength
- Permeability
- Air Entrainment
- Non Destructive Testing

VEE BEE CONSISTOMETER

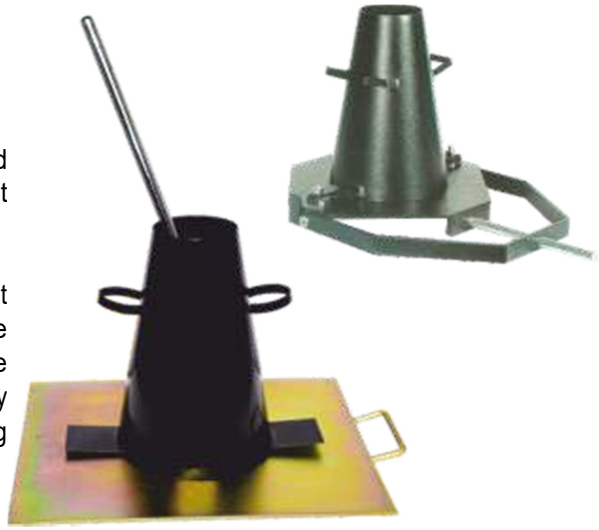
IS 1199 & BS EN 12350

The instrument is used for workability as well as consistency of fresh concrete. A slump Cone and a graduated rod supplied with the instrument helps the operator to find out slump values and vibration table with container and acrylic disc is used to find out workability of concrete expressed in Vee Bee degrees, which is defined as the time in seconds to complete required vibrating at which the fresh concrete flows out sufficiently to come in contact of the entire face of acrylic disc. Specification:

The equipment consists of : A vibrating table size 380 mm long and 260 mm wide, resting upon elastic support at a height of about 305 mm above the floor, complete with Start/Stop switch, cord and plug.

A holder is fixed to the base in to which a swivel arm is telescoped with funnel and guide swivel arm is also detachable from the vibrating table. The divisions of scale on the rod record the slump of the concrete in millimeters. Supplied complete with a sheet metal container with lifting handles which can easily be fixed to the vibrating table. A slump cone open at both ends with lifting handles and a tamping rod of size 16 mm dia and 600 mm long rounded at both ends.

SLUMP TEST APPARATUS



IS 7320 & BS 1881-102

It is used for the determination of the consistency of freshly mixed concrete, where the maximum size of the aggregate does not exceed 38 mm.

Specification:

The apparatus consists of one slump cone with handles and foot pieces. The slump cone has internal dimension 200 mm dia at base 100 mm top dia and 300 mm height foot pieces can be fixed to the clamps on the base plate. The base plate has lifting handle for easy transportation. One graduated steel rod 16 mm dia x 600 mm long rounded at both ends and graduated in mm is also supplied.

K-SLUMP TESTER

K-Slump Tester for in-place measurements indicates correlation to the slump test. The probe determines workability of concrete and the degree of compaction. Includes correlation chart and instructions.

CHASE AIR INDICATOR

Economical method of quickly estimating the air content of fresh concrete in the field using the isopropyl alcohol method. Does not replace conventional air meter method of air content testing.

KELLEY BALL PENETRATION APPARATUS

ASTM C-360

Specification:

The apparatus is used to determine the workability of Portland cement & concrete. The Kelly ball test is considered to be simple and much faster than the slump test. Twice the Kelly ball reading approximately equals the slump. It consists of a cylinder with a ball shaped bottom and handle, together weighing 15 kg. A strip frame, guides the handle and serves as a reference for measuring the depth of penetration. The handle is graduated in mm. Penetration can be recorded to the nearest 0.5 mm.

COMPACTION FACTOR APPARATUS

IS 1199, 5515. & BS 1881-103

The apparatus is used for determining the workability of fresh concrete, provided the maximum size of the aggregate does not exceed 38mm. The test is particularly useful for concrete mixes of very low workability where true slump values are not reliable.

Specification:

It consists of two rigid conical hoppers and a cylinder mounted on a rigid metal frame. The lower openings of the hoppers are fitted with hinged trapdoors having a quick release catches. A circular metal plate is provided to cover the top of the cylinder.

Supplied complete with one plaster's trowel and one tamping rod, 16 mm dia x 600 mm long, both ends rounded.

J-RING, NARROW GAP

EN 12350-12

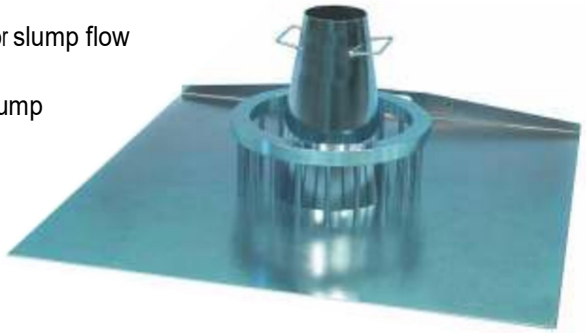
The J-Ring test is used for determining the passing ability, the flow spread and the flow time of self compacting concrete as the concrete flows through the J- Ring apparatus. The J-Ring narrow gap with ø18 mm x 16 smooth bars is manufactured from stainless steel.

The Slump Cone is made from sheet steel protected against corrosion, with diameters; top 100 mm, base 200 mm and with a height of 300 mm.

The Base plate is 900x900x3 mm square, made of stainless steel with engraved circles of 200 mm and 500 mm diameter conforming to EN 12350-8.

The Steel weighted collar is used to stabilize the slump cone on J-Ring or slump flow tests.

Minimum apparatus for the J-Ring test are J-Ring with narrow gap and slump cone.



J-Ring, narrow gap
Slump cone for J-Ring
A Base plate for J-Ring and slump-flow tests
B Steel weighted collar, 9 kg
C EN 12350-8 for slump cone on J-Ring or slump flow test

CONCRETE FLOW TABLE TEST SET

EN 12350-5

The test set is used for concrete mixes of high workability and determines flow index as an arithmetic mean of the diameter of the specimen after working on a flow table. The apparatus consists of a double steel table, an upper table measuring 700 x 700 mm and hinged at one side to the lower table. The top table is inscribed and all parts are protected against corrosion. The stainless steel cone has a 130 ±2 mm top diameter, 200 ±2 mm base diameter and 200 ±2 mm height and 1.5 mm thickness.

Dimensions: 700 x 850 x 300 mm, Weight (approx.) 40 kg

Concrete flow table test set
A Flow cone for
B Wooden tamper 40 x 40 x 335 mm

V FUNNEL

EN 12350-9

The V Funnel apparatus is used to evaluate the flow time of freshly mixed self-compacting concrete. The test is not suitable when the maximum size of the aggregate exceeds 22.4 mm.

The test set consists of a stainless steel funnel placed vertically on a supporting stand. The discharge orifice is equipped with a lid, which can be momentarily opened.

The I shape box apparatus is supplied complete with:

- Filling Hopper
- Base

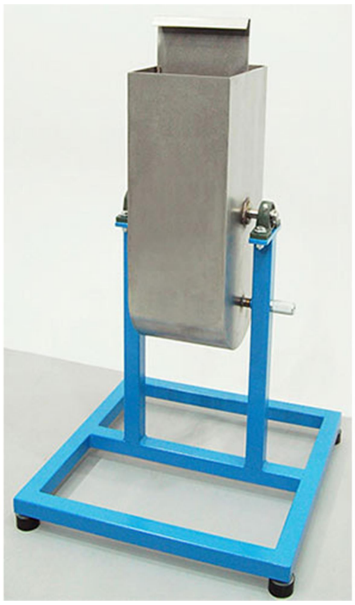
L SHAPE BOX APPARATUS

EN 12350-9

The L Shape box is used for determining the passing ability rate of freshly mixed self compacting concrete. The distance between 12 mm diameter bars can be set between 41±1 mm or 59±1 mm. L Shape box is designed for ease of cleaning the vertical and horizontal hoppers.

The I shape box apparatus is supplied complete with:

- Filling Hopper
- Base



U SHAPE BOX APPARATUS

The U Shape box apparatus is used to determine the filling and passing ability of self-compacting concrete (SCC). The U box is made of stainless steel consisting of three 12 mm dia. Rebars. The U box is mounted on a frame with a fixing mechanism.

Penetration

POCKET CONCRETE PENETROMETER

ASTM C-403

For fast evaluation of the initial setting of concrete. It can be used on light weight concrete, special roof deck mixes and concrete additives.

Specification:

Consists of a needle having face area 3/10 sq. cm. and graduated at a distance of 25 cm. The needles point is an integral part of barrel which houses a calibrated spring. The spring is confined in a sleeve.

The resistance offered by the concrete mortar is shown on the direct reading scale with a marker ring which holds its position when released. Scale range is 0-50 kg/cm^2 when the penetration resistance reaches a value of 35kg/cm^2 the concrete is assumed initially set.

Supplied complete in carrying case.

MORTAR PENETROMETER

ASTM C-403

It is used for finding out the rate of hardening of mortar sieved from concrete spring and a stem graduated from 0-70 kg x 1 kg. Six interchangeable penetration needles of areas 645, 323, 65 32 and 16 mm sq. is provided . The penetration resistance is measured by the force exerted to penetrate the mortar by 25 mm and is indicated by a sliding ring on the stem, which is graduated. Needle shanks are marked at every 12.5 mm. Supplied complete in a wooden carrying case.

Mixing Equipment

BLEEDING OF FRESHLY MIXED CONCRETE

ASTM C 232; EN 480-4

used for determination of the relative quantity of mixing water that will bleed from a sample of freshly mixed concrete.

LABORATORY CONCRETE MIXER (MOTORISED)

A Concrete and mortar mixer for light professional and DIY use. Designed to give reliable service with low maintenance requirements. The compact storage size makes the Mixer a convenient product for DIY users.

Advantages:

- Light and effective the Mixer mixes a full barrow load
- Compact enough to be transported in the boot of car
- Supplied complete with stand
- Direct drive for increased reliability
- Full thermal overload protection
- 230 V, AC Single Phase
- Drum capacity: 100 Ltrs.

LABORATORY PAN MIXER (CAPACITY 60 LTRS.)

The Concrete mixer has been designed for mixing small quantities of concrete used in preparation of concrete cubes, for testing in laboratories. The purpose of the mixer is to smear mechanically the aggregate surface with cement paste uniformly & produce a mix of uniform consistency. This in turn gives consistent quality of cubes specimens when casted in the moulds.

The Concrete Mixer developed is transportable on wheels. The design of mixing paddles ensure uniform & efficient mixing of cement & aggregate both in dry & wet conditions. This machine is suitable for

aggregate size upto 20 mm. The equipment can also be put to use for mixing of any other material in dry / wet conditions. The arrangement helps the operators to access the pan contents conveniently & emptying the mixture after completion of the operation. The drum is driven off the ribbed base. The lid with mixing paddles clears off the top of the drum to provide maximum access to the operator.

Specifications:

Mixing Capacity	:	60 ltrs.
Overall Dimension	:	695 x 875 x 1200 mm
Motor	:	3 HP, 1445 RPM
Powersupply	:	440 V, 50 Hz, 3 phase AC

Features:

- Portable, compact & easy to operate
- Blades
- Simple to clean & maintain

LABORATORY PAN MIXER (CAPACITY 100 LTRS.)

The Concrete mixer has been designed for mixing small quantities of concrete used in preparation of concrete cubes, for testing in laboratories. The purpose of the mixer is to smear mechanically the aggregate surface with cement paste uniformly & produce a mix of uniform consistency. This in turn gives consistent quality of cubes specimens when casted in the moulds.

The Concrete Mixer developed is transportable on wheels. The design of mixing paddles ensure uniform & efficient mixing of cement & aggregate both in dry & wet conditions. This machine is suitable for

aggregate size upto 30mm. The equipment can also be put to use for mixing of any other material in dry / wet conditions. The arrangement helps the operators to access the pan contents conveniently & emptying the mixture after completion of the operation. The drum is driven off the ribbed base. The lid with mixing paddles clears off the top of the drum to provide maximum access to the operator.

Specifications:

Mixing Capacity	:	100 ltrs.
Overall Dimension	:	1000 x 995 x 1250 mm
Motor	:	5 HP, 1445 RPM
Power supply	:	440 V, 50 Hz, 3 phase AC

Features:

- Portable, compact & easy to operate
- Blades
- Simple to clean & maintain

The offered equipment is robust design high performance horizontal pan mixer with overhead drive suitable for uniform and homogeneous mixing of refractory Castable. The mixer proper consist of:

CHASSIS:
Made from welded steel channel and fitted with 2 rubber wheels & angle support with handle for mobility.

MIXING PAN:
Is of welded sides with reinforcing ring at top to maintain circular shape. One section is removable for easy accessibility and renewable steel lining plates fitted in the bottom and also inside walls.

MIXING BLADES:
The mixing blades are of steel and are adjustable both ways for wear. The ingenious design of the mixing blade ensures thorough mixing without any built-up on the wall. The mixing blades and the liners are replaceable.

DISCHARGE DOOR:
The material is discharged through sliding door bottom, operated by hand lever through arrangement. A discharge chute is provided in the bottom for collecting the material.

DRIVE SYSTEM:
The mixing blade assembly is driven by and output shaft of a reduction gear box, transmitting power through electric motor mounted directly belt pully arrangement drive the gear box .

The price for supply of 1 No. Pan Mixer having 200 kgs (100 Liter) working capacity, complete with rubber wheels, draw bar, and mixing pan of 900 mm dia x 457 mm height with renewable side bottom, wall liners, mixing blades with reduction gear and drive motor with DOL starter, hand operated type discharge door generally as described above.

LABOMIX CONCRETE PAN MIXER

The right choice for the demanding professional user. Here you get the best value for money without making any compromises on the well known Entek virtues. Quality, durability and efficiency completely lives up to even the highest demands.

Features:

- Large motor with plenty of power
- High quality and finish
- Exchangeable mixer shovels
- Automatic emptying of the container
- Large transport wheels makes it easy to load the mixer
- Easy to clean

Positioning bolt secures the cover during use/transport

- Can be operated by one man
- Maintenance free high quality gear

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TAMPING ROD

IS 516, ASTM C-29, C-31, C-57, C-138, C-192 AASHTO T-29 & T-23

Specification:

This is used for compacting concrete into cube moulds. This rod is made of steelit is 16mm dia., 600mm in length and rounded at both ends.

TAMPING BAR

Specification:

This is used for compacting concrete into cube moulds. This rod is made of steel bar it is 25 mm square x 380 mm long with handle.

STRAIGHT EDGE

Used to remove excess material when molding cube and cylinder specimens. Conduction slump cone and air meter tests. Flat bar made from steel.

1" X 12" (2.5 X 30.4 CM)

VERIFICATION OF FLATNESS, PERPENDICULARITY, STRAIGHTNESS AND DIMENSION OF MOULDS AND SPECIMENS

ISO 1101 EN 12390-1

The appendix of EN 12390-1 Standard calls for a set of instruments to be used for dimensional and tolerance verification of the mould and the specimens got from the same.

A Go-Not Go Gauge
For 100 & 150 mm cube moulds

B Rule
Rule straightedge, 300 mm long

C Feeler Gauge
Comprising a set of strips from 0.05 to 0.50 mm, with blade 100 mm long

D Rule Right Angle
Steel made, 150x100 mm, rectangular section

E Digital Vernier Caliper
0-200 mm x 0.01 mm. Readings in mm and inches

CUBE MOULD (METAL)

These are available in different sizes and are made according to Indian and British standards. For the metric size cube mould, the faces are machined flat to +/-0.2mm accuracy and finished to within 0.2mm. For the inch size moulds, the faces are machined flat to +/-0.01 inched to within 0.01in. All moulds are supplied complete with base plate.

A Cast Iron Mortar Cube Mould 50mm, Single Gang
B Cast Iron Mortar Cube Mould 50mm, Three Gang
C Mild Steel Cement Cube Mould 70.6mm, with Loose Base Plate
D Cast Iron Concrete Mould 75mm Single Gang
E Cast Iron Concrete Mould 100mm Light Weight
F Cast Iron Concrete Mould 100mm Clamp Type (8.5 KG) Four Part
G Cast Iron Concrete Mould 150mm Light Weight 8KG
H Cast Iron Concrete Mould 150mm ISI Marked
I Cast Iron Concrete Mould 150mm Clamp Type (18 KG) Four Part
J Cast Iron Concrete Mould 150mm Clamp Type (16 KG) Two Part

CYLINDRICAL MOULD

For testing concrete cylinders for compressive strength tests.
Specification:
The mould is split vertically into two parts. The mean internal diameter in within +/-0.2mm and height is within +/-1mm. The ends are machined to +/-0.05 . The base plate and top plate are machined flat to +/-0.03mm.

A Mould cylinder, cast iron, 150mm dia x 150mm height.
B Mould cylinder, cast iron, 150mm dia x 300mm height.
C Mould cylinder, cast iron, 160mm dia x 320mm height.
D Mould cylinder, cast iron, 100mm dia x 200mm height.
E Mould cylinder, cast iron, 300mm dia x 600mm height.

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BEAM MOULD

BS 1881·108
For casting, concrete specimen for flexure tests.
Specification:
Made of Cast Iron / Mild Steel. The mould are made of 4 plates assembled together. Each mould is supplied complete with base plate. Faces are machined flat to ± 0.2mm. And finished in size to 0.2mm.

A	100 mm x 100 mm x 500 mm
B	150 mm x 150 mm x 700 mm
C	150 mm x 150 mm x 750 mm
D	100 mm x 150 mm x 600 mm
E	150 mm x 150 mm x 600 mm

FILLING HOPPER FOR MOULD

Filling hopper, stainless steel made, for an easier filling of fresh concrete into the moulds:
Supplied complete of clamping elastics

Capping

CONCRETE: PAD CAPS AND RETAINER RINGS

Pad-cap retainer rings hold neoprene pads that fit onto the ends of concrete test cylinders. Made from plated high-alloy steel to resist rust and deformation fatigue. Bearing surfaces machine-planed to within 0.002". Supplied two per set. Neoprene pad inserts are made from a tough elastomeric material that evens out and fills irregularities in the ends of concrete cylinders to assure even distribution of test loads for consistent results.

MELTING POT

Used to melt Capping compound this pot comprises a metal container in a well lagged steel jacket. A thermostatic control and stand by heat switch are fitted. Supplied complete with lift off cover.

Warmer: An electrically heated and thermostatically controlled bath for melting the capping compound. Supplied with cover and handle. Suitable for operation on 230 Volts A.C. Single Phase.

Capping Compound: Used for capping the ends of concrete cylinders to be tested. Available in packs of 5 kg.

Bowl & Ladle: Metallic bowl is used to carry the capping compound and ladle is used to pout molten capping compound in to the groves between specimen and capping plate. Supplied as a set.

Specification:

Dimensions (Diameter x Depth):	140 x 150 mm (Internal), 250 x 165mm (External) Capacity : 2.4 litres	
Rated Power	:	750 W
Temperature	:	40 to 340° C

Curing

CURING TANK

Features:

- 24 Hour cycle from time of mixing.
- Controlled 35° C or 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 cube moulds upto 36/72 cube mould and 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 or 100° C ± 2° C / 27° C +2° C,

expect for the 15 minutes after immersion of the freshly made specimens.
Note: Accelerated curing tank with cooling arrangement is also available of request.

B
150 mm / 70.6 mm size

C
150 mm / 70.6 mm size

D
150 mm / 70.6 mm size

Concrete Compaction

POKER VIBRATOR (WITH VIBRATING TABLE)

EN 12390–2; ASTM C31, C192; AASHTO T23, T126
Ø 22 mm hand-held, 220-240 V 50-60 hz
The poker vibrator is ideal for the internal compaction of concrete specimens and a good alternative to traditional tamping bar, especially when there are large numbers of specimens to be compacted. Flexible shaft length and tip diameter can be selected from the four available products.

VIBRATING TABLE

Specification:
It is designed to carry a load of 140 kg . The apparatus consists of a motor fitted with a variable pitch pulley housed in a cabinet. The vibrations are imparted by means off-balance masses rotating on a shaft of a vibrator clamped to the underside of the table top. The table top is 500 x 500 mm and has stops along its edges to prevent moulds from walking off the table during vibration . A crass arm adjustable on a vertical rod at the centre of the table is provided to hold the moulds while operating the between a maximum of 3600 vibrations down to 2600 vibration per minute. A speed regulation handle is provided for increasing or decreasing frequency. A switch is provided for starting the motor. Suitable for operator on 230 Volts, A.C. Single Phase, 50 Cycles.
Note: Table top size : 750 x 750 mm & 1000 x 1000 mm also available at an extra cost. Both models operates on 440 volts, A.C. Three Phase

DLC VIBRATING HAMMER FOR CONCRETE MOULDS

ASTM C 232; EN 480-4

Used for the compaction of concrete samples in a mould. Generally the vibratory hammer is found to be a much faster & quicker method as compared to impact hammering. The vibratory hammers are supplied with 1 tamping feet & 1 shank. Used for determination of the relative quantity of mixing water that will bleed from a sample of freshly mixed concrete.

Dimensions : 290 x 255 x 350 mm

Weight (approx.) : 6 kg

Test on Hardened Concrete

DE-MOUNTABLE MECHANICAL STRAIN GAUGE

BS 1881-206.

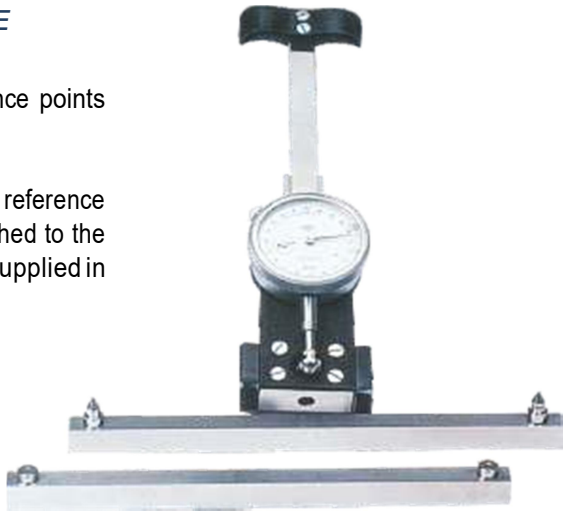
It is used for finding out the linear deformation caused on two reference points fixed on a loading member.

Specification:

This portable gauge is designed for a gauge length of 200 mm. of the reference pins. The deformation is indicated by a 0.002 x 5mm dial gauge attached to the instrument. Complete with two standard bars for 200 mm gauge length supplied in a wooden case.

Accessories:

Reference pins in packet of 100 nos. at an extra cost.



LATERAL EXTENSOMETER

This is for determining the lateral extension of 150 mm dia x 300 mm high cement concrete cylinders while testing them under compression.

Specification :

The unit consists of two movable frames pivoted at one end. The extensometer is fixed to the specimen with the help of tightening screws. The lateral extension is indicated on a dial gauge of 0.002 mm x 5 mm is mounted on the upper ring and the tip of the dial gauge rests on an anvil. The zero on the dial gauge can be set by adjusting the anvil screw. Supplied in a wooden carrying case.

LONGITUDINAL COMPRESSOMETER

ASTM C 469

It is designed for finding out the deformation and strains on 150 mm. Diameter and 300 mm high cement and concrete cylinders when subjected to compressive loads.

Specification:

Consists of a frame with a bottom ring and a top ring with tightening screws to firmly clamp the compressometer over the cylinder. A dial gauge .002 mm x 5 mm is mounted on the upper ring and the tie of the dial gauge rests on an anvil. The zero on the dial gauge can be set by adjusting the anvil screw. Supplied in a wooden carrying case.

Density of Concrete

SAND ABSORPTION CONE AND TAMPER

ASTM C 128 AASHTO·T·84

Used for determining the slump of fine aggregate in the determination of bulk and apparent specific gravity and absorption of fine aggregate.

Specification:

The equipment comprises of a conical metal mould 1.5 inch dia at to top, 3.5 inch dia at base and 27/8 inch in height. A metal tamping rod weighting 12 ounces and having a flat circular tamping faces 1 inch in dia meter.

DENSITY OF FRESH AND HARDENED CONCRETE

The density of both fresh and hardened concrete is of interest to the engineer for numerous reasons including its effect on durability, Strength and resistance to permeability.

Hardened concrete density is determined either by simple dimensional checks, followed by weighing and calculation or by weight in air / water buoyancy methods.

Density of Hardened Concrete:

The density of hardened concrete specimens such as cubes and cylinders can be quickly and accurately determined using a Buoyancy Balance.

Buoyancy Balance:

The buoyancy balance system developed by us consists of a rigid support frame. Incorporating a water tank mounted on a platform.

A mechanical lifting device is used to raise the water tank through the frame height immersing the specimen suspended below the balance fixed on a cradle.

The balance supplied may also be used as a standard weighting device, thus providing a versatile and comprehensive weighing system in the laboratory. The sample is weighed in air and in water to calculate the density of fresh concrete.

COMPRESSIVE STRENGTH

Concrete is a man-made material, essentially mixed at site. The properties of concrete depend on the properties of its ingredients and their proportion and it is likely to vary from mix to mix. Tests must be conducted, therefore, to ensure that the concrete used is in accordance with design specifications. A frequent test, is the test of compressive strength, in which concrete samples are tested to failure.

Compression Testing Machines :

Entek series Compression Testing Machines are the finest of their types available. Their rugged construction and extreme simplicity makes it possible for even non- technical personnel to operate them with ease and complete dependability. In particular, the portable units, which are small in dimensions, sturdy and light in weight, make quality control testing possible in areas where commercial testing facilities are not available and where the transportation of larger and much heavier machines would be difficult.

ENTEK Compression Testing Machines conform to IS: 14858(2000) and calibrated with an accuracy of ± 1% as per the requirement of 1828(Class1). It can also be supplied as per BS : 1881 and BS EN 12390. These machines are available in 50kN, 100kN, 500kN, 1000kN, 2000kN, 3000kN & 5000kN

Capacities.

Compression Testing Machines Classification :

- Analogue models.
- Motorized model gauge type / electronic
- Digital models with pace rate indicators.
- Semi-Automatic pace rate controlled
- Fully Automatic models

Salient Features of CTM's are:

- High stability Load Frames
- Self-aligning platen assembly.
- Load Gauges are calibrated in kN against certified Proving Rings, traceable to NPL / NCCBM / NABL Standards
- Suitable for testing cubes and cylinders of various sizes.
- Using special platens, bricks can also be tested.
- Logged data printing facility through a parallel port interface available in digital and micro controller and fully automatic version.
- Calibration process accreditated by NABL (National Accreditation Board for Laboratories).
- Machines are CE marked from UKCERT, London (UK)
- Operator's safety features like metal door with a perspex window and overload tripping device are provided in all Semi/Fully automatic model

COMPRESSION TESTING MACHINE (CHANNEL TYPE LOAD FRAME) HAND OPERATED

IS 516, BS 1881

Specification:

In these load frames "C" channels are used, they are welded at the top as well as bottom and with stand high loads. A hydraulic jack is fitted at centre of the base of the load frame, over which can be fitted lower platen and spacer block with the help of centering pin. A lead screw passes through the top of the frame. To the lower end of this lead screw is fixed the upper platen with spherical seat for self alignment. The platens are accurately machined, hardened and polished. The lower platen grooves to correctly place the specimen. Note: The platens are normally rectangular on shape, but no special request square platens or circular platens can be supplied at an extra cost.

Ranges: 50 kN to 2000 kN

COMPRESSION TESTING MACHINE
(Four Pillar) Hand Cum Electrical Operated

IS 516, BS 1881

Specification:

The load frame is made up of high quality steel construction with a fixed. Upper lead carrying a ball seated platen. 4 pillars are fixed to the base and the top plate of the loading frame. The upper and lower plates are adjusted with the help of head screw on either side of the pillar. The ram dia of the machine varies from the requirements of the customer. The lower pattern are at the base of the frame above the ram and it is rectangular in shape. Sufficient clearance is provided between the platens to fit in the cylindrical/ cube moulds. Spacer provided to adjust cubes and cylinders. A 20 cm dia pressure gauge with maximum load induction pointer is fitted on the top panel and in turn is connected to the hydraulic pressure pipe. On the right hand a console is fitted within which the electrical motor is fitted alongwith its coupling which inturn is connected to the pumping unit. A slow / fast loading rate regulator fixed on the top of the console for adjusting the rate of loading. The machine is duly calibrated and passed after inspecting and analyzing it with a compression level indicator is provided as a dip stick.

Optional:

1. Extra gauges can be attached to the machine (max. 3 nos.), for better accuracy and results.
2. Electrical connection can either be Single Phase on 220 V A.C., or 3 Phase 440 V A.C.
3. Rectangular plates of various sizes on request.
4. Digital Load Indicator with pressure transducer can be supplied at an extra cost

FLEXURE TESTING MACHINE

IS 516, BS 1881.

The Flexure Strength Testing are designed to test flexural strength of concrete beams. The design provide maximum rigidity throughout their working range.

The load is applied by the downward movement of the piston.

A spacer is for testing different size of beams.

The load is indicated on a calibrated bourdon tube type load gauge of range: 0 - 100 kN x 0.5 kN (0- 10,000 kgf x 50 kgf).

The load gauge is calibrated against National Council for Cement and Building Materials Certified Proving Ring.

Flexure Testing Machines

- Light weight, rugged high strength frame
- Double action hydraulic pump
- Self-aligning roller assembly
- Hydraulic jack provided with retraction spring
- For testing beams of 100 x 100 x 500mm and 150 x 150 x 700mm
- Conforms to IS 516, BS 1881 and ASTM C 78 Two Models are available.

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HAND OPERATED FLEXURAL TESTING MACHINE 250 KN

Specification

1	Ram Diameter (mm)	82
2	Ram Travel (mm)	50
3	Pressure Gauge Diameter (mm)	200
4	Pressure Gauge (in kN)	100
5	Least Count (in kN)	0.5 Kn
6	Maximum Pressure (Kgs./cm)	200
7	Platen Diameter (mm)	Nil
8	Horizontal Clearance (mm)	210
9	Vertical Day Light (mm)	160(adj)
10	Height Of Load Frame (mm)	850
11	Weight Of Load Frame (Kgs)	150
12	Lead Screw	Yes
	Specimen Size (can Be Tested)	0
13	Cube (mm)	Nil
14	Cylinderical	Nil
15	Flexural Test (size in mm)	100x100x500 150x150x700

FLEXURAL FRAME 100 KN

ASTM C 293, ASTM C 496, ASTM C 78, EN 12390-5, EN 12390-6, EN 1338, EN 1340
Flexural frame for above machine connected to the automatic pump 100 kn capacity

General Properties:

The Entek Automatic range of 100 kn capacity flexure testing machines have been designed to meet The need for reliable and consistent testing of flexural test on standard concrete beams, transverse Test on kerbs and flagstones, indirect tensile tests on concrete and interlocking pavers.

Entek flexural machines consist of their main part; frame. Each part has been designed to manufacture Machines with a high degree of mechanical stability and complies with EN 12390-5, EN 12390-6, EN 1338, EN 1340, ASTM C78, C293 and C496 by choosing suitable accessories.

Frame:

The versatile load frame is designed for minimum deflection at maximum load resulting in very high accuracy. The load frame is welded steel fabrication carrying the ram fitted to the upper crosshead.

All frames have a single acting down stroking ram with over travel switch protection to shut the machine down should maximum ram travel be reached. The return of the ram is done by dead weight to get maximum accuracy on the load measurement. The load cell is used for load measurements. All flexural frames have been designed to accept all the accessories for flexural and transverse tests. Both frames can be connected to any compression machine as a second frame.

The main characteristics are:

- Two capacity high stability welded assembly
- 75 and 100 mm piston stroke with safety limit switch
- Piston return by dead weight
- Can accept all required accessories for mentioned standards

Data acquisition and control system (Optional Accessory)

LCD graphics data acquisition and controls system is designed to control the machine and processing of data from load cells or pressure transducers installed on the compression machine frame. The easy to read lcd graphic display and touch-button data pad keys make the unit quick and straight forward to operate. All interaction with the measuring system is via the front control panel by using simple menu-driven procedures. The indicator is contained in light alloy housing and its

SEMI AUTOMATIC COMPRESSION TESTING MACHINE

ASTM C39; AASHTO T22; ISO EN 7500, EN 12390-4

The Entek Semi-Automatic (Motorized) range of 2000 kN and 3000 kN capacity compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. These compression testers are manufactured as a result of continuous research studies to upgrade the machines with the latest technologies to conform with the latest standards EN 12390-3, 12390-4, BS 1881 in terms of its technical properties taking into account the client requirements. These machines also meet the requirements of CE norms with respect to the health and safety of the operator. And their user-friendly design enable an inexperienced operator to perform the test.

design satisfies the ergonomic requirements for various use. The digital graphic display allows real time load vs time graph. At the end of the test cycle the results can be stored in the large memory or downloaded to a PC in Entek software format. Dedicated software package is available for further online data processing, database management and certificate printing.

Safety features all Entek flexural machines are fitted with:

- Max pressure valve to avoid machine overloading
- Ram travel switch to prevent excessive piston travel

Technical Specifications:

Capacity (kn)	100
Class 1 range (kn)	10-100
Resolution	1/65.000
Ram travel (mm)	75
Max. Vert. Test space (mm)	170
Max. Horiz. Test space (mm)	450
Power (w)	750
Overall dimensions 1140 (only frame) (mm)	600 x 830x
Weight (kg)	180

Technical Specifications:

Model	ETK	ETK
Capacity	2000kN	3000 kN
Standard	EN	EN
The roughness value for texture of loading and auxiliary platens	“3.2 µm	“3.2 µm
Lower platens dimensions (dia.)	300 mm	300 mm
Upper platens dimensions (dia.)	300 mm	300 mm
Maximum vertical clearance between platens	340 mm	340 mm
Piston diameter	250 mm	300 mm
Maximum piston movement	50 mm	50 mm
Horizontal clearance	360 mm	425 mm
Power	550 W	550 W
Oil capacity	20 L	20 L
Maximum working pressure	410 Bar	410 Bar
Dimensions (W x L x H) (mm)	740x500 x970	805x540x1050
Weight	780 kg	1080 kg

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Maximum horizontal clearance for placing sample is limited with the border of the platens. Sample must be placed such that its ends will not overflow from the ends of platens and it must be centered perfectly.
The suitable vertical clearance for specimen can be adjusted with distance pieces. Operated on 220 V, 50 Hz, Single Phase.

DIGITAL LOAD INDICATOR

Features:

- Large alphanumeric LCD display with backlight
- 10 Segment bar graph for display of variation in Pace Rate
- Sample Area digitally settable
- Stress at Peak load calculated & displayed
- Peak/Normal mode selectable
- Buzzer alarm for peak detection in Peak Mode
- Relay output for load limit detection
- Digital tare provided
- Non-volatile memory for saving configuration
- RS-232 serial output for logging on PC
- Configuration lock at rear to prevent tampering
- Aesthetically designed front panel with membrane switches

Specifications:

Display	:	2 Line alphanumeric display with backlight illumination Range
	:	Load : 0.1 KN to 6000 KN
		Set Load (Limit) : 0.1 KN to 6000 KN
		Set Pace Rate : 0.1 KN/sec to 99.9 KN/sec
		Sample Area : 0.1 cm^2 to 999.9 cm^2
Accuracy	:	±0.1% of Full Sacle ±1 digit
Relay Logic	:	ON when Actual Load " Set Load Limit
Normal/Peak Mode	:	Selectable from front panel with LED indication of current mode
Peak Detection	:	Buzzer alarm re-settable from front Reset switch / Rear external contact Tare
Facility (Zero)	:	Digital Tare using front panel Tare switch
Memory	:	Non-volatile EEPROM to save settings
Configuration Lock	:	Jumper on rear terminals to prevent alteration of configuration from front Serial
Output	:	RS-232 output to interface to PC
Supply	:	220 VAC ±15% @ 50/60 Hz
Dimensions	:	Front Fascia: 96 x 192 mm Cut Out: 92 x 188 mm

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FULLY AUTOMATIC COMPRESSION TESTING MACHINE

Entek make CE certified fully automatic compression testing machine 1000 kn / 2000 kn / 3000 kn capacity with all distance platens for 150 mm cube/100 mm cube 150 x 300 mm cylinders, software.

General properties:

The automatic range of 3000 kn capacity compression testing machines has been designed to meet the need for reliable and consistent testing of concrete samples.all Entek machines feature the complete automatic test cycle with a closed loop digital readout. Once the specimen parameters have been introduced, it is sufficient to press the start button to complete the test. Entek compression machines consist of their main parts: frame, power pack and data acquisition & control system. Each part has been designed to manufacture machines with a high degree of mechanical stability and complies to EN 12390-4, BS 1881 and ASTM C39 (with suitable platen set)

Standards:

- Automatic test cycle with standard rapid approach
- Graphical-LCD data acquisition and control system
- Menu driven software for easy operation
- Load vs time plot and instantaneous load rate displayed
- Accurate load rate control within ±5 from 1 kN/sec to 20 kN /sec
- Class 1 starting from % 10 of the full range
- Ready stress calculation for the standards of EN 12390-3, EN 12390-5, EN 12390-6, En 1338, EN 1340, EN 196
- SI, Metric, Imperial units
- Data storage up to 256 tests
- RS 232 output for printer or PC
- Free of charge PC software for test control and advanced report printout

Frame:

The load frame is a welded steel fabrication carrying the ball-seated upper platen. Positively located on the loading ram which is protected from debris by a cover, the lower platen is marked for the centering of cube and cylinder specimens. The dimensions of the frame allow the testing of concrete cylinders up to 320 mm long x 160 mm diameter; 100, 150 mm cubes. All machines are supplied complete with 30 mm, 50mm and 90 mm distance pieces. To test samples shorter than 150 mm extra distance pieces should be ordered. All machines are supplied with flexi glass front and rear removable safety doors. All frames have a single acting upstroking ram with over travel protection to stop the motor when the maximum platen travel be reached.

The Main Characteristics Are:

- High stability welded assembly
- 50 mm piston stroke with safety limit switch
- Platen hardness of min 55 HRC
- Distance pieces and safety door included
- Ball seating assembly and frame tested for stability

Data Acquisition And Control System:

Lcd graphics data acquisition and controls system is designed to control the machine and processing of data from load cells or pressure transducers installed on the compression machine frame. The easy to read lcd graphic display and touch-button data pad keys make the unit quick and straight forward to operate. All interactions with the measuring system are via the front control panel by using simple menu-driven procedures. The bc100 is contained in light alloy housing and its design satisfies the ergonomic requirements for various use. The bc100 digital graphic display allows real time load vs time graph. At the end of the test cycle, the results can be stored in the large memory or downloaded to a PC in Entek software format. Dedicated software package is available for further online data processing, database management and certificate printing.

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The Main Characteristics are:

- High resolution 65.000 points
- 240 x 120 pixel blue-white graphic lcd display
- Standalone full automatic testing capacity
- Can make manual tests if required
- Large permanent memory up to 256 test results
- Rs232c (optional ethernet) connection at 57600 band
- One RS232 serial port for connecting either PC or printer for data transmission
- Two analogical channels, use for load cell or pressure transduce
- A sample type and dimensions can be entered respect to the standard
-
- 18 key touch membrane keyboard
- Easy to operate with 6 main function keys
- Language select: English
- Can control two frames (Compression & Flexural)

Power Pack:

Dual stage power pack which is controlled by is designed to supply required oil to the frames. Very silent Power pack can load a specimen between 1 kn/ sec to 20 kN/sec. On the dual stage pump high delivery low pressure pump is used for rapid approach and low delivery high pressure radial piston pump is used for test execution.

On all power packs maximum pressure valve is used to avoid machine overloading.

The Main Characteristics are:

- Dual stage pump
- 750 W power
- 25 liter oil capacity
- 60-100 mm/min fast approach speed

Safety Features:

All Entek compression machines are fitted with:

- Max pressure valve to avoid machine overloading
- Ram travel switch to prevent excessive piston travel
- Front and rear gates with transparent durable flexiglass
- Emergency stop button
- Software controlled maximum load value

Pumping Unit

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Technical Specifications:

Model	A	B
Capacity	2000kN	3000 kN
Standard	EN	EN
The roughness value for texture of loading and auxiliary platens	‹‹3.2 µm	‹‹3.2 µm
Lower platens dimensions (dia.)	300 mm	300 mm
Upper platens dimensions (dia.)	300 mm	300 mm
Maximum vertical clearance between platens	340 mm	340 mm
Piston diameter	250 mm	300 mm
Maximum piston movement	50 mm	50 mm
Horizontal clearance	360 mm	425 mm
Power	750 W	750 W
Oil capacity	20 L	20 L
Maximum working pressure	410 Bar	410 Bar
Dimensions (W x L x H) (mm)	810x500x970	810x500x970
Weight	795 kg	1095 kg

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COMPRESSION AND FLEXURAL TESTING MACHINES SPLITTING TENSILE TEST DEVICE

A Splitting tensile test device
For ø150x300 mm and ø160 x 320 mm
Cylindrical specimens,ASTM/EN

B Distance piece
For ø100 x 200 mm, cylindrical specimens, EN

C Splitting tensile test device
For 60·150 mm height x 220 mm

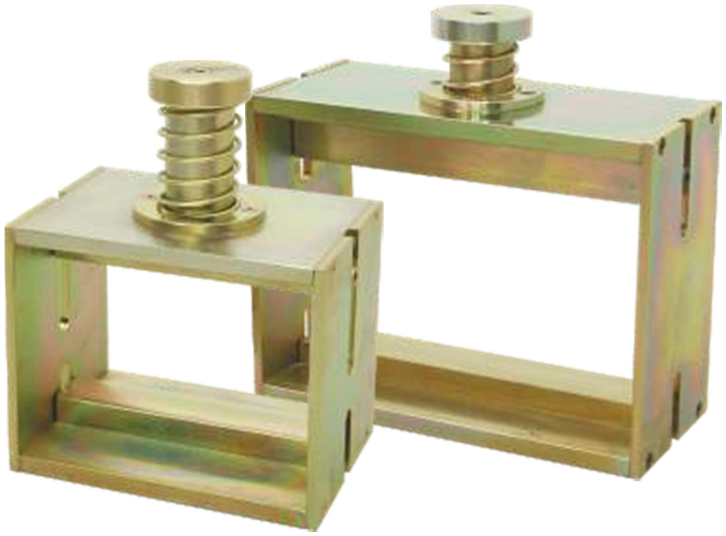
D Length concrete block pavers, EN
Splitting tensile test device
For 150x150 mm concrete cubes, EN

E Distance piece
For 100x100 concrete cubes, EN

Standards:
EN 1338, 12390·6; ASTM C496

The Entek series Splitting Tensile Test Devices are accessories for compression machines for measuring the splitting tensile strengths of ø150 x 300 mm and ø160 x 320 mm cylindrical specimens, 150 mm cube concrete specimens and of 60·150 mm height x 220 mm length concrete block pavers according to the requirements of the related standards.

	A	C	E
Specimen	Cylindrical 150x300 mm 160x320 mm	Concrete Block Pavers 60·150 mm height 220 mm length	Concrete Cubes 150x150 mm
Related Standards	EN 12390·6; ASTM C496	EN 1338	EN 12390·6
Dimensions	340x150x330 mm	240x160x320 mm	180x150x320 mm
Weight (approx.)	25 kg	17.5 kg	15 kg



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HYDRAULIC JACKS

Hydraulic Jacks have multipurpose utility, i.e. application of loads while engaged in field investigation, determination of load carrying capacity of piles in the field, tensioning of wires in pre-stressed structures, loading of members of any structure for deformation characteristics etc. The jacks are supplied complete with manually operated pumping units fitted with bourdon tube type load gauge and high pressure flexible hose pipe. All the jacks have a piston travel of 50 mm and jacks upto 1000 kN capacity are provided with retraction springs.

Note: Piston Travel upto 150 mm can be provided on request.

Capicity (kN)	Model No.	Specs of Load Gauge		General Specs	
		Range (kN)	L.C. (kN)	Piston Dia. (mm)	Piston Stroke (mm)
50	ETK 501A	50	0.2	50.0	50
100	ETK 501B	100	0.5	78.7	50
250	ETK 501C	250	1	78.7	50
500	ETK 501D	500	2	111.2	50
1000	ETK 501E	1000	5	157.0	50
2000	ETK 501F	2000	10	222.2	50
3000	ETK 501G	3000	10	272.2	50

PERMEABILITY APPARTUS (THREE CELL MODEL)

IS 3085, DIN 1048

One of the durability test of concrete is to determine permeability of water through specimen. Permeability apparatus is used for determining the permeability of cement mortar and concrete specimens of 150mm cubes/cylinders cast in the laboratory.

Specification:

The concrete permeability apparatus comprises of a mild steel cell of Square/Round cross-section mounted on a stand and a pressure chamber is connected to the cell through 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 and one top plate connected to nozzles.

The pressure chamber is fitted with a pressure regulator which helps in regulating the pressure from 0-15kg/cm sq. Gauge is for indicating the pressure in the cell. A foot pump and a pressure tube is supplied to develop pressure in the chamber. The apparatus is supplied with a measuring cylinder 500cc to measure percolated quantity to water.

Note: 1. Pressure can also be applied; by a pressure air line or by a compressor (2HP capacity), can be supplied at an extra cost.

2. Model available for 6, 9, 12, 18 cells permeability also.

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B TYPE AIR ENTRAINMENT METER

High-quality type B pressure meters measure concrete air content and include many value-added improvements. Our standard model now features the exclusive Gorilla gauge, and a new, more affordable model offers an American-made stainless steel gauge. Other features of the two units are identical. Long-lasting stainless steel clamps adjust quickly and are less expensive to replace. Pump with large, easy-grip handle builds pressure quickly and is shielded to keep dirt and water out of the piston area. Brass petcocks have stainless steel ball valves for accuracy and durability. Petcock handles are vinyl coated for more comfortable operation.dimensions and accuracy of the meters exceed ASTM requirements. Calibration vessel, calibration tubes, 24in (610mm) tamping rod, aluminum straightedge, syringe for water, carrying case and operating instructions are all included. Cast aluminum chamber volume is 1/4ft³ and can also be used for unit weight and yield determinations. Sturdy plastic carrying case holds meter with all accessories securely in die-cut foam padding.

Case Dimensions: 686 x 356 x 356 mm (W x D x H)

AIR ENTRAINMENT METER

IS 1199 1959 & BS 1881-106

As entrainment of air in limited percentage improves durability of concrete and very low percentages deteriorate it , measurement of air entrapped in freshly mixed concrete becomes important. The use of chemical additives to increase workability of concrete in turn requires an air content check to be made. Air entrainment meters are used to determine air entrained in freshly mixed concrete by pressure method.

Specification:

The apparatus consists of a pressure tight flanged cylindrical measuring bowl. The bowl is fitted with a removable flanged conical cover assembly with the help of a seal. The conical cover has an air valve and a petcock for bleeding off the water. A transparent cylindrical stand pipe which is graduated in air content is fixed to the conical cover assembly. Pressure is applied to the specimen with the help of a pressure bulb and the pressure is recorded on the pressure gauge which is mounted on the stand pipe. The whole assembly is mounted on a flat base. The instrument is supplied complete with one each following accessories.

Calibration cylinder with spring clamp, trowel, tamping rod, straight edge. Rubber mallet and measure.

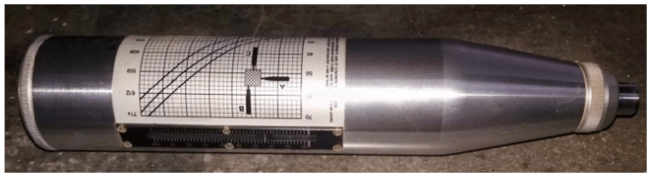
Models:

A Bowl Capacity: 0.005 cubic meter B
Bowl Capacity: 0.007 cubic meter C
Bowl Capacity: 0.01 cubic meter D
Bowl Capacity: 0.01 cubic meter

CRACK WIDTH RULER

This simple gauge has been designed to provide inspectors with a low cost alternative to a graduated microscope for determining the width of a crack in a concrete or other building materials.
Similar in size to a standard credit card, this transparent gauge is marked with a range of graded lines. Each line is a specified width. To use, position the gauge over the crack and identify which line is a similar width to the crack. Read off the width value.

CONCRETE TEST HAMMER (SCHMIDT HAMMER) N TYPE



EN 12504-2, 13791, ASTM C 805, BS 1881:202, NF P18-417, DIN 1048, UNI 9189

The quality of concrete is mainly judged by its compressive strength directly affecting the load-bearing capacity and durability of concrete structures. concrete test hammer (Schmidt Hammer N type) is used to measure the compressive strength characteristics of hardened concrete non-destructively, control uniform concrete quality and detect weak spots in the concrete. The test object should have a minimum thickness of 100 mm.

ELECTRONIC CONCRETE TEST HAMMER (SCHMIDT HAMMER)

Trait:

1) Center rod is made from imported material, high accuracy and durable resistance.
2) The high polymer material in order to perfect protect instrument from damage and extend use life.
3) Pointer slider is outside structure, its friction can be balance well and easy to be adjusted so that we can make sure that the instrument is accurate. Compared with other suppliers in the line of business, the product is more accuracy, good quality, and best price and longer use life.

Parameter:

TestRange	: 10~60mpa
Standard Impact Energy	: 2.207J (0.225Kgf.m)
Stroke ofRebound Hammer	: 75mm
Friction ofPointer Slider	: 0.5n~0.8n
Sphereradiusofrebound poleSR	: 25mm1mm
AverageRebound Value on Steel Anvil RM	: 802
Size	: 54 x 278 mm
Weight	: 1Kg

Specifications:

Power	Electronic
Brand name	Entek
Usage	Compression strength
DIY Supplies	Tiling
TestRange	10~60MPA Standard Impact Energy 2.207j (0.225kgf.m) Stroke ofRebound Hammer 75 mm
Friction ofPointer Slider	0.5n~0.8N
Shell	High Polymer Material

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CRACK MICROSCOPE

Crack microscope is a high definition device which is used for measuring crack widths both in concrete and other structures like masonry walls. Consists of an adjustable lamp unit and a knob for focusing the image. The 360° turning ability of the eyepiece enables the alignment with the direction of the crack or pitch subject to examination. The battery operated microscope has 40x magnification and 4 mm measuring range with 0.02 mm subdivisions.

Specifications:

Magnification	:	40 X
MeasuringRange	:	4 mm
Subdivision mm	:	0.02
Dimensions	:	150x80x45mm (packed)
Weight (approx.)	:	550 gm

ROCK TESTING EQUIPMENTS

Rock mechanics is the theoretical and applied science about the physical behavior of rock and rock masses as well as their reaction to the force fields of their physical environment. It also deals with the application of the principles of engineering mechanics to the design of the rock structures generated by mining, drilling, reservoir production or civil construction activity, such as slopes, tunnels, dam foundation mining shafts, underground excavations, open pit mines, oil and gas wells, road cuts, waste repositories and other structures built in or made of rock. It also includes the design of reinforcement systems such as rock bolting patterns.

Testing of rocks mainly aims to simulate stress conditions that a rock sample is exposed in nature and to get necessary parameters such as stress, strain, elastic modulus, poisons ratio properties to evaluate specimen. When a rock sample is subjected to defined stress conditions in the laboratory, the stress-strain diagram can show non linear relations also for very small strains, hysteresis, anisotropy, etc. All these phenomena can be mathematically described and used for mechanical design simulations.

- Coring & Cutting
- Sample
- Preparation
- Strength Index
- Pullout Test
- Rock Strength
- Deformability

CORE CUTTING/CORE DRILLING MACHINE (PETROL)

Specification:

Suitable to cut/drill cores of concrete, rocks, stones, tiles or the similar materials. The machine is suitable for core samples of size upto 150 mm diameter with the help of thin walled diamond bits which are at extra cost. The machine has sturdy base with pillar support in which rack and pinion is provided for adjustment in height and penetration assembly. The leveling screws are provided at the base. For gripping the sample in position suitable grips are provided. A suitable petrol engine is fitted in the machine with cooling arrangement with water. The base frame is also fitted with wheels for ease of transportation.

Dimension approx, are as under:

Height : 1300 mm
Base : 625 x 900 mm
Head travel on rack : 500mm
Drill speeds : 900 R.P.M. for soft samples and 350 R.P.M. for hard Samples
Waterswivel : Built in the machines.
Accessories : (1) Thin wall diamond bits.
(2) Core barrel.
(3) Petrol engine 190 cc

PORTABLE CORE CUTTING DRILLING MACHINE PETROL DRIVEN

EN 12697-27

Compact and portable core drilling machine is designed to cut cores up to 200 mm diameter from concrete, asphalt and similar hard construction materials. The machine comprises a vertical support column which carries the drill head/motor assembly. The motor assembly comprises a 6.5 hp petrol engine. A ball screw mechanism enables close control of the drilling pressure and rapid return when drilling is completed. A water spraying assembly is mounted on the machine. The complete assembly is supplied on a rigid wheel mounted metal base frame with leveling and fixing facility during the operation.

Weight (approx) : 100 Kg
Power : Petrol Engine 6.5 HP
Briggs & Stratton USA

CORE CUTTING/CORE DRILLING MACHINE (MOTORISED)

Specification:

- Rated Voltage: ~220 V / 50Hz
- Power Input: 2800W
- No-Load Speed: 840rpm
- Max. bit diameter: Ø50mm/100mm/150mm
- Shaft Male: 1 1/4"UNC

Features:

- Compact size with light weight as well as safety in operation
- The drills are equipped with a friction clutch as well as over load current protection for protecting motor
- High-strength gear to keep the drill working long hours constantly
- Excellent speed, smooth and stability during drilling
- Out setting water swivel seal facilitate making replacement when the seal worn out
- Bits capacity: 25mm Dia - 150mm Dia

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Complete Combination:

The core drill includes drill motor, base, column, carriage, control panel, friction clutch, motor mount plate, rack, gear-box, out setting water swivel seal, hydraulic system.

Optional parts include water pump, rod for ceiling jack, water container, adapters.

Application:

The Core Drill is the industry standard, designed for concrete, reinforced concrete, Asphalt and brick in construction.

ROCK/CONCRETE CUTTING MACHINE

EN 12390:3, ASTM C42

Electrically operated with cooling system.

Masonary Table Saw

For people who work with stone, brick, large tiles or blocks, it goes without saying that precision is crucial to the end result. But the efficiency of the machine should never compromise the need for good ergonomics and a reasonable workload. Put simply, the stone or tile you cut must fit perfectly, just as the machine and the blade you use must fit your work situation perfectly.

Universal table saw with a unique super-stable height adjustment device, lockable in any position. max. cutting depth in top position is 230 mm, by turning the material over.

Specifications:				
Rated voltage	: 230v		Rated power	: 2200w
Max cutting depth	: 90mm		Cutting length	: 650 mm
Rated speed	: 2800r/min		Blade diameter	: 350mm
Arbor size	: 25.4 mm		Water pump runoff	: 10-12l/min
Packing size	: 1320 x740	x 825 mm		
Weight	: 80kg			

ASPHALT & CONCRETE FLOOR SAW

Driven by electrical motor or by engine as per customers requirement. Diamond blade from 350 to 500 mm maximum can be supplied as per requirement. The trolley in which the engine is fitted is supplied with cooling arrangements with the help of a water tank. Arrangements to control the depth is also provided. A safety guard is also provided on the diamond blade. Two wheels are provided for easy movability of the machine.

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CORE CUTTING GRINDING MACHINE

- Table Mounted
- Stable Construction Feed arrangement for cutting
- Feed arrangement for cutting
- Cooling water arrangement

Specification:

This unit is designed for cutting and grinding cylindrical rock specimens upto NX size. The outfit includes 200mm dia diamond impregnated cutter, a fine diamond impregnated grinding wheel a water supply system and sampler holder.

A V-Vice, to hold the sample up to 55mm dia x 140mm long to be cut parallel and square to the longitudinal axis is provided. Cores longer that 140mm can be prepared by reversing the specimen and holding againstthevice, A hand feed arrangement is provided to facilitate the specimen with a uniform and smooth feeding motions. This unit is provided with a 3 HP, Three Phase, 440 V A.C. Motor.

POLISHING AND LAPPING MACHINE

- Compact table model
- 20 cm dia top and Adapter to hold polishing cloth or paste
- Sample Holders to accommodate upto NX size Cores
- Continuous water feed arrangement during operation

Specification:

This unit is provided with a 1 HP Single Phase, A.C. motor

This bench mounted single spindle lapping machine is Ideally suited jar the final polishing of mounted rock or concrete specimens. Two sample holders of sample size ordered for are provided with each machine as standard supply Sample holders of other size can also be provided on request. This is a motor driven unit with 450/500 rpm. A swing-in tap, for continuous water supply during operation is also provided.

AUTOMATIC GRINDING MACHINE

The automatic grinding machine provides fast grinding of cylinder specimen ends to obtain plane and parallel surfaces according to EN and ASTM standards.

Three units of ø38 to 100 mm or two units of ø150-160 mm concrete cylinders ends can be ground simultaneously with the suitable cradle and water restraint panel. The length of the any specimen must be longer than 70mm.

According to ASTM and EN standards, the planeness accuracy of grinded surface is 0.05 mm. and the deviation of perpendicularity of the side with reference to the end faces is 0.5^{o}. The equipment has selectable advance grinding time functionality by user from 50 to 400 seconds. Optimum grinding time per end of all type specimens is 90 to 120 seconds. The cradle which specimens are fixed on has automatic bidirectional radial displacement ability. The safe and ergonomic design prevents the user to exposure to water and dust and provides easy access to the water inlet and outlet. Specimen cradles and water restraint panels can easily be installed without the need for any assembly.

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Mobility of the machine is achieved with the help of the integral wheels, and all components of the system can be safely accessed for easy maintenance.
The frame is manufactured from aluminum to obtain a lighter weight and the stainless steel exterior shell assures resistance to corrosion.
The water restraint panels should be ordered separately for cubic specimens or different sized cylindrical specimens.
The preparation of concrete cylinder test specimen for compressive strength test
EN 12390-1, 12390·3, ASTM C31, C39, C192, C617
The maximum tolerance on the flatness of the potential load bearing surfaces (the ends of compression test specimens) is 0.002 in. [0.050 mm]
The preparation of drilled concrete cores specimen for compressive strength test
EN 12504-1, 12390-1, 12390·3 ASTM C42, C397
T h e

w i t h deviation of perpendicularity of the side, reference to o the end faces is 5
Dimen sions : 730 X 1080 X 1510 mm
Weigt h (Approx.) : 280 Kg

Strength Index

POINT LOAD INDEX TESTER

IS 8764
Point Load Index tester, a rock tes t i n g i n s t r u m e n t f o r determining the Diametrical Point Load Strength Index of rock cores and Irregular Lumps which may be tested without any treatment. The Point Load Test is primarily as index Test for strength classified of rock materials. This instrument is mainly intended for field measurements on rocks specimen, but it can be used in the laboratory. The results of the test may also be

Features:

- Equipment is light and portable
- Rock core specimens can be tested without any preparation
- The instrument can be used in the laboratory as well as at the drilling site
- The results of the test may also be used to predict the uniaxial compressive strength of rock.
- With this instrument, a wide range of core size can be tested
- The frame has adequate adjustments to align perfectly the loading axis passing through the centre of the bearing plates and loading platens at the position of the ram of the hydraulic jack

The equipment comprised the followings:

A Loading Frame, fitted with Hydraulic Jack, handoperated, capacity 100KN (10,000kgf)
B Load Gauge, 25KN (2,500 kgf) to read upto 0.25KN (25kgf)
C Load Gauge, 100KN (10,000 kgf) to read upto 0.50KN (50kgf)
D Conical Loading Platens
E Diaphragm Bolt

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DIGITAL POINT LOAD TEST APPARATUS

ASTM D5731

Digital Point Load Test Apparatus consists of a 60 kN capacity load frame with a hydraulic loading ram driven by a hand pump. The frame is adjustable for testing of samples up to 102mm diameter. A ruler assembled on the frame allows the direct measurement of the distance between the conical platens before and after the test. The compression load is measured by a pressure transducer connected to an advanced digital display unit assuring the best accuracy and resistance to the failure shocks. Safety Features:

- Load range : 0 - 60 kn
- Digital display : 2 x 16 characters
- Resolution : 32.000 div.
- Accuracy : ± 1%
- Load pacer included
- Load measurement in both kn and mpa
- Serial port for pc connection

BRAZILIAN TEST APPARATUS

IS 10082-1982

Specification:

The instrument is useful for testing specimen from 50mm dia to 100mm and of thickness of half the diameter. This is to test for indirect measurement of tensile strength of rocks. The specimen is held in circular jaws, this is primarily similar to a compression machine and consists of a small load frame having sturdy base with two vertical threaded rods and an adjustable cross head. The hydraulic jack is fitted at the centre of the base of the load frame. The jack of the load frame is self retracting and two plain platens are supplied. A pressure gauge capacity 0-100 kn x 1 kn is fixed at the base of jack. A maximum pointers is also provided on the gauge, a pair of semi circular platens for 50mm dia samples also provided. The instrument can be used in field also.

Optional Extras:

Pair of jaws for samples dia

(a) 60mm (b) 70mm (c) 80mm (d) 90mm (e) 100mm.

SLAKE DURABILITY APPARATUS

ASTM D 4644

Plake durability apparatus, 220-240 v 50 hz

A Pair of mesh drums for

This test method has been developed to assess the deterioration of rocks over a period of time when subjected to water immersion. Slake durability is a simulated weathering test to determine abrasion resistance during wetting and drying cycles of shale and similar soft rocks as used in embankments and other construction-related applications. Samples are alternately tumbled in mesh drums through a water medium and oven-dried for two cycles. The percent loss of mass is referred to as the slake durability index.

The slake durability apparatus consists of a motorized drive unit which is mounted on a baseplate and which can rotate two or four drums at a speed of 20 r.p.m. The tank assemblies are filled with water to a level 20mm below the drum axis. The test drums are manufactured from 2.00mm mesh, 140mm dia. X 100mm long.

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ROCK BOLT PULL OUT TEST APPARATUS

IS 11309, ASTM D 4435

Specification:

The objective of the test method is to measure the working and ultimate capacities of rock bolt anchors. The system comprises of a central hole jack, hand pump with a load gauge, directional control value (only for central hole jacks above the capacity of 500 kn), flexible hose pipe 5 mts, truss high tensile bolts with coupling. In general the pull out force is indicated on the load gauge, however a load cell with digital indicator can be used to measure the pull out load. Arrangement is provided for fixing the dial gauge for estimating deflection against the load.

Rock Strength

LOAD FRAME FOR UNIVERSAL COMPRESSION TEST OF ROCKS 12 SPEED 200 KN

ASTM 2938

This equipment is used for determining unconfined compressive strength of intact rock core specimens. The rock sample is cut to length and the ends are machined flat. The specimen is placed in a loading frame and if required heated to the desired test temperature. Axial load is continuously increased on the specimen until peak load and failure are obtained.

The equipment consist of the following replaceable parts :

- Load frame, 200 kn capacity 12 speed from 0.0064 to 1.25 mm/min
- Proving ring, 200 kn with calibration certificate
- Dial gauge 25mm travel, 0.01mm least count.
- Platen set as per ASTM 2938 requirements
- Platen set as per ASTM 2938 requirements
- Horizontal clearance 300 mm
- Vertical clearance 750 mm
- Maximum platen diameter 198 mm
- Maximum platen travel 100 mm
- Specimen diameter 38 mm to 100 mm
- Can test AX, BX, NX rock specimen upto 100 mm

Deformability

HOEK TRIAXIAL

Hoek Triaxial Cell BX, 42.04 mm dia.

(A) Spare Sealing Sleeves dor Hoek Triaxial Cell BX

(B) Hoek Triaxial Cell NX, 54.7 mm dia.

(C) Spare Sealing Sleeves for Hoek Triaxial Cell NX

(D) Hoek Triaxial Cell HQ, (Ø 63.5 mm)

(E) Spare Sealing Sleeves HQ, (Ø 63,5 mm) for Hoek Triaxial Cell Hoek Cells have been designed to be used for triaxial testing of rock specimens. Hoek Cells comprise a steel body complete with two quick release self-sealing couplings, two steel end caps which are screwed to the cell body, 2 pieces of upper and 2 pieces of lower loading caps with spherical coupling and a rubber sealing sleeve to separate the specimen from the cell fluid.

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SOIL

TESTING

EQUIPMENTS

Entek Soil Testing Equipments are used for understanding and investigating the physical/mechanical properties, critical characteristic behaviors, performance of soil, unbound and hydraulically bound mixtures during compression, shear or inner liquid flow under dynamic and vibrating loading conditions. Soil characteristics are also used for deciding the most suitable method for excavating underground tunnels. The soil tests provide the engineering firms and construction companies with the ability to predict the mechanical behavior of soils in order to design foundations that ensure resistance to forces likely to act upon it, including any unusual / extreme events such as earthquakes or hurricanes, thus providing a safe environment for people in or around the structures.

- Shrinkage Limit of Soil
- Index Properties of Soil
- Grain Size Analysis
- Water Content & Dry Density of Soil
- Soil Penetrometers
- Soil Sampling
- Moisture Meter
- Soil Permeability
- Field Density
- Specific Gravity
- Relative Density
- Testing Kits
- Extraction & Sample Preparation
- Consolidation
- Direct Shear Apparatus
- Unconfined Compression Testing
- Triaxial Test (Cell & Setup)
- Bearing Ratio
- Sampling Augers
- Sampling Tubes
- Static Cone Penetration Test
- Vane Shear
- Test Sieves
- Sieve Shaker
- Plate Load Test
- Light Weight Deflectometer
- Load Rings

PLASTIC LIMIT SET

IS 2720 (PART-VII) ASTM D-42, BS 1377 AASHTO T 90

Moisture contents at which soil has smallest plasticity is called limit. For determination purpose plastic limit is defined as the water content at which a soil will just begin to crumble when rolled in to a thread of 3mm dia.

Specification:

The complete set consists of one each :

1. Glass plate 20cm x 15cm having round ends
2. Brass or stainless steel rod 3mm dia x 150mm long
3. Flexible spatula 15 cm
4. Set of 6 moisture containers
5. Porcelain basin 150mm dia
6. Plastic wash bottle 500ml

Note: Glass Plate size 500x500x10mm can be supplied at an extra cost.

SHRINKAGE LIMIT SET

IS 2720 (PART-VII) ASTM D 427, BS 1377,
AASHTO T 92.

Shrinkage limit is the maximum water content at which a reduction in water content does not cause an appreciable reduction in volume of the Soil Mass. At shrinkage limit, on further reduction in water, air enters in to the voids of soils and thus keeps the volume constant.

The apparatus can be used to determine shrinkage limit and to calculate other shrinkage ratio, shrinkage index and volumetric shrinkage.

Set consists of one each:

1. Porcelain evaporating dish
2. Shrinkage dish
3. Glass cup
4. Perspex plate with three metal prongs
5. Flexible spatula 100mm
6. Glass cylinder
7. 25ml x 1ml, supplied without mercury
6. Plastic wash bottle 500ml

Optional Accessories:

Mercury supplied in bottle of 500 gms. at an extra cost.

LINEAR SHRINKAGE MOULD

BS 1377-2

Specification:

A simple mould which is filled with the soil under test. This is then dried and the resulting decrease os length of the specimen measured is expressed as the linear shrinkage. It is 25mm Dia. x 12.5mm Height x 140mm Length.

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SOIL CONE PENETROMETER

IS 2720 (PART IV)

Specification:

For determining the liquid limit of soils. This is specially useful to obtain reliable and accurate results of those soil which have low plasticity index. The percentage moisture contents determined when cone with half angle of 15-30 minutes under a total sliding weight of 148 gm penetrates 25mm gives the liquid limit.

SEMI AUTOMATIC CONE PENETROMETER

BS 1377:2

Specification:

Used to determine the moisture content at which clay soils pass from a plastic to a liquid state. Two Version are available. One the standard one & the other is semi-automatic with timer where the cone is allowed to free fall for a period of 5 seconds including one each of 50 gm. & 100 gm. weight, one penetration cone, preset counter & measuring cup.

LIQUID LIMIT DEVICE WITH COUNTER

IS 2720 (PART V), BS 1377-2, ASTM D 4318

Specification:

Casagrande method in mechanical form is known as liquid limit method and has been in use for soil mechanics for a number of decades. The liquid limit data of soils is useful to correlate mechanical properties of soil, such as compressibility and lower shear strength. Liquid limit is the water content at which soil passes from zero strength to an infinite strength, hence the true value of liquid limit cannot be determined. For determination purpose liquid limit is that water content at which a part of soil, cut by a groove of standard dimensions, will flow together for a distance of 1.25 cm under an impact of 25 blows in a standard liquid limit apparatus. The soil at the water content has some strength which is about 0.17 N/cm. sq. (17 gms/sq.cm.) . At this water content soil just passes from liquid state to plastic state.

It consists on a brass cup held on an adjustable bracket.

The cup can be adjusted for a fall of 1 cm and can be raised an dropped on a rubber base of standard hardness by cam action. Complete with one Casagrande grooving tool, one ASTM grooving tool and a height gauge block. A counter to register the number of blows.

LIQUID LIMIT DEVICE (MOTORISED)

Same as but fitted with a motor geared down to give approximately 120 rpm. Suitable for operation on 230 V A.C., Single Phase, 50 Cycles.

Spares :

Casagrande grooving tool. ASTM grooving tool, height block, 1cm high.

Grain Size Analysis

HIGH SPEED STIRRER

IS 2720 (PART IV)

Specification:

This is for mechanical analysis and also other laboratory applications for stirring Speed approximately 4000 R.P.M. under load. A dispersion cup is supported on a rest on the stand of the stirrer and has a removable baffle. For operation on 230V A.C. supplied with dispersion cup or baffle cup.

GRAIN SIZE ANALYSIS (PIPETTE METHOD)

IS 2720 (PART IV) AND BS 1377:2.

Specification:

This is for the determination of the sub sieve particle distribution in a soil sample by mechanical analysis. An analysis of this kind expresses quantity the proportions by weight of the various sizes of particles present in the soil. It is recommended as a standard procedure to use dispersion agent to avoid flocculation.

The apparatus consists of a sliding panel which moves up and down by means of a screw allowing Anderson pipette fixed to it to be raised or lowered vertically. A sedimentation tube is held by a laboratory clamp provided on the stand below the pipette. The depth of immersion is measured by a scale graduated in mm at the side of the sliding panel. Supplied complete with Anderson pipette 10ml. At the side capacity made from glass, and a sedimentation tube also of glass of 500ml capacity and 50nos. Test form pads.

Accessories & Spares: (on extra cost)

1) Sedimentation Pipette (Anderson pipette) 25ml.
2) Sedimentation tube 100ml
3) Sedimentation pipette 10ml
4) Sedimentation tube 500ml
5) Test forms pad of 50

PARTICLE SIZE SEDIMENTATION (HYDROMETER METHOD)

ASTM D 422 AASHTO T 88, BS 1377-2.

Specification:

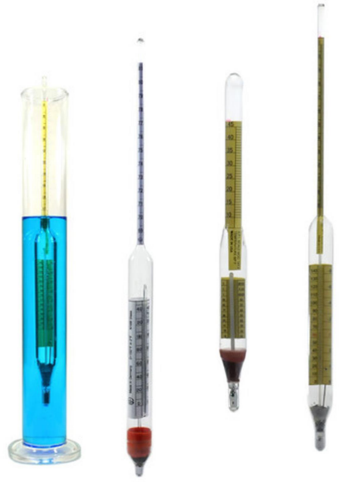
Particle size analysis of soils:

Hydrometer method

This equipment is used to determine the quantitative size distribution of very fine particle in soils such as clay and silt.

The complete set comprises:

- Sedimentation Cylinder, 1000 ml capacity (6 pieces) with rubber bungs.
- Soil Hydrometer, 151H, range 0.995 to 1.038 g/ml with div. 0.001
- Glass Tank, dimensions: 600x300x380 mm
- Heater complete with thermostat, circulation unit. 230V Single Phase 50Hz 1000W
- Glass Thermometer, range -10 to 50° C., Sub-div. 0.5° C.
- Beaker, Borosilicate Glass, 250 ml capacity
- Sodium Hexametaphosphate, 1000 g
- High Speed Stirrer, 4000 R.P.M, complete with baffle cup, for dispersing soil particles in water.



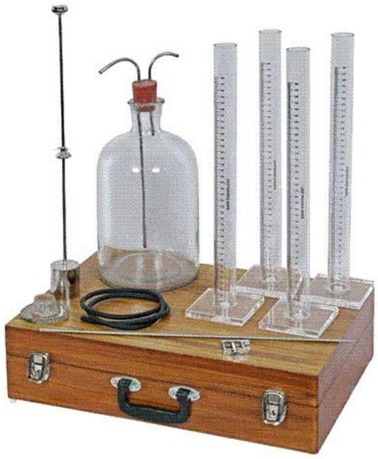
SOIL HYDROMETER

IS 2720 (PART-VI), BS 1377-2

Specification:

Used for grain size analysis of soils where more than 10% of the material will pass through 75 microns B.S. sieve. Manufactured from clear transparent glass having uniform clarity throughout the upper end on which density scale is engraved. The scale range is 0.995 to 1.030 density (gms./cc) at 27°C smallest division on the scale is 0.0005.

Note: Hydrometer for other liquids also available.



SAND EQUIVALENT TEST SET

ASTM D 2419, AASHTO T 176

Specification:

Used to determine the relevant proportions of clay-like or Plastic fines and dust in granular soils & fine aggregate

Consists of:

1. Acrylic graduated cylinder (4 nos.)
2. Rubber stopper for cylinder (4 nos.)
3. Graduated Steel rule 450 mm
4. Funnel 100 mm plastic
5. Aspirator bottle 5 lts plastic with rubber cock
6. Stand for the aspirator bottle with siphon assembly
7. Irrgation tube with stopping cock & weighted foot assembly

Optional : Stock solution can be supplied at an extra cost

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METHYLENE BLUE TEST SET

EN 933-9; NF P94-068; UNE 83 180; UNI 8520-15
The test set is used for determining the methylene blue value of 0/2 mm/ fraction in fine aggregates.

A Methylene Blue Test Set, 210-240 V 50-60 HZ
B 1 Filter Paper For Methylene Blue Test Ø:125 mm, 100 Pcs./Pack

Set consists of

- High speed agitator motor, 400/600 r.p.m.
- Stirring propeller, ø 70 mm 4 flanks
- Glass burette, 50 ml x 0.1 ml
- Burette holder and stand
- Filter paper, 1 pack (100 pcs.), 125 mm dia, 95 g/m^2, 0.20 mm thickness
- Glass rod, ø 8x300 mm
- Plastic beaker, 1000 ml
- Methylene blue, 100 g
- Kaolinite, 500 g

MOTORISED SAND EQUIVALENT SHAKER

ASTM D2419, AASHTO T 176

- Stroke Travel (EN) 200 mm ± 1 mm
- Stroke Travel (ASTM) 203.2 mm ± 1.02 mm
- Rate (EN) 180 mm ± 2/min
- Rate (ASTM) 175 mm ± 2/min
- Dimensions mm (wxlxh) 240 x 800 x 340
- Weight Kg 27.5

PLUMMET BALANCE

Conventionally particle size distribution analysis is carried out using pipette and hydrometer methods. Whereas in hydrometer method it is possible to determine particle sizes in the range 75microns, the method involves computation and it is time consuming. The pipette method can be used for determining only the percentage of specific sizes less than 0.02, 0.006 and 0.002 mm as a percentage of total soil sample.
The plummet balance method to determine sub sieve particle size for the entire range is very rapid and only manipulation of height of the balance, so that plummet sinks to the right depth is required.
The percentage of soil in suspension is directly indicated by a pointer over a graduated scale.
A vertical rod is mounted on a sturdy base having leveling screws.
A pointer with steel pivots turns is jewel bearing an moves over a graduated scale. Scale graduations are market 0-100% x 2%

To the other end of the pointer a plummet is hanged. Rack and pinion arrangement is provided on the vertical rod for adjusting the height. Supplied with a chart showing relationship between "K" and temperature of suspension of soils of varying specific gravity from 2.4 to 2.8 to help in solving stroke's equation. Supplied complete with one Perspex plummet one measuring jar and one rider weight for zero adjustment and rider weight for adjusting the pointer to 100%.

STANDARD COMPACTION TEST

IS 2720, (PART-VII)
Specification:
The apparatus consists one each of compaction mould steel, 100 mm I.D. x 127.3mm height x 1000 cc. volume, complete with collar and base plate. Compaction Rammer is 2.6 kgs in weight x 310mm controlled fall.

STANDARD COMPACTION TEST

BS 1377-4, 1924-2
Specification:
The apparatus consists one each of compaction mould steel, 105mm I.D. x 115.5mm height x 1000 cc. volume, complete with collar and base plate.
Compaction Rammer is 2.5 kgs. in weight x 300mm controlled fall. Face of the rammer is 50mm

STANDARD COMPACTION TEST

ASTM D 558, D698
Specification:
The apparatus consists one each of compaction mould steel, 101.6mm I.D. x 116.4mm height x 944 cc. volume, complete with collar and base plate Compaction Rammer is 2.5 kgs. in weight x 12" controlled fall. Face of the rammer is 2"

HEAVY COMPACTION TEST

ASTM D 558, D698
Specification:
The apparatus consists one each of compaction mould steel, 152.4mm I.D. x 116.4mm height x 2124 cc. volume, complete with collar and base plate Compaction Rammer is 4.5 kgs. in weight x 18" controlled fall. Face of the rammer is 2"

HEAVY COMPACTION TEST

IS 2720 (PART-VIII)
Specification:
Instrument consists one each of compaction mould steel 150 mm I.D. x 127.3mm height volume 2250cc. Complete with collar and base plate. Compaction Rammer is 4.89 kgs. in weight x 450mm controlled fall.
Note : Instead of steel moulds, gunmetal mould are also available.

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AUTOMATIC SOIL COMPACTOR

BS 1377:4

Automatic Soil Compactor BS EN Rammer the automatic soil compactors is designed to provide a fully automatic uniform compaction of standard / modified and CBR specimens assuring conformity with the reference standard.

Compactor is equipped with programmable digital counter which allows machine to stop at the preset numbers of blows. The height and weight of the rammer is adjustable to suit test requirements. The drop weight is adjustable to 300 mm drop height and is also adjustable to 450 mm drop height. The rammer is circular faced with a 50 mm diameter and is adjustable to 2.5 kg. or 4.5 kg.

An automatic blow pattern ensures effective compaction for each layer of soil and the rammer travels across the mould. The table rotates the mould in equal steps and the number of blows per layer can be set at the beginning of the test by the digital counter. User defined blow number and in-out distribution is also available.

A standard proctor / CBR switch, emergency stop and start push buttons are located beside the blow counter. 220 V, 50-60 Hz, 1 Ph

Drop Height (mm)	300-450 (adjustable)
Rammer Weight (Kg)	2.5-4.5
Dimensions (mm)	640x340x1506
Weight (Kg)	135
Power (W)	370

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PROCTOR NEEDLES (SPRING TYPE)

Specification:

The instrument consists of a needle attached to a spring loaded plunger, the stem of which is calibrated to read 0 to 40 kg division. Long stem is graduated at every 12.5mm to read depth of penetration and for use with needles of larger areas. The small penetration stem is also graduation in 12.5mm division and is used with needles of smaller areas. Needle points one each of 0.25, 0.5, 1.0, 1.5, 2.0, 3.5 and
6.0 sq cm. And one Tommy pin is supplied. Complete as above in a wooden carrying case.

POCKET PENTROMETER

ASTM D 1558 D 2573

This instrument is used to estimate approximate unconfined compressive strength and the estimation to shear strength of soil Cohesive soils can also be classified in terms of consistency using this Penetrometer. This is a handy and convenient instrument.

Specification:

It consists of a light weight barrel assembly with a polished and ground steel loading piston plunger. A direct reading scale is engraved on the piston barrel and indicates load in kg. / sq. cm. A maximum load indicator ring is provided on the penetration plunger. The calibrated spring is heat treated and plated for rust resistance. The barrel diameter is 20mm and the length 150mm. Supplied with carrying case.

VICKSBERG PENTROMETER (PROVING RING TYPE)

This is fork determining the bearing capacity of sub grades or for compaction control. It also used for rapidly of soils in shallow exploration work.

Specification:

Consists of a study handle under. Which is fixed a sensitive proving ring. An extension piece is fixed to the bottom of the proving ring and carries a detachable penetration cone at its tip. Proving ring capacity 100 kg (1kn) and 0.002mm dial gauge provided indicates the penetration load applied.

An optical viewer is provided to facilitate reading the dial gauge by the operator. Simplified for single person operation. A calibration chart is provided for the proving ring. Instrument is complete in a wooden carrying case.

WATER LEVEL INDICATOR

A Water level indicator 50 m cable length

B Water level indicator 100 m cable length C
Water level indicator 150 m cable length D
Water level indicator 200 m cable length

The water level indicators (electric contact meters) are portable, easy-to-use and reliable instruments for measuring water level and total depth in bore holes, wells, observation pipes, reservoirs, as well as control of pumping tests.
As soon as the measuring probe electrode touches the water surface, the signal indicator on the instrument lights up with an audible alarm. The water level can be read on the measuring tape in meters (m) and centimeters (cm).

Technical Specifications:

Measuring Range	50m, 100m, 150m, 200m
Accuracy	1 cm for a Measuring Range of 100m
Reproductibility	0.5 cm
Pressure Tightness	10 Bar (up to 50 Var Possible)
Probe	Chromium-plated Brass Standart
Version	14 mm Dia. 140 mm Long
Special Version	10 mm Dia. 320 mm Long
Cable	Polyethylene with 2 steel cores (Anti-corrosive) with Polyamide-coated steel tape, Graduation in millimeters (mm), in centimetres (cm) and numbering in decimetres In black color, the meters (m) figures are red colour on yellow-green base
Cable Drum	Hard Rubber, Plastic Material and Temperature Resistant Power
Supply	3v DC.2 Baby-cells each 1.5v

DYNAMIC CONE PENETROMETER

- A simple and robust instrument for rapid in-situ measurement of the structural properties of road pavements
- Provides fast and efficient method of obtaining information
- For continuous measurements up to a depth of 800 mm and 1,200 mm with the extension rod.
- Portable and can be accommodated in a carrying case

A typical test takes only a few minutes and the instrument therefore, provides a very efficient method of obtaining information which would normally require test-pits. Correlations have been established between measurements with DCP and California Bearing Ration (CBR) so that the results can be interpreted and compared with CBR specifications for pavement design. Agreement is generally good over most of the range but differences are apparent at low values of CBR, especially for fine grained materials.
It incorporates a 8 Kg weight dropping through a height of 575 mm and a 60 deg. cone having a diameter of 20 mm. It is supplied complete with assembly tools and weighs 20 Kg approx.
The DCP needs three operators, one to hold the instrument, other to raise and drop the weight and a technician to record the results. The instrument is held vertically and the weight carefully raised to the handle limit and then allowed to fall onto the anvil.
The equipment consist of the following replaceable parts
A Top and Bottom Rod
B Handle
C Hammer
D 1m Scale
E 60deg.Cone
F Anvil

SPEEDY MOISTURE METER (D2 LARGE)

ASTM D 4944 AASHTO T 217

Specification:

The unit consists of a pressure vessel with clamp for sealing cap, capacity is 20 gms. Rubber sealing gasket, pressure gauge calibrated in percentage moisture content 0·25% x 0.25% on the wet weight basis, an electronic balance for weighing sample, a scoop for measuring carbide reagent, a bottle of reagent, one cleaning brush and a set of 4 steel balls for thorough mixing . Complete in highly polished wooden carrying case with handle.

RAPID MOISTURE METER

The unit consists of a pressure vessel with clamp for sealing cap, capacity is 6 gms. Rubber sealing gasket, pressure gauge calibrated in percentage moisture content on the wet weight basis, a counter poised balance for weighing sample, a scoop for measuring carbide reagent, a bottle of reagent, one cleaning brush and a set of 4 steel balls for thorough mixing . Complete in highly polishedwoodencarryingcasewithhandle.

A : Pressure gauge calibrated
0·50% x 0.50%

B : Pressure gauge calibrated
0·25% x 0.25%

Spares:
Carbidereagent,inbottlesof500gms.eachavailable on extra cost

INFRARED MOISTURE METER

It is a fast ,accurate method to derive direct moisture % in a sample by Loss on Heating Method. Heating arrangement consists of a 250 watt heating lamp with a solid state power stat to control rate of drying and also temperature.

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PERMEABILITY APPARATUS (FALLING HEAD PERMEABILITY)

IS 2720 (PART XVII) 1966.

The apparatus is used for the laboratory determination of permeability of soil using a constant or a variable head. This test is recommended for soils with co-effcient permeability in the range of $0{\cdot}10^{-3}$ to 10^{-7} cm/sec. The maximum particle size of the soil which can be tested in the mould is 10mm.

UNIVERSAL PERMEABILITY

IS 2720 (PART XVII)

Specification:

Same as but instead of a set of three glass stand pipes a stand with nine glass tubes of 6mm, 10mm, 20mm, 25mm, 40mm, 50mm, 60mm, 70mm, 75mm, bore tube is provided with over flow arrangement for constant head tests. The remaining tubes are used for falling head test.

SOIL PERMEABILITY 75 MM

IS 2720 (PART XVII)

Specification:

Same as but with glass tubes of 75mm, bore tube is provided with over flow arrangement for constant head tests. The remaining tubes are used for falling head test.

SAND POURING CYLINDER

IS 2720 (PART XXVIII) 1966

This apparatus is used for the in place determination of the dry density of compact, line and medium grained soils and for layers not exceeding 500mm thickness. The complete apparatus consists one each of Small sand pouring cylinder, 3 litre capacity fitted with conical funnel and shutter. Cylinder calibrating container, internal dia 100mm and 150mm height.

Accessories:

Metal tray, 300mm square and 40mm deep with hole.

Note:

Sand pouring cylinder Medium (150mm) and Large (200mm) as per IS 2720 (P-XXVIII) also available.

SAND POURING CYLINDER

BS 1377-9

Specification:

Same as but this apparatus is as per the BS standardfor 100mm, 150 mm, 200mmdia cylinders.

SAND DENSITY CONE APPARATUS

ASTM D 1556- AASHTO T 191

Specification:

Used to determine the in-situ density of fine grained compacted soil. The test consist in digging a hole into the ground and then collect, dry and weight the sampled soil. The hole is then filled with dry sand from the cone container. The apparatus consist of a double metal cone, oneplastic5ltsjar&a metaltraywithcentrehole.Sizeof thecone is6½"(165.1mm)

Note:

On request 12" (305 mm) Sand Density Cone Apparatus is also supplied at an extra cost.

CORE CUTTER

IS 2720 (PART XXIX) 1966 & BS 1377-9

Specification:

This is used for determination of in situ dry density of natural or compacted fine grained soil, free from aggregates. A cylindrical cutter is used to extract a sample of the soil with the help of a dolly and rammer. From the weight, density and the moisture, and dry density of the soil is ready calculated.

It consists one each of: cylindrical core cutter mode of steel, 127.3mm. Long and 100mm internal diameter. Steel dolly, 25mm high with a lip to enable it to be located on top of the core cutter, rammer with detachable steel rod.

Spare, Optional Extra and Accessories:

1. Cylindrical core cutter 100mm i.d. x 175mm long
2. Dolly
3. Test form pad of 50.

Specific Gravity

PYCNOMETERS

BS812

Useful to determine specific gravity of clays, sand and gravel of size smaller than 10mm.

Specification:

Comprises a 1kg. glass jar with brass cone. Locking ring and rubber seal.

Spare: Rubber seal.

DENSITY BOTTLE (GAY-LUSSAC TYPE)

BS 1377-2, ASTM D 854

Specification:

For determining the particle density (Specific Gravity) of sand, fine aggregate & filler. Capacity 25ml, 50ml, 100ml, 250ml, 500ml & 1000ml.

PARTICLE DENSITY BY GAS JAR METHOD (END-OVER-END SHAKER)

BS 1377-2

Specification:

This method applies for soil containing upto 10% of particles retained on 37.5 mm sieve. The equipment is used to rotate two gas jars at approx. 50 R.P.M.. Glass Jar is 1 litre in capacity with rubber bung.

RELATIVE DENSITY TEST

IS 2720 (PART XIV), ASTM D 4253 & ASTM D 4254
The equipment is used for the determination of the relative density of cohesion less free draining soils and meets the essential requirements

Specification:

The equipment consists one each of:

Vibratory table, with a cushioned steel vibrating decks about 75cm x 75cm. It has a frequency of approximately 3600 vibratory table, minute under a 11.5kg load. Amplitude is variable in between 0.65mm in step of 0.05 to 0.25mm, 0.25 to 0.45 mm and 0.45 to 0.65mm. Suitable for operations on 415V, Three Phase supply. Cylindrical metal unit weight mould, 3000ml capacity. Guide sleeve with clamp assembly. Surcharges base plate for mould. Handle for surcharge base plate. Surcharge weight.

The total weight together with surcharge base plate and handle is equipment to 140 kg./cm^2. For mould. Cylindrical metal unit weight mould 15000 ml. capacity. (Total weight together with the above mould & surcharge weight is equivalent to 140 kg./ cm^2) dial gauge 0.01mm x 50mm travel. Extension piece 25mm for dial gauge.

SOIL TESTING KIT

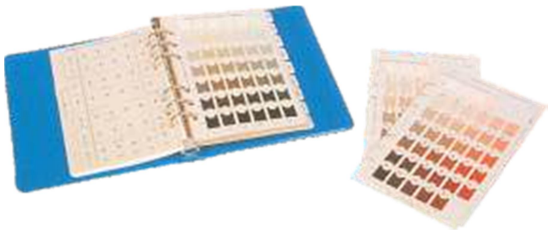
A very useful kit to determine on the spot soil pH value. This is a compact kit easy to carry on site.
Consists of :
12 thick walled test tubes with rubber bungs. 1 tube Cleaning brush.
1 bottle of Barium Sulphate (100gm) 1 bottle of Soil indicator (100gm)
1 bottle of Distilled water (500gm) 1 Spatula.
1 Colour chart, range 4.0 to 8.0 ph in 0.5 ph steps.
Supplied complete with carrying case.

WATER TESTING KIT

A. Acidity Testing Kit
B. Chloride Test Kit
C. Hardness Test Kit
D. Sulphate Test Kit
E. Alkalinity Test Kit

COLOUR STANDARD CHART

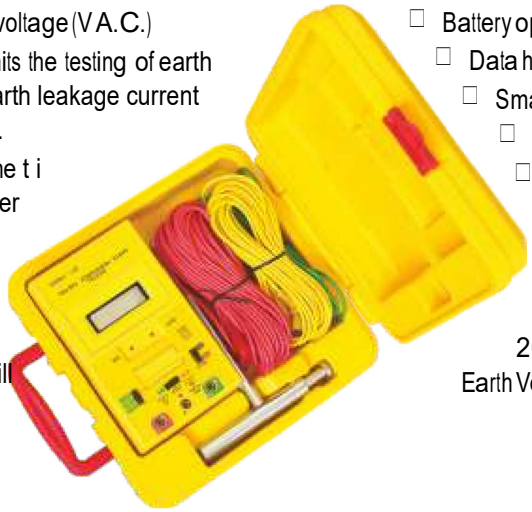
BS 1377:3
The chart provides a simple method for soil classification by of determining the color of soil specimens. Test set consists of 7 constant hue charts covering a total of 196 colors. The color chart and the diagram are fitted in a pocket size binder. Supplied complete with a tropical soil color chart, set of 2 which can be fitted into the binder.



EARTH RESISTIVITY METER

ASTM G 57

- Capable of measuring earth voltage (V A.C.)
- 2mA measuring current permits the testing of earth resistance without tripping earth leakage current circuit breakers in the circuit.
- Auto power off function. The t i mer o p era t es auto power off function. The time operates the "PUSH BUTTON SWITCH" and "TIMER ON BUTTON' are pressed together. This will keep the test "NO" for.



Then auto power off.

- Battery operated
- Data hold function
- Small and light weight
- IEC 1010 CAT III 200V
- Calibration performed with supplied test leads

Specifications:
Measurement Ranges
Earth Resistance: 0-20W/0-200W/0-2000W
Earth Voltage: 0-200V AC (40-500Hz)

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UNIVERSAL EXTRUDER FRAME HYDRAULIC

The extractor frame is used for taking out soil samples compacted or undisturbed, from 100mm dia and 150mm dia cylinders such as Core Cutters, Proctor moulds, C.B.R. moulds etc.

Specification:

It consists of a 50Kn capacity hand operated, hydraulic jack mounted on a suitable frame. Two plungers, one for 4"/100mm dia and the other of 6"/150mm dia moulds are supplied Height of thrust plate is adjustable.

Accessories :

Set of plungers adaptors and thrust plates for 38mm, 50mm and 75mm dia specimen.

Note: Motorised model also available

EXTRACTOR FRAME UNIVERSAL (SCREW TYPE)

ASTM D 698 , BS 598:107

Designed to extract specimens from almost every type of sampling tube and mould used in solid engineering laboratory or in the field. It can be mounted vertically or horizontally as desired. It has an unique feature that three 38mm dia sample.

Specification:

Comprises of a frame designed for screw jack operation, one each of the adaptors for 38mm, 75mm, 100mm, 150mm dia meter specimens and a stand to obtain simultaneously three 38mm diameter samples from one 100mm diameter sample. The adaptor plate which slides along the slotted support can be claimed at any desired position by means of locking nuts. Besides this, the tube or mould can be held in position by raising the tube guides and held in position with locking screws. The lead screw movement can be stopped at any predetermined position by tightening the lead screw collar.

Plunger adaptor for 200mm dia samples.

Adaptor plate with 200mm dia hole and device to extract b number 38mm dia samples.

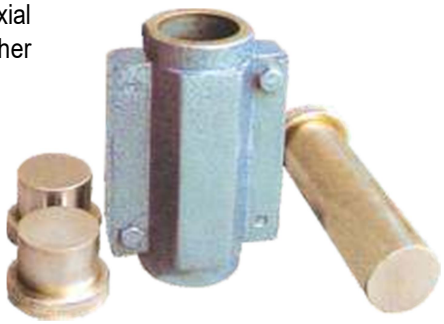
SOIL TRIMMER (HAND OPERATED)

For trimming various diameter specimen for triaxial and unconfined compression tests.

Specification:

The lower specimen grip is mounted on a disc which rotates freely. The soil sample is mounted on the lower specimen grip and the upper grip is firmly seated on top of the specimen. The vertical guide can be adjusted to control the depth of cut. While trimming the lower disc is rotated by hand. Supplied complete with a wire saw. Trimming knife, mounted on a support, can be adjusted horizontally as well as vertically to permit trimming of the specimen to the exact size of the ring. A guide supplied prevents over cutting. Complete with 38mm, 50mm, 75mm and 100mm dia specimen rings.

Constant Volume Mould



Often in the laboratories it is required to quickly prepare remoulded soil specimen for Triaxial and Unconfined Tests. Constant volume moulds are used for this purpose, using either dynamic or static compaction. The moulds are available in different sizes.

A For specimen size 38 mm x 76 mm long comprises Split mould
38 mm dia x 126 mm long.
End plug 38 mm dia x 25 mm long pair. Split collar interchangeable.
Ejecting plunger 38 mm dia x 126 mm long.

B For specimen size 50 mm dia x 100 mm long specimen comprises of
Split mould 50 mm dia x 178 mm long.
End plugs 50 mm x 39 mm long pair.

Accessories :
Split mould 38 mm dia x 76 mm long and split mould 38 mm dia. x 86 mm long.

Consolidation

CONSOLIDATION APPARATUS (SINGLE GANG)

IS 2720 (PART XV)

Consolidation test is un-dimentional test considered extremely important in soil mechanics. Sample taken from adjacent areas of a single site show differential settlement even when tested using same techniques. Soil of similar strength may show varying consolidation. Samples are very carefully prepared and vertical settlement of the specimen in saturated or drained conditions carefully recorded when known load is applied.

Specification:

The standard outfit comprises of the following items. Loading unit, maximum capacity 20kg/cm^2. Having a loading yoke connected to a lever arm with a counter balancing adjustment and having a lever ratio of 1:1 the whole assembly being mounted on a sturdy steel frame stand. The loading unit is so designed that it can be used for consolidation cells of different diameters as well as different dia floating ring type consolidation cells.

Fixed ring type Consolidometer (Odeometer) cell assembly for testing 60mm dia x 20mm thick specimen comprising:
Fixed ring for specimens 60 mm dia x 20 mm thick with guide ring.
Top and bottom porous stones for 60 mm dia specimen.
Perforated pressure pad, channeled base with water inlet and gasket Flanged water jacket, water reservoir with plastic tube and pinch cock.

Set of weights to give a pressure of 10kg/cm.sq. On 60mm dia specimen, comprising : 7 nos. 0.05 kg/cm^2, 5nos. 0.1 kg/cm^2, 6nos. 0.5kg/cm^2, and 5 nos. 1.0 kg/cm^2.

Supplied complete as above but without dial gauge.

Accessories :
Dial gauge 0.002 mm x 5mm. Extension piece, 40 mm long, consolidation test forms pad of 50 for one dimensional consolidation.

CONSOLIDATION APPARATUS (FRONT LOADING TYPE)

BS 1377-5, ASTM D 2435

Specification:

Rigidly manufactured from aluminium alloy casting to provide a high degree of accuracy with any frame distorsion under load. The load bridge group is supported in high accuracy self-aligning seat balls. The beam provides three loading ratio: 9:1 10:1 11:1 and the beam assembly is fitted with an adjustable counterbalance weight.

Maximum load: 150 kg of slotted weights. The odeometer accepts cells up to 100 cm. sq. Supplied complete with rod holding the weights and coupling block holding the dial gauge or transducer. Supplied 'without': Consolidation cell, Weights, Dial Gauge (or transducer), holding bench which have to be ordered separately.

CONSOLIDATION CELLS (FLOATING)

Water trough : Floating ring type of Consolidometer (Odeometer) cell assembly for 60mm dia x 20mm thick specimens complete with floating ring with two guide rings, pair of porous stones, pressure pad and cutting collar.

Set of weights to give a pressure of 10kg/cm. sq. on 60mm dia specimens. Floating ring type of Consolidometer (Odeometer) cell assembly for 50mm dia x 20mm thick specimens complete with accessories as above.

Set of weights to give a pressure of 10kg/cm^2. On 70mm dia specimen.

Floating ring type of Consolidometer (Odeometer) cell assembly for 100mm dia x 25mm thick specimens complete with accessories as above.

Set of weights to give a pressure of 10kg/cm^2. On 100 mm dia specimen.

Additional set of weights for loading upto 20kg/cm^2. Set of weights to give a pressure of 10kg/cm^2. On a 60mm dia specimen comprising 10 off 1.0kg/cm^2.

Set of weights to give a pressure of 10kg/cm^2. On a 50mm dia specimen comprising 10 off 1.0kg/cm^2.

Set of weights to give a pressure of 10kg/cm^2. On a 70mm dia specimen comprising 10 off 1.0kg/cm^2.

Set of weights to give a pressure of 10kg/cm^2. On a 100mm dia specimen comprising 10 off 1.0kg/cm^2. Pair of top & bottom porous stones for 50mm dia cell Pair of top & bottom porous stones for 60mm dia cell Pair of top & bottom porous stones for 70mm dia cell Pair of top & bottom porous stones for 100mm dia cell

CONSOLIDATION APPARATUS (THREE GANG MODEL)

BS 1377-5, ASTM D 2435

Specification:

Same as model but consists of 3 consolidation test assemblies mounted on a single frame. Complete with 3 sets of Consolidation cell assembly for 60mm dia samples and three sets of weights each giving 10 kg/cm^2. On each sample.

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CONSOLIDATION APPARATUS (ELECTRONIC BENCH MODEL)

BS 1377-5, ASTM D 2435

Specification:

Same as Consolidation Apparatus (Front Loading Type) except that the data is displayed and acquired in the digital electronic system.

Direct Shear Apparatus

DIGITAL DIRECT / RESIDUAL / SHEAR APPARATUS

ASTM D3080; BS 1377:7; AASHTO T236, CEN-ISO/TS 17892-10

The test covers the determination of consolidated drained shear strength of a soil material in direct shear. This Automatic Direct / Residual Shear Test Machine is motorized and floor mounted. Supplied with carriage assembly load hanger and integral 9:1, 10:1 and 11:1 lever loading device as standard. The beam loading device which is used to amplify the vertical load on the shear box assembly can receive up to 50 kg of weight. The total load on the specimen can reach up to 5 kN (5000 N).

The machine accepts 60 mm square, 100 mm square, 60 mm dia. round, 100 mm dia. round and 2.5 inc. dia. round shear box assemblies. All shear box assemblies are designed to contain water that surrounds the specimen. The Assemblies consist of a shear box with a rigid wall square or round hole complete with a vertical loading pad grooved back face, a grooved retaining plate, 2 pcs. porous plates, 2 pcs. plane grids and 2 pcs. perforated grids.

The shear machine is driven by high resolution servomotor and gear box assembly. Speed range is fully stepless variable over the range 0.00001 to 9.99999 mm/min for both direction(forward and reverse). After test the reverse speed is 10 mm/min.). 5 kN load cell is used for load measurement. 10 x 0.001 mm and 25 x 0.001 mm sensitivity linear potentiometric transducers are used for vertical and horizontal displacement measurements respectively. Displacement limits are controlled by limit switch.

Shear Box Assembly, Slotted Weight Set and other optional accessories including specimens cutter and extrusion dolly should be ordered separately

The Automatic Direct Residual Shear Test Machine is supplied complete with

- Load Cell 5 kN
- Linear Potentiometric Displacement Transducer (10x0.001 mm)
- Linear Potentiometric Displacement Transducer (25x0.001 mm)
- Software

DIRECT SHEAR (MOTORISED TWELVE SPEED)

IS 2720 (PART XIII)

The apparatus comprises of the following.

Loading Unit:

Supplied with load yoke with direct and lever system for applying load. Normal stress capacity 8 kg/sq. cm. Load is applied either directly or through a counter balanced detachable lever. Provision is made for the load to be applied either through a steel ball recessed in the loading pad or direct through a boss on the pre calibrated loading yoke. The loading unit is provided with V strips and roller strips for frictionless movement of shear box housing.

Shear Box Assembly:

Comprising direct shear box in two halves for a square specimen size 60 x 60 x 25mm one pair of plain gripper plates, One pair of perforated gripper plates, one pairofporousstones,onetopofloadingpad.

Shear Box Housing:

Accommodates the direct shear box assembly. Complete with two ball roller strips.

Specimen cutter: for cutting 60 x 60 x 25 mm. Specimen formlargersamples. Setofweightstogivea normal stress of 3kg/sa.cm. Through larger as following:

To give kg/cm. sq.	Qty.
0.05	04 nos.
0.1	01 nos.
0.2	01 nos.
0.5	03 nos.
1.0	01 nos.

Complete set as above but without proving ring. Net weight 140 kg.

Essential Accessories:

High sensitivity compression proving ring. Cap 200kg. One consolidation dial gauge 0.01mm x 25mm and one strain dial gauge 0.01mm x 25mm Optional Extras:

Additional set of weights to give a normal stress of 5 kg/cm2. Soil sampler for 60mm x 60mm specimen and test forms pad of 50.

Spares:

Porous stone for 60mm x 60mm size sample available in pairs.

Unit is electrically operated to give the following 12 rates or strains. 1.25, 0.625, 0.25, 0.125, 0.05, 0.025, 0.01, 0.005, 0.002, 0.001, 0.004 and 0.0002 mm/min. The apparatus is suitable for operation on 230 Volts Single Phase A.C. Supply.

UNCONFINED COMPRESSION TESTER (MOTORISED)

IS 2720 (PART X) ASTM T 208

This is a motorized instrument for determining the unconfined compression strength of soil specimens of dia. ranging from 38 to 100mm. Load on the sample is applied gradually by a load frame and loads are measured on a sensitive proving ring attached to the load frame.

Specification:

Comprises a screw operated load frame, cap.5000kg with a gear box and motor drive giving 1.25, 1.5, 2.5mm/min. Rates of strain, a pair of cone seating, adaptor for proving ring, and stain dial gauge bracket. Supplied with one pair of male/female coning tools for 38mm dia samples but without ring and dial gauge. Suitable for operation on

230 V, Single Phase A.C. Supply.

Accessories:

Coning tools in pairs (Male & Female) for samples having diameter 38, 50, 75 & 100mm

TRIAXIAL CELL

IS 2720 (PART XII) (stationary Bushing) For 38mm Dia Specimen

Specification:

The cell is useful for testing 38mm dia x 76mm high soil specimen. Transparent Perspex chamber with anvil and loading plunger, the cell is easily opened by releasing four nuts of the tie rods. It is leak proof up to 10kg/cm.sq. Fluid pressure. An oil plug which can also be used as an air vent is provided for introducing a thin layer of oil over water. This provides effective sealing at the plunger for long duration tests. The cell is fitted with four sleeve packed valves of no volume change type on the base. These valves are used for cell pressure, pore water pressure, drainage or back pressure. The loading plunger of the cell has dial gauge rest.

- Loading pad made of Perspex for 38mm dia specimens.
- Pair of plain discs made of Perspex 38mm dia 6mm thick.
- Pair of porous stones 38mm dia specimen.
- Split sand former for 38mm dia specimen.
- Sheath stretcher for 38mm dia specimen.
- One dozen rubber sheaths for 38mm dia samples.
- For synthetic rubber 'o' rings for 38mm dia specimen.
- One plastic drainage tube.

PORE PRESSURE APPARATUS 10 KG/CM²

This apparatus is used for measuring pore water pressure and pore air pressure in soils. This is as per the principals outlined in the book " measurement of soil properties in triaxial tests" by A.W. BISHOP and D.J. HENKEL. This is used as an accessories for triaxial test apparatus.

Specification :

The apparatus consists of a panel for wall mounting on which are fitted 1.0 to 10kg/cm sq x 0.1kg cm. sq. a pressure gauge, bourdon tube type 15 cm dia.

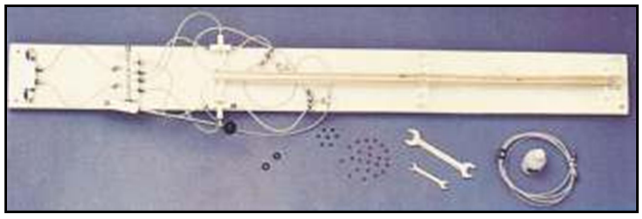
Manometer: Glass u-tube manometer for measuring low positive pore pressures negative pore measures and checking zero error of pressure gauge. It is provided with a mercury trap (mercury supplied at extra cost.) Null indicator made out of clear transparent Perspex with mercury trap and cursor to indicate the mercury level. Burette: 50ml burette for measuring the volume change in the soil specimen. Pressure pump fitted with four sleeve packed valves, operated by means of a hand wheel on the end of the piston rod which is threaded through the pump cap and gives a smooth, fine adjustment of pressure.

Copper coil and water reservoir is fitted on board with complete stand assembly. The unit is tested against leaks up to 10kg/cm sq.

PORE PRESSURE APPARATUS 20 KG/CM²

Same as model, but fitted with pressure gauge 0-20kg/cm2 x 0.2kg/cm sq.

Spares: Polythene tube 3mm bore x 5 mm. O.D.



VOLUME CHANGE GAUGE

A Singleburette,10ml.Capacity, graduated in 0.05 ml division.

B Singleburette,25ml.capacity, graduated in0.1ml.Division.

C Twinburette,50ml.Capacitygraduated in 0.2 ml divisions.

The unit consists of two glass graduated burettes of 50ml. 0.2ml. Capacity enclosed in two Perspex tubes sealed by two end caps.

DEAD WEIGHT TYPE OIL & WATER CONSTANT PRESSURE SYSTEM

This device is used to maintain cell pressure constant for a long duration and the system can be used in place of conventional constant pressure system using mercury pots where certain minimum heights are required. Problems like de-airation of pump, leakage of mercury etc. is eliminated in this system . This unit is smaller in volume and can be used in mobile laboratory also. This can maintain pressure in the cell upto 20kg/cm sq. Pressure is maintained constant in the system by a balancing calibrated weights on a spindle against a columnofoil,operatingunderconstantfeedback.

Construction:

The system consists of an oil pump continuously driven by an electric motor during the test period. The internal components are housed in a strong compact housing. The piston on which weights are kept rotates with minimum friction. A transparent oil water vessel is provided to transmit pressure to the cell. A hand pump provided facilitates priming and to maintain constant pressure during power failure

Specification :

- Range 0-20 bar(0-20kg/cm^2)
- Steps of pressure 0.5bar (0.5kg/cm^2)
- Accuracy + 0.5%
- Electric supply 230V, Single Phase, 50Hz, AC supply.

Supplied complete with pressure gauge, flow valves, connecting pressure hose and set of weights to give maximum pressure of 20 bar (20 kg/cm^2)

LATERAL PRESSURE ASSEMBLY 10KG / cm²

It is designed for application of cell pressure upto 10kg/cm^2 on a triaxial specimen in the triaxial cell. The unit is mostly used in routine tests which last for about 10 to 15 minutes wherein the variations of cell pressure can be tolerated.

Specification :

The apparatus consists of a pressure chamber which has a flanged top cap fitted with a 10 kg/cm^2. Pressure gauge and a valve for pumping in air. Water inlet and drain cock are fitted to the chamber.

The foot pump supplied easily develops a pressure of 10 kg/cm^2 Complete with connecting pressure hose.

Note: Also available 20Kg/cm^2

LOAD FRAME, MOTORISED, 30 SPEEDS

Features:

- Two pillar type
- Detachable Frame
- Enclosed motor and gear system
- Jewel lamps indicating direction of motion
- Operational ease
- Useful for Triaxial and CBR Tests

The Load Frame consists of a cabinet which houses the gear system and motor with sturdy angle iron frame. the loading is done through the bottom loading platen, which is carried on a lead screw, which advances upwards. the top load bracket, which slides over two upright pillars, can be positioned at any desired height and locked. It carries a screw adapter for standard Proving rings and Load Cells.

The loading part of the unit is detachable from the main unit for ease of transport and to avoid damage to the tension rods.

Rates of Strain: 30 fixed speeds between 0.00048 mm/min and 6.00 mm/min.

Suitable for operation on 220 V, 50 Hz, single phase, AC supply.

California Bearing Ratio

CALIFORNIA BEARING RATIO (CBR)

The California Bearing Ratio Test, (usually called CBR test) is an empirical penetration test for evaluation of mechanical strength of natural ground, subgrades and base courses beneath new carriageway construction. It is to determine the relative bearing ratio and expansion characteristics. It was developed by the California department of transportation before World War II.

The test can be performed in the laboratory on prepared samples or in-situ on location. It is important to appreciate that this test, being of an empirical in nature, is valid only for the application for which it was developed i.e., the design of highway base thickness. The basic site test is performed by measuring the pressure required to penetrate soil or aggregate with a plunger of standard area. The measured pressure is then divided by the pressure required to achieve an equal penetration on a standard crushed rock material

CALIFORNIA BEARING RATIO APPARATUS(ASTM VERSION MOULD)

ASTM D 1883 AASHTO T 193

A	CBR mould body complete with collar & perforated base plate. Plated Steel 6 In.(152.4mm) Dia x 7 In. (177.8mm) Height
B	Spacer Disc with T handle 515/16 In. Dia(150.8mm)x2.416 In. (61.4mm) height
C	Annular surcharge weight 2.27kg D Slotted surcharge weight 2.27kg E Filter paper 150mm dia No 1 Fisherman (Pack of 100 circles)

CALIFORNIA BEARING RATIO APPARATUS (BS VERSION MOULD)

BS 1377-4

A	CBR mould body plated steel, with both ends threaded to fit the base or collar, 152 mm ID x 127 mm high
B	Extension collar 152mm ID x 50mm high
C	Perforated base plate
D	Solid base or top plate
E	Cutting collar
F	C Spanner to mount and dismount the collar from the mould body. Two are required for the operation.
G	Compaction plug with handle 150 mm x 50 mm high
H	Annular surcharge weight 2 kg
I	Split surcharge weight 2 kg
J	Filter paper 150 mm dia No 1 Fisherman(Pack of 100 circles)

LABORATORY CALIFORNIA BEARING RATIO APPARATUS, MOTORISED

IS 9669, IS : 2720 (PART XVI)
The Apparatus Consists of :

A
Load Frame, 50kn (5000 kgf) Capacity, 3 Speeds

B
Mould 150mm ID x 175mm high

C
Perforated Base Plate for · 2 Mould

D
Extension Collar, 150mm ID x 50mm high

E
Penetration Piston, 50mm face dia

F
Adjustable Bracket, for Penetration Dial Gauge

G
Circular Metal Spacer Disc. With detachable handle, 148 mm dia x 47.7mm high time.

H
Annular Metal Weight, 2.5kg, 147mm dia with 53 mm dia central hole

I
Perforated Metal Weight 2.5 kg. 147mm dia, with 53mm dia soft

J
Perforated Plate, 148mm dia, with adjustable stem and lock nut
K
Metal Tripod for Dial Gauge
L
Cutting Collar
M
Rammer 2.6kg, 310mm controlled drop
N
Rammer 4.9kg, 450mm controlled drop
O
Proving Ring Capacity 50 KN
P
Dial Gauge, 25mm travel, 0.01mm least count
Optional Extras:
Q
Annular Metal Weight 5 kg, 147mm dia with 53 mm dia central hole
R
Slotted Metal Weight 5 kg 147mm dia with 53mm dia slot

AUTOMATIC CBR TEST APPARATUS

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

The automatic CBR test machine is designed for performing laboratory evaluation of the CBR value of highway sub-bases and sub-grade, and determination of the strength of cohesive materials which have maximum particle sizes less than 19 mm (3/4"). This CBR apparatus is composed of a robust and compact two column frame with adjustable upper crossbeam driven by an electro-mechanical ram with a maximum capacity of 50 kn and a data acquisition and processing system.

The machine is designed to load the penetration piston into the soil sample at a constant rate to measure the applied load and piston penetration at predetermined intervals. The ram speed can be set between 0.5 mm/min to 5 mm/min by using the digital readout unit. This main feature allows the user to perform tests complying to BS, EN, ASTM or AASHTO standards with the same machine.

Rapid adjustment of the platen is also provided by up and down buttons which are located on the front panel of the machine. The machine is supplied complete with a 50 kN load cell, penetration piston, linear potentiometric displacement transducer (25 mm x 0.001 mm), computer software and connection cable. PC is optional.

Main Features:

- Calculates corrected CBR value at 2.5 and 5 mm the digital unit saves the load value at user defined displacement values such as 0.625, 1.25, 1.875, 2.5, 3.75, 5, 7.5,10, 12.5 mm
  - The load corresponds to the displacements corrected respect to the linear region of the data has also saved
  - The % CBR at 2.5 mm and % CBR at 5 mm is also automatically calculated and saved
  - Can make test with displacement and limited 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, 2 channels are active for CBR
- 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 lb
- Real-time clock and date
  - Test result visualization and memory management interface
- Remote connection through ethernet
- USB flash disc for importing test results and for firmware
- USB printer support for inkjet and laser printers(ask for compatible models)
- Camera support for real-time video recording during test(ask for compatible models)
- Free of charge PC software for the test control and advanced report generation

The CBR test machine is supplied complete with:

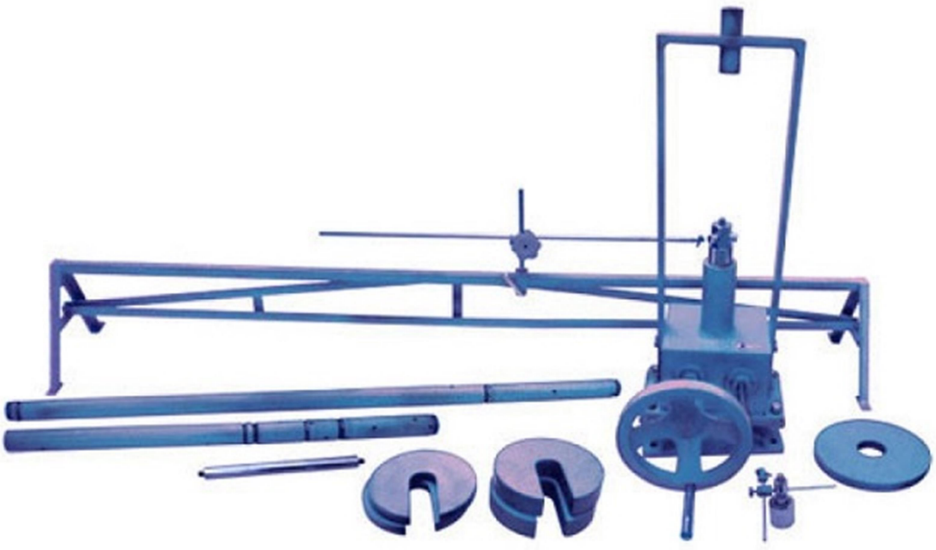
- Load cell, 50 kN
- Penetration piston
- Linear potentiometric displacement transducer with connection part, 25x0.001 mm
- Computer software
- Connection cable
- Advanced report generation

Dimensions	:	480 x 650 x 1150 mm
Weight (approx.)	:	110 Kg
Power	:	370 W

CALIFORNIA BEARING RATIO TEST (FIELD TYPE)

IS 2720 (PART XXXI) 1969.

In recent years it has become important to know C.B.R. values in situ. It is useful in determining the load carrying capacity in the field when in place density and water contents are such that the degree of saturation is 80% of greater, when material is cohesionless and coarse grained, such that it is not effective by changes in water contents and when the material has been in place for considerable the loading is effected by means of a mechanical load frames which can be fixed to the underside of a truck



Specification :

Mechanical screw loading jack, 10,000 kg. Capacity with u-bracket and swivel head. Penetration piston, 50mm dia. Threaded at the upper end. Extension rods consisting of 2 lengths 5 cm. g lengths 10cm. 1 length 30 cm., 1 length 50 cm. and 1 length 100 cm. used as spacers between the proving ring and penetration piston. The lengths are machined from steel tubing. Connector set, has eight connectors for coupling the penetration piston and proving ring assembly either directly or through extension pieces. Dial gauge support of seamless pipe constructions. It stands 30 cm high and 45 cm. Wide at the base. Provided with a quick release screw type clamp capable of sliding and locking anywhere along 2 meter length of the bridge. Supplied with annular metal weight 5 kg., 250mm dia with 53 mm dia central hole, slotted metal weight 5 kg., 215mm to 250mm dia with 53 dia slot 2 nos.

Accessories:

Dial Gauge 0.01mm x 25mm.

High sensitivity proving ring 5000kg capacity with calibration chart and carrying case.

SWELL TEST APPARATUS

Specification :

It is designed to determine the swelling pressure developed by soil specimens moulded to desired densities at knows moisture contents when soaked in water. The load applied to restrain the swelling is transferred to a load measuring proving ring through a perforated swell plate and a load transfer bar. The proving ring is attached to the lead screw of hand operated load frame. A soaking tank is provided for saturating the specimen and the base of the mould has channels and radial grooves with connecting holes it consists one each of :

1. Load Frame, Hand Operated, Capacity 50 KN (5,000 kgf)
2. Mould, 100mm dia x 127.3mm height (1,000ml volume) with base plate and collar
3. Proving Ring, with integral boss, high sensitivity 2.5KN (250 Kgf) capacity
4. Dial Gauge , 25 mm travel, 0.01mm least count

Lid & receiver in G.I. frame for 300mm dia x 450mm dia sieves

5. Perforated swell plate, 100 mm dia x 16 mm thick
6. Spencer, 100 mm dia x 12.7 mm thick

7. Pair of Porous stones, 100 mm dia x 12.7 mm thick
8. Load TransferBar
9. Steel Ball
10. Soaking Tank, 250 mm dia x 210 mm high

Sampling Augers

AUGER POSTHOLE TYPE

Augers are used to collect disturbed soil samples at reasonal depths for laboratory tests. Augers are available in two types and each in different sizes. Blade type (posthole type) and helical type (screw type). Each auger outfit consists one each of auger head, one meter long rod, tee piece and handle. Depth of excavating can be increased using additional extension rods.

A AUGER POSTHOLE TYPE

(a) 50mm (b) 75mm
(c) 100mm dia (d) 150mm dia

B AUGER SCREW TYPE

(a) 25mm (b) 38mm
(c) 50mm (d) 75mm
(e) 100mm (f) 150mm
(g) 200mm (h) 250mm
(i) 300mm dia

Extras :

Extension rod 1 meter length with threading at both ends and couplings, set of two spanners and tee piece.

SAMPLING TUBES

(A) UNRELIEVED
(a)150mm(b)200mm(c)225mm(d)300mmlong.
(B) RELIEVED
(a)150mm(b)200mm(c)225mm(d)300mmlong.
(C) SAMPLING OUTFIT (HEAVY DUTY)

Undisturbed samples of soil at different depths can be collected using these sampling tubes. The kit includes all necessary impletments for boring. Collection and sealing with wax. The operation may be carried out either using a tripod stand or without it. The equipment is supplied in a canvas bag.

Specification:

150mm auger blade type, complete with handle 'T' piece and 1 mtr. long rod 1 no.

Extension:

1mtr. Long and 37.5mm diameter 5 nos.

Jarring link (large) for driving samplers 50mm, 100mm or 150mm dia. This can be connected to the sampler or to the extension rod.

One eye hook, one wax container, one methylated spirit stove, one wax ladle, and one pair spanners complete in carrying case.

Accessories:

Samplers for undisturbed sampling are available in different sizes. These are used with sampling outfit. Each sampler is 45cm long is supplied complete with two end caps, cutting nose. Driving head with air outlet valve and 3 nos. C-spanners . Sampler are available in 50mm dia, 100mm dia & 150mm dia. Thin walled samplers are also available in diameter 50mm, 75mm and 100mm. Each sampler is 60cm long and its cutting edge is hardened. These samplers can be used with sampling outfit 'a' drill rods by using suitable adoptors.

Static Cone Penetration Test

SPLIT SPOON SAMPLER

IS 2131-1963, IS 9640-1980

Specification:

This is used for standard penetration test for determining penetration resistance (N valve) of soil which can be related to unconfined compressive strength. Penetration resistance (N value) of soil is determined by giving a number of blows with a 65 Kgs weight falling through a given distance of 75cm required to penetrate the assembly to a depth of 30 cm when properly seated on the ground.

The sampler is made from a steel tube split length wise & held together by a head fitted with a ball check valve & a hardened steel shoe in size cutting edge of 35mm dia.

The sampler is 35 mm i.d. & 50.8mm in outer dia & 508mm long. One adopter to connect 'A' type drill rods is also supplied.

Spares :

Body of split spoon sampler, shoe of split spoon sampler, head of split spoon sampler.

SPLIT SPOON SAMPLER WITH LINER

Specification: Same as but the diameter is increased to accommodate a brass liner complete with brass liner.

PORTABLE ALUMINIUM DERRICK WITH PULLEY

It is a light weight aluminium derrick can be dismantled fro ease of transpiration . the equipment is suitable for shallow soil sampling, standard penetration tests & lifting operations complete with upper tie bolt & ball but without sleeve. The pulley is use with portable aluminium derrick. It attaches to the ball at the top of the derrick.

DROP HAMMER AND GUIDE PIPE ASSEMBLY

Weight 65 Kg. Complete with two end caps to give a free fall of 75cm the drop hammer

Vane Shear

LABORATORY VANE SHEAR APPARATUS (MOTORISED)

Consists of a torque head adjustable in height by means of a lead screw rotated by a drive wheel to enable the vane to be lowered into the specimen. Rotation of the vane is by means of an electrically operated rate of rotating is 1/60 R.P.M. Suitable for operation on 230 V A.C. Single Phase which operates a worm gear arrangement turning the upper end of a calibration torsion spring, vane dia, rod dia, vane size & vane height are as per IS specifications.

The vane shaft is attached through the hollow upper shaft to a resettable pointer, which indicates the angle indicates the angle of torque on a dial graduated in degree the dial reading multiplied by spring factor gives the torque a container for soil sample is also supplied & a sampling tube of 38mm. i.d. & 150mm long can also be used as container.

Supplied with set of four springs, one each of approx. 2 kgs/cm^2, 4kgs/cm^2, 6 kgs/cm^2 & complete as above in a wooden carrying case.

8 kgs/cm2

POCKET VANE SHEAR APPARATUS

This is an accurate and portable instrument for the determination of in-situ shear strength of cohesive soil , either on-site or on undisturbed or re-moulded samples in the Laboratory. The instrument comprises of a torque head with a direct reading scale which is turned by hand. A non return pointer assists in reading. Vanes of either 19 mm or 33 mm dia with rods are fixed to the underside of the torque head, and can be pushed well into the undisturbed material below or behind and excavated surface.

IN-SITU VANE SHEAR TEST

IS 4434-1967

Specification :

The apparatus is designed for conducting in situ vane shear testfrom bottomof a bore hole in saturated cohesive deposits for determining their in place shearing resistance.

The equipment consists of a torque applicator assembly mounted on a base, a gear wheel, which is marked in degrees, holds a torque ring and is geared to a crank, the torque ring is a split ring & deforms as torque is applied & the deformation is indicated by a dial gauge. A calibration chart to convert dial gauge readings to torque force in kgs/cm2 is supplied. A pointer is provided

Forregisteringtherotationsofthevane,adetachablestandisprovidedto anchorthe instrument an attachment to securely hold the string of rods is provided the equipments comprises of the following:

Torque applicator assembly capacity 2000kg/cm^2 with split proving ring & dial gauge 0.002 x 5mm complete with stand.

Vane(withvanerod)37.5mmdiax75mmhigh	1 no.
Vane(withvanerod)50.0mmdiax100mmhigh	1 no.
Torque rod (square cross section) 0.6mts long	1 no.
Rods quick couplind type, 1 mtr. long	1 no.
Rods quick coupling type, 1 ½ mtr. long	1 no.
Dummyrod,correspondingto37.5mmdiavane	1 no.
Dummyrod ,correspondingto50.0mm diavane	1 no.

Test Sieves

G. I. FRAME SIEVES 300 & 450 MM DIA (POWDER COATED)

IS 460 (PART I)

A sieve, or sifter, is a device for separating wanted elements from unwanted material or for characterizing the particle size distribution of a sample. This is called a Sieve Analysis (or Gradation Test) the particle size distribution of a granular material.

Entek offers a wide range of high quality testing sieves which are used in all types of sieve testing applications, from sampling and classification of soils, aggregates and other powdered and granular materials. Entek testing sieves are of the highest quality to ensure consistent fit, accurate specifications and durable construction.

Woven wire cloth and perforated plate sieves are supplied in 200 mm and 300 mm frame diameters in various nominal aperture sizes suitable for several applications and standards.

Wet washing sieves are used for wet testing of various materials enabling to wash the fines through the sieve without losing any of the sample. Available in 200 mm diameter with 100 mm and 200 mm deep models. They are made with only the highest quality materials and are available in diameter sizes of 100, 200, 300 and 450 mm or in 4, 8, 12 or 18 inches. They can be supplied with aperture sizes ranging

from 125 mm down to 20 microns in full or half height versions. Woven wire mesh sieves are available in frame materials of either brass or galvanized steel

Sizes Available (in mm): 125, 106, 100, 90, 80, 75, 63, 53, 50, 45, 40, 37.5, 31.5, 26.5, 25, 22.4, 20, 19, 16, 14, 13.2, 12.5, 11.2, 10, 9.5, 8, 6.7, 6.3, 5.6, 4.75, 4.0, 3.35, 2.36, 1.18, 1.00. Lid & receiver.

BRASS FRAME SIEVES 100, 200, 300 & 450 MM DIA.

(BS 410)	(IS 460 part 1.1985)	ASTM E 11 micron	(Aperture)
·	4.75 micron	4	4750
4	4.00 micron	5	4000
5	3.35 micron	6	3350
6	2.80 micron	7	2800
7	2.36 micron	8	2400
8	2.00 mm	10	2000
10	1.70 mm	12	1680
12	1.40 mm	14	1400
14	1.18 mm	16	1200
16	1.00 mm	18	1000
18	850 micron	20	850
22	710 micron	25	710
25	600 micron	30	600
30	500 micron	35	500
36	425 micron	40	425
44	355 micron	45	355
52	300 micron	50	300
60	250 micron	60	250
72	212 micron	70	210
85	180 micron	80	180
100	150 micron	100	150
120	125 micron	120	125
150	106 micron	140	106
170	90 micron	170	90
200	75 micron	200	75
240	63 micron	230	63
300	53 micron	270	53

entekindia@gmail.com

350	45 micron	325	45
400	38 micron	400	38
500	25 micron	·	25

Lid & Receiver Brass for 200mm dia or 8” dia sieves.

entekindia@gmail.com

SIEVE SHAKER 'ROTAP'

Specification :

To make process of sieving simpler and quicker, Rotap sieve shaker is useful , this produces circular shaking of the sieves. At the same time the sieves are tapped. The mechanism for imparting circular action and topping is oil immersed in a tank and in motorized. The shaker can accommodate upto 7 nos. Sieves of dia 150mm or 200mm. Suitable operation of 230 V A.C. Single Phase.

SIEVE SHAKER 'GYRATORY'

Specification :

Carries upto 7 sieves of 150 or 200 mm diameter. The shaker is driven by a 1/4 H.P. Motor through a reduction gear immersed in oil. The sieve table does not rotate but is inclined from the vertical axis and the direction on inclination charges progressively in clockwise direction. If the stop pin below the table is removed, the shaker can have a rotary motion. In addition to this gyratory motion of the table, there is an upward and downward movement ensuring that each square cm of the sieve is utilized. A pair of rods and a holder can be fixed on the top of the upper most sieve, and thus the sieve set in firmly held. Suitable for operation from 230 V 50 Hz, Single phase A.C. supply.

a) Adopter for 300 mm dia. sieve available at extra cost
b) Adopter for 450 mm dia. sieve available at extra cost

WET SIEVE SHAKER

This is yodar type, motor driven sieve shaker for carrying out wet sieve analysis of materials.

Specification :

Consists of a water reservoir and a holder for sieves, which can take up to 7 sieves of 150mm or 200mm diameter. Shaker is driven by a ¼ H.P. motor through a belt drive. Shaker mechanism moves the sieves up and down in the reservoir. The reservoir has a water out-let for draining out the used water.

Suitable for operation

230 V A.C. Single Phase

SIEVE BRUSHES

BS 812

A Bristle round brush 30mm.
B Nylon sieve brush 33mm.
C Soft Hair brush 3mm dia.
D Double ended brass & nylon bristle.
E Double ended nylon sieve brush.

PLATE BEARING TEST

IS 1888 1962, ASTM D 1194, BS 13779

This is for estimating the bearing capacity of shallow foundations in situ and for the design of flexible pavement. In the test procedure a steel plate is subjected to gradually increasing load and settlements of the plates recorded.

Specification : The out fit consists of

50 tonne hydraulic jack with separate pumping unit fixed to it a 0 - 500KN x 0.5KN. 1No.

Pressure gauge and flexible metal pipe 5mtr. long 1No.

Special ball and socket arrangement between the jack and the bearing plate 1 No.

Extension rod 12mm dia x 25 cm long for taking dial gauge readings 16 Nos.

Magnetic base with female thread on top for holding extension rod 4 Nos.

Top end plate, 50mm, dia with male thread for fitting onto the extension rods and positioning the dial gauge plunger 4 Nos.

Column 15cm dia x 25cm long with flanges complete with four bolts and nuts 2 Nos.

Column 15cm dia x 50cm long with flanges complete with four bolts and nuts 1 No.

Bridge support of welded steel angle construction, 5 mtr. Span and stands approximately 30 cm. High. Fitted with two quick release clamps a for positioning and holding the dial bracket 2 Nos.

Plane M.S. plate 60cms x 60cm . Square x 60 cms. Square x 25mm thick. Plane M.S. plate 45cm x 45cm x square x 25mm thick.

Plane M.S. plate 30 cms x 30 cms x 25mm thick. Dial Gauge 0.01mm x 25mm - 4 Nos.

Accessories:

Plane M.S. 75mm x 25mm thick

Plane M.S. 50cm x 25mm thick

Grooved M.S. plate 60cms x 60cms x 25mm thick

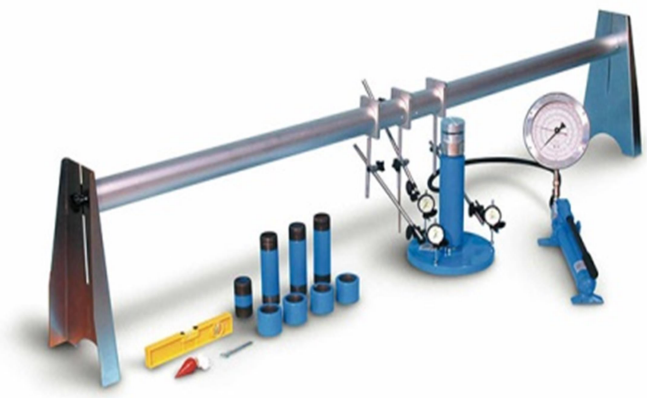
Grooved M.S. plate 45cms x 45cms x 25mm thick

Grooved M.S. plate 30cms x 30cms x 25mm thick

Grooved M.S. plate 75cms x 75cms x 25mm thick Note :

1) When plates of size more than 30cm sq, are used, in order to prevent deflection of the edge, a series of smaller plates are advised to be placed concentrically on the bottom plate.
2) Flexible rubber pipe 1 mtr. length can be supplied for the hydraulic jack in place of metal pipe at extra cost. For site testing load trusses to meet the reaction of loading are available in different capacities as under.

Hydraulic Jack for 500KN



LIGHT WEIGHT DEFLECTOMETER

ASTM E2835-11

Corresponding to "German technical test code for soil and rock mechanics in road constructions" TP BF-STP part B 8.3 from the German federal road research institute (Bundesanstalt für straßenwesen) accredited compaction test according to ZTV E 2009 and ZTV A 2012 (German supplementary technical terms and conditions of contract and guidelines for earthworks in road construction and excavations in traffic areas) RIL 836 German National Railway Company Deutsche Bahn AG

Calibration record corresponding to German standard TP BF-STB part B 8.3 Detailed instruction manual in English

Mechanical System:

- Loading device with 10 kg drop weight (measurement range EVD=15-70 mn/Sq. m)
- Load plate 300 mm with high-quality accelerometer
- Angled load plate handles for hooking up (mobile testing system)
- Ergonomic hexangular weight-catching grip for comfortable handling on the construction site
- Safety grip with integrated spirit level, tightly screwed to the guide rod
- Electro less nickel coating, especially suitable for construction sites, since largely resistant to alkaline constituents (lime, cement, concrete etc.)
- TÜV-certified

Testing Computer:

Testing computer in weatherproof box with large inspection window and external control buttons, enabling operation under closed cover, protecting the measurement electronics against dust and rain intuitive English-language menu guidance integrated GPS system for immediate calculation, printout and storage of test coordinates testing point will be shown in satellite picture with EVD-value, date and time (can be turned off) integrated thermal printer for immediate report printout on the construction site with GPS coordinates saving on chip card for convenient data transfer to the PC

Text input function available illuminated graphic display for illustration of settlement curves, s/v value and deflection modulus EVD high-performance rechargeable battery with extremely long service life internal memory for more than 2000 tests, PC interface via USB socket charger for 100-240 V input voltages as well as car charger USB data transfer cable for reading out the internal memory via the PC switchable to 15Kg loading device.

Softwarein English:

Software for MS-Windows NT, windows 2000, XP, vista, windows7 oncdrompresentationoftestingpoints withdateand timeinsatellitepicture(canbeturnedoff) Individual data records with user-designed company logo and color coded settlement curves as A4 sized record.

Statistical analysis of the tests in accordance with German standard TP BF STP part B8.3 detailed English user guide.

Information cards with quick start guide in English. Rules for proper use correlation static/dynamic

Chart EV2-EVD (static/dynamic) with minimum requirementsaccording toGerman standardZTVE

INTEGRAL PROVING RINGS

The Proving rings are made of special steel carefully forged to give maximum strength and machined to give high sensitivity commensurate with stability ensuring long life and accuracy.

All proving rings are integral type viz, the loading (outside) bosses are forged integral with the ring body. This ensures that there is no possibility of abutment shift and consequent loss of accuracy in reading that always exists with bolted abutments.

The dial gauge and anvil are mounted on U-brackets clamped to the ring body by set screw. The dial gauge is fitted with a special back cover and threaded bush. Which does not permit any shift from the original dial alignment, coaxial with the loading boss centres, that is set at the factory before calibration.

For all compression proving rings and tension compression proving rings up to and including 5 KN capacity the loading bosses have female threading ½" BSP (16 TPI)

The boss faces are ground and polished and are plane parallel to within 0.2mm total DTI run out. Tension compression rings have their integral loading bosses male threaded, 1.25" dia, 8 tpi square thread, 1.25" long. Caps are provided for use when loading in compression

Repeatability is as stipulated in IS 4169 The rings are supplied complete with dial gauge and Works calibration Chart. Individually packed in polished wooden. Boxes. NCCBM Calibration can also be arranged for any proving ring at an additional cost. Proving rings to meet special requirements are also available on request.

Separate polished and ground pair of Loading Pads FOR Compression Proving Rings and Pair of Shackles for Tension Proving Rings are provided to suit each proving ring, at extra cost.

Compression Proving Rings-:

Sl. No.	Capacity	Design	Approximate Sensitivity	Weight
1	0.25 kN	25 kgf	0.21 N/Div	1.00 kg
2	0.5 kN	50 kgf	0.42 N/Div	1.00 kg
3	1 kN	100 kgf	0.83 N/Div	1.10 kg
4	2 kN	200 kgf	1.15 N/Div	1.20 kg
5	2.5 kN	250 kgf	2.1 N/Div	1.30 kg
6	4 kN	400 kgf	3.3 N/Div	1.40 kg
7	5 kN	500 kgf	4.5 N/Div	1.50 kg
8	10 kN	1,000 kgf	10 N/Div	1.70 kg
9	15 kN	1,500 kgf	17 N/Div	3.40 kg
10	20 kN	2,000 kgf	22 N/Div	3.50 kg
11	25 kN	2,500 kgf	28 N/Div	3.60 kg
12	30 kN	3,000 kgf	33 N/Div	3.75 kg
13	40 kN	4,000 kgf	44 N/Div	3.90 kg
14	50 kN	5,000 kgf	56 N/Div	4.00 kg
15	100 kN	10,000 kgf	125 N/Div	5.00 kg
16	200 kN	20,000 kgf	300 N/Div	14.00 kg
17	300 kN	30,000 kgf	430 N/Div	16.00 kg
18	500 kN	50,000 kgf	833 N/Div	18.00 kg
19	1000 kN	100,000 kgf	2,500 N/Div	24.00 kg
20	2000 kN	200,000 kgf	5.000 N/Div	25.00 kg
21	3000 kN	300,000 kgf	6,000 N/Div	34.00 kg

Standard:-lS516, 14858-2000, EN 12390 4, ASTM C39, AASHTO T22

Fully Automatic Compression Testing Machine 3000 kN

Compression testing machine shall be fully automatic, controlled through touch panel based electronic display system as well computer through software. related to the size of the specimen and the expected load, and capable of providing the rates of loading prescribed in IS 516.Compression testing machine 3000 kN capacity with Servo Controlled based and automatic pace rate controller. Machine includes the features given is lS 14858-2000 (reaffirmed 2005).

In particular, the portable units, which are small in dimensions, sturdy and light in weight, make quality control testing possible in areas where commercial testing facilities are not available and where the transportation of larger and much heavier machines would be difficult. **ENTEK** Compression Testing Machines conform to IS: 14858(2000) and calibrated with an accuracy of± 1 % as per the requirement of 1828(Class1).

Loading Unit:-

The loading unit is of fully welded construction having across head, base and solid side plates. The hydraulic jack is fixed to the base. The platens of the machine are hardened, ground and polished. The upper platen is provided with self-aligning action. To facilitate testing of various size specimens, suitable sized spacers are provided.

Model	ET-CT-054
Capacity	3000KN
Least Count	0.1 KN
Load Accuracy: of the indicated load	± 1%
Safety Over Load	2%
Limit Switch, Safety Door	Provided
Load Resolution	0.1 KN
Test Storage	10000 Tests
Attachment	For Flexural & Splitting Tensile
Surface Hardness of Platen	55 HRC
Material	Mild Steel
Lower Platen Dimension (Thickness x Diameter)	50x320 mm
Upper Platen Dimension (Thickness x Diameter)	60x320 mm
Maximum Vertical clearance between platens	350mm
Maximum Horizontal clearance	400 mm
Piston Diameter	260±5 mm
Rated Pressure(Hydraulic Pump)	20
Maximum piston Stroke	50 mm
Display Type	Microcontroller based 7" touch screen display
Automation Grade	Automatic
Pumping	Motorized
Pump Speed	Dual Speed
Motor	Servo Motor
Reading	Digital
Connectivity	USB 2.0, RS232, Wi-Fi, LAN
Auto stop after failure of specimen	Available, Machine stop after completion of test
Auto Release pressure after specimen Failure	Available
Calculation of result	Automatic
Holding Peak load	Yes
Computer operation software and data Acquisition software	Available
Displacement controlled operation	Available
Modulus of Elasticity Calculation	Available
Flexural attachment	Possible all calculations will be made automatically
Splitting Tensile Test	Possible, all calculations will be made automatically
Auto internal Calibration without proving ring	Available
Piston over travel safety cut off	Available
Over load safety cut off	Available
Shot circuit protection	Available
Multi Channel operation	3 Channel operation possible, flexural and compression frame can be attached
Saving of records	Infinite records with Pen Drive
Pen drive slot	Inbuilt pen drive slot (saves reading in excel format (Record date-time, Sr. no. and peak load and N/mm2)
Real time graph	Available, on controller itself
Servo Type Voltage Stabilizer	3kVA Single Phase
Over all Dimensions (LxWxH)	840x635x1535mm

Total weight of machine Approx.	1020 Kg

Technical Specifications:

Set test parameters including load rate: This machine having the provision for automatically turning the pump ON and OFF, controlling the set pace rate and switching the machine off under predetermined conditions. Machine having inbuilt intelligent pace rate controller. It is having a full three term proportionalintegralderivative controller continuously calculating an error value and controls the loading on the rock specimen using a high torque Stepper Motor and driver sets. The loading frame is a fully welded construction with a top crosshead, base and solid side walls with the precision ground hydraulic piston fixed to the base, one lower platen and one top platen with self-aligning action. The Pump control facilitated through PID controlled EDI. Pace rates parameters can be set digitally and cannot be regulated manually. Machine able to operate as standalone with digital indicator unit as well with dedicated data management and analysis software installed in a desktop PC or laptop.

Peak load, Peak Stress,Unique record no displayed on the digital indicator, MS-Window based reputed make computer with compatible configuration to run the analysis software. Suitable for Testing above mentioned parameters for HQ, NQ & BQ size samples in Compression

- Press the start button
- Tighten the pressure valve
- The machine automatically : starts the rapid approach; switches to the test speed once the specimen comes into contact with the upper platen; automatically stops the motor upon specimen failure
- Save the test including data results
- The test execution conforming to standards can be easily proved
- Working on 240V, 50 60Hz, single phase
- Dual stage pump assuring fast piston approach and precise test execution
- Test execution conforming to EN 12390 4, ASTM C39, AASHTO T22
- Controllable pace rate from 0.05 KN/Sec to 20.00 KN/Sec
- Auto stop after completion of each test
- Soft platen to specimen contracts and smooth load rate control from the very beginning of the ramp
- Servo motor driven machine

Frame:

- Four column high stiffness welded frame tested for stability
- Heavy duty spherical seat, allowing initial free alignment at the initial contact with the specimen and automatic jamming up to the end of test.
- Surface hardness of platen is 55 HRC, flatness tolerance 0.03mm. Traceable certificate of surface hardness available on request.
- Piston travel limit switch (Extra cost)
- Emergency stop button
- Servo motor driven machine

- Gives live online graph on the 7” touch screen
- User friendly large graphical display
- Displacement controlled machine also available (at extra cost)
- Saves 100 results in the 7” touch screen
- Inbuilt USB drive to save the date

Salient features of data manager PC software

- Two way communication i.e. machine operates from computer and from the touch screen controller both /(Stat, stop, save data and save graph)
- Results directly saved in excel file
- Graph also saved in excel file
- Capable to save customer name, other details of customer, ageing of cube mould, identification mark of the cube mould, date and time of testing
- Capable to print direct report from the computer
- Capable to select different test parameters like pace rate, sample size and area from the computer (software)
- Capable to select different type of tests, like flexural, CTM, aggregate crushing etc.

Pumping Unit

- Electrically operated pumping unit, The loads are measured on Digital Touch display Indicator which are calibrated against certified proving rings.
- Servo Controlled operated hydraulic power pack are of High speed design. The geared pump facilitates fast approach of the platens for daylight closure, thus eliminating the need for the lead screw.
- In the Electrically Operated Pumping Units, Digital Indicator switch-off the motor when the load approaches the maximum capacity of the Indicator, to avoid any over-loading. Relays are incorporated so that the motor does not restart on its own after a power breakdown.
- The electrically operated pumping units are provided with Variable Frequency Drive Motor to automatic adjust the desire pace rate.

- Microprocessor based electronic display - 7” touch Screen heaving features:-

- Menu Driven Sample Detail
- Auto Calculation facility
- Peak Load
- Peak Stress
- Real-time graph in computer screen

- Test Record storing with Unique 1000 nos.
- Start, stop, pause, reset, load hold facility
- Data collecting USB
- Automatically transfers and saves test records and graphs in Desktop
- Each mode having independent calibration points

- Load Least Count 0.1 kN
- Hydraulic pump with Automatic rapid approach and precise oil flow controlAs per IS: 14858(2000), IS 516 and calibrated with an accuracy of ± 1% as per the requirement of 1828 (Class1)
- Micro data controller based models with automatic pace rate controllers
- Controllable pace rate from 1 KN/sec to 25KN/sec
- Automatic Pace rate servo controlling with an accuracy of 5% of Set Pace rate Facility to access data on PC
- Software shall be capable to plot graph real time data acquired for load Vs Displacement, Load vs Time, Stress Vs Strain.
- Load v/s Time, Load v/s displacementgraph generating automatic on Touch Display.
- Facility to log all test reports like Pace Rate and Peak load, Stress N/mm2 & Kg/cm2 on Touch Display 1.6 GHz, 64 bits Processor
- Suitable for operation on 220-240 V, 50 Hz, Three phase, AC Supply.

ln addition to the above the machine should have the following features:-

- Automatic pace rate control unit
- Pace deviation bar graph Load v/s Time
- Overload safety protection.
- Pre-defined machine capacities
- Flexible calibration point can be done on 10 points
- Peak load peak stress unique record number is displayed
- Data storage approx.10000 test result
- Connect PC to touch panel Wi-Fi/USB/RS232 port
- Store record can be viewed & print
- Peak stress calculation based on sample type & shape
- Password protection for system & calibration setup.
- Door Safety guard also provide.
- Multifunction touch screen panel set of pace rate
- One PC i7 processor with window 11, UPS and printer