Cements

GROUP I&S

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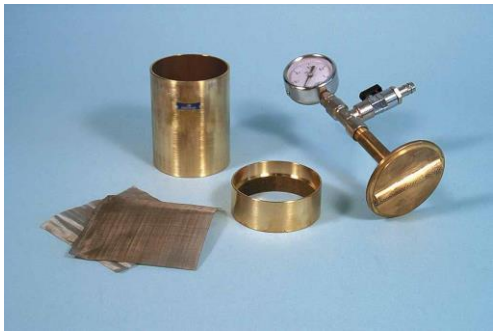
BLAINE AIR PERMEABILITY APPARATUS
EN 196-6 / ASTM C204 / BS 4359 / NF P-15 442 / AASHTO T153
D001 Blaine air permeability,. Used to determine the fineness of Portland cement in terms of the specific surface expressed as total surface area in square centimeters per gram of cement.
The apparatus is supplied with glass U-tube manometer with valve, steel stand, test cell with disk and plunger all in stainless steel, rubber aspirator bulb, 1000 filter paper disks, manometric liquid, vaseline grease for better coupling tube/cell, funnel, brush.
Dimensions: 220x180x470mm
Weight:12 Kg
Accessories:
D001.01 Filter paper disc box of 1000 pcs.
D001.02 Standard reference cement 114 g. to ASTM / SRM / EN
D001.03 Glass termometer -10º a +50ºC.
D001.04 Manomentric liquid (250 ml) bottle
D001.05 "U" tube glass manometer
D001.06 Cell body, stainless steel
D001.07 Cell perforated disk, stainless steel
D001.08 Vacuum pump

BLAINE AIR PERMEABILITY APPARATUS, AUTOMATIC
D002 This automatic electronic apparatus with microprocessor is equipped with an automatic airproof device.
The apparatus consists of a flat enclosure with a manometer column and with 4 components stainless steel measuring cell.
Depending to the cement porosity and its density, the equipment calculates automatically the masse that you have to test, determines the constant K according to standard cement, records the test results with possibility to elaborate an average value of different tests. RS 232 port.
The defining of final Blaine value is automatically given by the apparatus.
Supplied complete with accessories.
Power supply: 230V 1ph 50Hz
Dimensions: 280x325x410mm
Weight: 10 kg



EQUIPMENT FOR DETERMINING RESIDUE BY MEANS OF WATER FLOW
UNE EN 451-2 / D.M. 3/6/68
D003 Used to determine the fineness of cement.
It consists of a spr ying unit with feed cock and gauge; brass sieve body 85 mm dia.and 95 mm high with two stainless steel cloth disks having opening 0,18 and 0,09 mm.
A cement sample of 25 g. is placed inside the sieve and washed for two minutes by means of the sprying unit put on top of the sieve.
The residue of the retained cement is obtained by drying the sieve at 110 °C .
Weight:3 Kg
Accessories:
D003.01 Stainless Steel cloth disk, opening 0,18 mm
D003.02 Stainless Steel cloth disk, opening 0,09 mm

Fineness of fly ash by wet sieving
Standards: EN 451-2 / ASTM D430
D004 The set, brass made, consists of: sieve dia. 50 mm. with stainless steel mesh opening 0,045 mm, spray nozzle 17,5 mm ID with 17 holes dia. 0,5 mm, pressure gauge dia. 80 mm range 0-160 kPa, div. 5 kPa, fittings and connectors.
Weight: 3 kg

GRAVITY OF HYDRAULIC CEMENT
EN 196-6 / UNE 83453 / ASTM C188 / AASHTO T133 / BS 4550
D006 Le Chatelier flask to determine the relative density(specific gravity) of the hydraulic cement and lime.
Capacity: 250 ± 0.05 cm ^{3}
Graduation: between 0 to 1 ml and from 18 to 24 ml with divisions of 0,1 ml.
Weight: 500 g.

DROPPING BALL APPARATUS

BS 4551-1, 6463-4
D007 Used to measure the consistency of cement mor tars, this instrument allows a mm.25 diameter acrylic ball to fall freely from a standard height of 250 mm.into a specimen of mortar contained into a brass ring mould, and the surface of which has been carefully prepared.
The depth of the ball penetration into the mortar gives the specimen consistency.
The instrument comprises a dropping device mounted on a stand, acrylic ball, mould dia.100 x 25mm.
The base of the stand is machined.
Chromed finishing.
Weight: 8 Kg

ACCESSORIES:
D007.01 Ball penetration measuring device formed by a tripod on which a dial gauge 25x0,01 mm is mounted.
A device to adjust the height of the dial in relation to the tripod is also included.
Chromed finishing.
Weight:1 Kg

D007 D007.01

Filter press for muds
API (American Petroleum Institute), recommended practice 13B-1 and 2
D008 This filter press is the most effective means for determining the filtration properties of drilling muds and cement slurries.
The filter press consists of a mud reservoir mounted in a frame, a pressure source, a filtering medium, and a graduated cylinder for receiving the measuring filtrate, pack of 100 filter paper, nitrogen pressurized cartridges.

Dimensions: 210x240x500 mm approx
Weight : 12 kg

Accessories:
D009.01 Propane regulator, butane or natural gas (to be defined in your order).
D009.02 Standard Potassium solution
D009.03 Standard sodium solution
D009.04 Standard calcium solution
D009.05 Standard Barium solution
D009.06 Standard Lithium solution

D009 Flame photometer for routine determination of sodium (Na) and potassium (K), with possibility of adding additional filters as lithium (Li), barium (Ba) and calcium (Ca). In cements and raw materials as reference methods EN 196-2
features:
Electronic ignition system with automatic regulation of the air supply.
Electronic unit with 3 ½ digit LED display for concentration ranges from 0 to 199.9 ppm
Range:
Na from 0.50 to 10 ppm - CA 3.0 - 40 ppm - K0.75 - 25 ppm
Ba5.0 - 100 ppm - Li0.75 - 20 ppm
Reproducibility 1% CV for 20 consecutive samples, 10 ppm reading scale 100
Linearity better than 2% Na and K 3 ppm to 5 ppm Li
Interferences for Na, K and Li in better concentration of 0.5%.
Supplied with:
Air compressor 6 L (1 kg / cm ²)
Setting standards
Does not include calibration patterns
Power: 230V, 50 Hz
Dimensions: 420x360x300 mm.
Weight: 8 kg

Bulk cement sampler
EN 196-7 / ASTM C183 / AASHTO T127
D010 Used to sample cement in bulk storages or shipment. Brass made, it consists of two concentric tubes with slots. Inside tube volume is 3 litres approx.
Dimensions: dia. 40x1500mm
Weight: 5 Kg

D010.01 Packaged cement tube sampler**.** Used to sample cement homogeneously from cement bags.
Dimensions: dia. 32 x 1050mm
Weight: 3 Kg
D010.02 Sampling spoon with handle

Bulk density of cement
EN 196-6 / ASTM C91, C110
D011 Equipment for determining of the apparent density (bulk density) of powders and non-cohesive materials. It consists of sieve funnel with tripod, unit weight measure 1 litre capacity, spatula, straight edge, aluminium scoop.
The discharge hole of the funnel has 8 mm dia.
Dimensions: dia. 350 x 520mm
Weight: 5 Kgcomprises funnel cement with shutoff valve and measuring tripod 1 l. capacity.
Dimensions: Ø345 x 520 mm.
Weight: 3 Kg approx.

CRAKING TEST MOULD
NF P15-434
D012 Mould designed for used to produce ring-shaped specimens designed for cracking tests on hydraulic binders. This test consists of measuring the formation time of a crack on the test specimen.
Weight: 8 Kg

FLOW CONE APPARATUS
EN 455 / NF P18-358, P18-507
D012 Funnel for viscosity and fluidity determinations of mortars, muds, grouts, fluid materials, etc.
Mortar fluidity is considered suitable when the flow time of 1000 cc of mortar is comprised between 17 to 25 seconds.
Entirely brass made,it is supplied complete with four interchangeable nozzles dia.8 -9 -10 -11 mm, stand adjustable in heigh, plastic graduated cup.
Cone top dia. is 155 mm, total lenght 290 mm, capacity 1700 cc.
Weight:10 Kg

Accessories:
D012.01 Ø12, 5 mm.Interchangeable nozzle
D012.02 Ø 150 mm sieve, mesh size 1.5 mm.

Level Support
EN 1015-9
D014 Lever Support (drill-holder type), complete with washer and penetration rod brass made, clamp and locking support.
Used for the determination of stiffening time on products and systems for the protection and repair of concrete structures. Complete with container.
Dimensions: 380 x 300 x h500 mm
Weight: 12 kg approx.Excludes balance.

D016 Baroid mud balance
The balance consists of a base and graduated arm with cup, lid, knife edge, rider, built-in spirit level and counter-weight, carrying case . The constant volume cup is affixed to one end of the graduate arm and the counter-weight on the opposite end.
Weight:5 Kg

Sand Content of Drilling Muds
D018 The Sand Content Kit is a simple, accurate and inexpensive sieve analysis apparatus for determining the sand content of drilling muds.
The kit consists of a special 200-mesh sieve 2,5” in diameter, faste-ned inside a collar upon which a small funnel is fitted on either end.
This is used with a 10ml glass measuring tube, graduated to read from 0 to 20% the percentage sand by volume.
The collar and funnel are made of polyethylene and the screen is made of brass. A 500ml wash bottle and carrying case are included.
Weight: 1500 g

METHOD VICAT
UNE-EN 196-3/ EN 13279-2/ EN 480-2/ ASTM C187, 191/ BS 4550/ NF P15-414, P15-431
Determination of setting time and consistency of cement
D020 Vicat Needle manual, the instrument consists of a metallic frame, graduated scale with index, sliding probe of 300 g, consistency plunger dia. 10 mm, glass base plate. Supplied with full needle initial setting of Ø1, 13 mm, glass plate and conical mould.
D020.01 Final needle
D020.02 Initial **n**eedle
D020.03 Conical mold
D020.04 Glass Base (EN, ASTM).

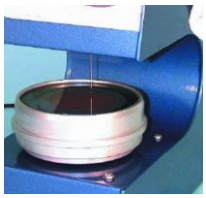
AUTOMATIC COMPUTERISED TROPICALIZED VICAT RECORDING APPARATUS
EN 196-3 / EN 13279-2 (gypsum) / EN 480-2 / ASTM C191 / DIN 1168 / UNE 80102 / NF P15-414, P15-431 / AASHTO T131
D021 The Vicat aut. apparatus, that is designed and manufactured using the most recent and sophisticated technology, is used for the initial and final setting time determination of cements or mortar pastes. The unit is manufactured with **anticorrosion and tropicalised** components to be used in places with humidity not below 90% and 20°C. Controlled temperature as required by EN Specifications. The entire test is made in a fully automatic way and gives a very precise and repeatable result.
The results are printed on the incorporated printer and this eliminates the manual operations of installing and zeroing the paper graph on the drum.
DISPLAY
The large high contrast LCD display (negative blue) has a high resolution and shows the test data together with the general functions of the appliance. It visualises for the first time in real time the graph of the test (see picture) replacing and simulating what the old fashioned pen tracing on the paper. The appliance has a clock calendar that is used to program the test cycles.
FIRMWARE
The Vicat aut. is supplied with the standard programs to make automatically, all the tests according to the following Standards: **EN 196-3:2005 / EN 13279-2 gypsum / EN 480-2** / ASTM C191 / DIN 1164 / DIN 1168 gypsum / NF P15/431 / BS 4550 / AASHTO T131.
Further programs can be developed by the operator using the specific menu **"free tests"** available on the base firmware; the user has the possibility to set 5 totally free test profiles defining the number of penetrations and the coordinates of each penetration (ray in mm of the circle where the number of penetrations have to be distributed) and number of circles.
TIMER 0 – 999 MINUTES
The firmware allows activating a delay on the appliance to the beginning of the test.
The unit is supplied complete with:
. Standard program to make automaticallyall tests according to the following standards EN 196-3/05, EN 13279-2 / EN 480-2 / ASTM C191 / DIN 1164, DIN 1168 / NF P15/431 / BS 4550 / AASHTO T131. Other programs may be developed by the operator using a specific menu "free trial".
. Integrated printer
. Needle Ø1, 13 mm (EN, BS, DIN, NF, UNE)
. Needle Ø 1 mm (ASTM, AASHTO), Two conical plastic moulds EN and ASTM, Ø120 mm glass base and Instruction Manual↗

Accessories for testing different regulations must be ordered separately.
Power supply: 220-240 V, 50 Hz, 50 W.
Dimensions: 400x200x475 mmh.
Weight: 14 kg approx.

Accessories:
D021.01 Needle for initial setting Ø1, 13 mm (EN / BS / DIN / NF).
D021.02 Needle for initial setting Ø1 mm (ASTM / AASHTO).
D021.03 Needle for final setting Ø1,13 mm (On / BS / DIN / NF).
D021.04 Additional weight of 700 g (EN / NF).
D021.05 Consistency test probe
D021.06 Probe for testing consistency Ø10 mm (EN / ASTM).
D021.07 Vicat mould Ø70/80x40 mm (EN / NF).
D021.08 Vicat mold Ø60/70x40 mm (ASTM / AASHTO).
D021.09 Glass Base
D021.10 Probe 300 g to (EN 196-3)
D021.11 Thermal printer paper (10 rolls pack).
D021.12 Cleaning device needle

COOLING EQUIPMENT
B055 Electronic microprocessor thermostatic bath with selection and digital temperature reading. Adjustable safety thermostat that blocks the heating system in case of over temperature (DIN 12879 class 2).
Temperature sensor PT-100 Class A.
Compressor Group 1/8 hp
Timeout commissioning programmable from 0 to 99.5 hours.
Time keeping temperature programmed from 0 to 99.5 hours.
Recirculation pump internal and external.
Adjustable temperatures from -10 º C to 99.9 º C
Bucket capacity 8 liters.
Opening the cap 200 X 130 mm.
Power: 220V, 50 Hz 1150 W
Dimensions: 380 X 600 X 420 mm
Weight: 28 Kg

D022 Dip tank for molding test in water. The test should be performed in a cabin with temperature control at 20 ° C ± 1 ° C. moisture saturation is achieved by immersing the sample in water as indicated in the standard EN 196-3

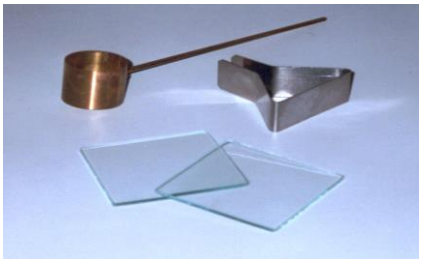


FLOW TABLE MOTORIZED, COMPLETE - EN 459-2, EN 1015-3
D024 Constructed by a stainless steel circular board Ø300 mm supported on a tripod and a gearmotor machining steel which raises and lowers the cam at a certain height of 10 mm. Supplied complete with digital electronic counter blows with no automatic shutdown, conical mold, hopper and compaction hammer.
Power supply: 220V, 50 Hz
Weight: 35 kg approx.

FLOW TABLE MANUAL, COMPLETE
UNE-EN 1015-3/ EN 459-2/, ASTM C230/BS 4551-1
D026 Shaker constructed in accordance specifications of standard test board made of stainless steel. Ø 300 mm. Supported on a tripod and a machined steel wheel that performs as for raising and lowering the cam at a certain height of 10 mm.
Comes complete with conical mold, hopper and compaction hammer.

Accessories:
D026.01 Conical mould of Ø 101.6 / 69.9 x 50.8 mmh.
D026.02 Rammer absorbent material.
V297 Flow Calliiper 200x0, 01 mm to measure the diameter of the sample
V296 Flow Calliper 200x0, 01 mm with digital

STABILITY CEMENT AND HYDRATED LIME
EN 196-3/ UNE 80103/ NF O15-432/ BS 6469
D029 Le Chatelier mold Ø 30 x 30 mm interior with two rods
D030 Le Chatelier clamp for fastening glass plates
D031 Glass plates (2), 50 x 50 mm.
D032 100 g weight to place over the glass plates



D033 Le Chatelier thermostatic water bath 12 l. Capacity for 4 needles Le Chatelier. Adjustable temperature up to 120 º C. body constructed stainless steel interior and exterior painted in epoxy. Heating by armored heating elements in stainless steel. cubrer-resistance tray. Stainless steel cover. Orifice disc adapters 80, 60 and 40 mm. Supply 220 V.

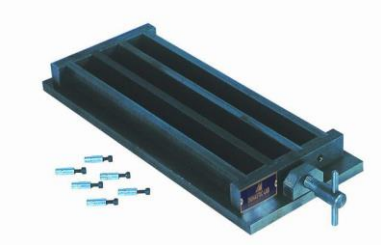
D034 e Chatelier thermostatic water bath similar to the above, but in 20 l. Sleeps 6 needles Le Chatelier

PLASTER EXTENSOMETER
D035 Utilized to measure the linear expansion of a paste of standard consistence. The extensometer comprises an horizontal cradle 100 mm long x 60 mm wide x 25 mm deep closed at one end and open to the other. The open end is in contact with a dial gauge spindle, so that the lateral expansion of the specimen is measured. The dial gauge has 10 mm travel and 0,01 mm. graduation.
Dimensions: 250x80x80 mm
Weight: 3 Kg

LENGTH COMPARATOR, ANALOGIC and DIGITAL
EN 1367-4, 12617-4, 12808-4 / BS 1881:5, 6073/ ASTM C151/ NF P15-433, P18-427
A133 Used for measuring variations in length of the specimen. The top bridge can be adjusted to suit the length of the specimen.
It also measures the linear shrinkage of samples having different dimensions.
As: 40x40x160 mm, 1 "x 1" x 1 "¼.
Supplied without gauge and reference rod (see accessories).

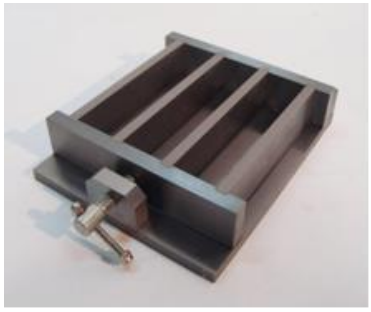
Accessories:
A133.01 Dial indicator 5 mm travel x 0,001 mm divisions
A133.02 Dial indicator 12,5 mm travel x 0,001 mm divisions
A133.03 Reference rod Invar for calibrating the specimens

PLUNGER PENETRATION APPARATUS
EN 413-2, 459-2 / EN 1015-4
D036 Equipment to determine the consistency of fresh mortar, lime and masonry cement.
The base is foreseen of a device to locate the test cup. The height of the drop can be accurately adjusted to 100 mm.
Supplied complete with test cup and tamper, both anodized aluminium made
Dimensions: 200x200x700 mm
Weight: 8 Kg



EXPANSION TEST MOLDS
UNE 80113/ ASTM C490, C348/ BS 1881, 6073/ NF P18-427
D037 Three gang prism mould, for the preparation of specimens of 1 "x1" x11 ¼ "(25.4 x 25.4 x 287 ± 2 mm) steel grinding, fully removable to accommodate bolts holes (contact point).

D037.01 Contact points, stainless Steel, Pack of 15



UNE-EN 196-1, 413, 459, ISO-679, UNE-80.101
D038 Three gang mould completely removable, manufactured for preparing to produce 4x4x16 cm prisms. Steel construction fully rectified.
Internal dimensions: 40.0 ± 0.4 x 40.1 ± 0.3 x 160.0 ± 0.8 mm. (Width x Depth x Length) with holes to accommodate bolts (contact tip).

D037.01 Contact points, stainless Steel, Pack of 15

ASTM C490
D039 Two gang prism mould to produce 75x75x254 mm specimens. Complete with 4 steel inserts.
Weight: 9 Kg

D039.01 Contact points, stainless Steel, Pack of 15

BS 1881, 6073
D040 Two gang prism mould to produce 25x25x250 mm specimens for expansion tests in autoclave. Complete with 4 steel inserts.
Weight: 6 Kg

D040.01 Contact points, stainless Steel, Pack of 15

D041 Triple prism mould, for the preparation of 75x75x275 mm specimens. Manufactured of steel grinding inside, fully removable and accommodation placement steel insert.

D041.01 Contact points, stainless Steel, Pack of 15

D043 Deviation meter of 500 mm. completely realized of stainless steel. and aluminum. As a measuring instrument incorporating an analog comparator 10 mm path with appreciation of 0.01 mm in its standard configuration, but may be replaced by any other (provided that the stem coincides with the support comparator comparator).
The ruler has an appreciation of 1 mm and its edges are machined to ensure the correctness of this element.
Technical:
Dimensions: 520x 30x140 (height) mm
Measuring range of the comparator (horizontally): from 15 mm to 485 mm.→

Separation range between fixed and movable tip tip: from 52 mm to 480 mm.
Presented in a wooden case.

UNE-EN 1015-7/ EN 459-2, 413-2/ DIN 18.555
D044 Determination of air entrainment in mortars
Entrained meter air content in cement mortar. Constructed of cast aluminum with seal by spring clamps quick action. Supplied with direct indication gauge air content in% 0-50% range and manual air pump built.
Capacity: 1 Liter
Accuracy: 2 bar
Weight: 5.8 Kg

DIGITAL PULL-OFF STRENGTH TESTER 16 KN CAPACITY
EN 1542 / EN 1348, EN 1015-12 / EN 13687-2 / EN 13963 / EN 14496 / NF P18-858 / BS 1881:207 / ISO 4624
D047 This dynamometer measures the adhesive force and the tensile strength of two layers of materials (concrete, facing plasters, mortars, building plasters, lime etc.). Compact, light and suitable for use in any location, this Pull-Off Tester is fitted with a load cell and high resolution large digital display unit; it is therefore suitable for measurements from low loads up to 16 kN. The direct tensile force is applied by rotating the hand wheel.
The three feet of the unit can be fixed in the **"large" position** (overall dimensions 176mm diameter) with very stable bearing, or in the**"compact" position** (overall dimensions 92,5mm diameter), to perform tests in narrow spaces, or for specimens close one to the other.
Specifications:

Load capacity: 16 kN	Battery operated
Resolution: 10 N	Serial port for PC connection
Working range: 0,25 to 16 kN	Hand wheel rounds: 60 with mechanical round/counter
Accuracy and repeatability: better than +/- 1%	Graphic indication of the applied load rate
Complete with traceable calibration certificate	Seat ball assuring axial/central load application

Supplied complete with carrying case, but **WITHOUT** accessories to perform the test, which have to be ordered separately. Dimensions: 410 x 210 xh 270 mm
Weight: 3,5 kg approx.
Accessories:
D047.01 Disc of aluminum Ø 50 mm (pack of 15 pcs.)
D047.02 Centering drill diameter of 50 mm, for the preparation of the test surface
D047.05 Adhesion Gauge Calibration with traceability certificate (1 scale)

CALORIMETER
EN 196-8/ ASTM C 186/ BS 4550, 1370/ DIN 1164
D048 Used to determine the heat of hydration of the hydraulic cement and Portland. Formed by a Dewar fleak housed in a wooden box open into two halves, allowing easy access so you can be easily replaced. A second wooden box also open into two halves, the first houses, ensured their perfect thermal insulation. The unit is supplied with constant speed electric stirrer, thermometer and centesimal Beckman glass funnel. The stir bar and Beckman thermometer must be ordered separately according to the standard test.
Power supply: 1 x 230 V. 50 Hz 150 W.
Dimensions: 350 x 250 x 680 mm.
Weight: approx. 12 kg.
Accessories:
D048.01 Propeller conforming to EN 196-8 Specifications.
D048.02 Propeller conforming to ASTM C186 Specifications.
D048.03 Dewar flask
D048.04 Glass funnel

D048.05 Beckman centesimal glass thermometer
D048.06 Digital centesimal thermometer
V441 Electric heater of Paraffin

THERMAL CEMENT SYSTEM
SPECTROPHOTOMETER
UNE EN 196-2:1996

V336 The thermo-cement system is a combination of a spectrophotometer cuvette thermostated 200 ml for titration titrimetric photometrically, overhead stirrer and a variable speed controller PID digital controller temperature to 99.9 ° C with 0.1 ° C accuracy . The set fits the UNE - EN196-2: 1996 for cement by colorimetric analysis.

Espectrofotómetro:
200 ml heated cuvette and Pt100 temperature sensor.
Concave diffraction grating, 1200 lines.
Bandwidth: 5 nanometres.
Range: 330 - 850 nm (in 0.1 nm).
Scales: Abs 0.170-2.000.
Trans 0-150%.
Scanning: from 60 to 800 nm/minute.
LCD screen, graphic data and printing.
RS232 port and parallel port.
Supplied with a stirrer and an opening in the lid of the sample compartment to adapt the assessment burette and the stirrer.
Power supply: 230V/50-60 Hz.
Digital visible spectrophotometer for the analysis of cement in compliance with UNE-EN196.2:1996, with thermostatic cuvette tray, cuvette and stirrer.

V336 V337

V337 Temperature Controller
Range: from ambient to 99.9 ° C
Accuracy: ± 0.1 ° C
Proportional: PID
Digital display: Temperature programmed current
Power supply: 230V, 50-60 Hz

Accessories:
V338 200 ml optical glass cuvette.
V339 Adjustable paddle stirrer.

FUNNEL GROOVE
Consistency of Grouts
EN 13395-2
D050 Used to determine the consistency of the expansion premixed cement mortars for anchorages, mixed with water, classified of super-fluid type.
Supplied complete.
Weight: 20 Kg

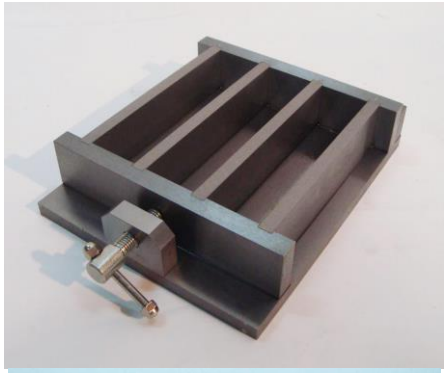
B117 Marsh cone to determine the viscosity of sludge.
Manufactured of durable plastic mesh of 2 mm light on top and outlet orifice of 4.7 mm, Supplied complete with 1 liter container.
Dimensions: Ø160 x 370 mm
Weight: 1 Kg approx.

UNE-EN 196-1, EN 196/3, 413-2, 459-2, ISO-679, UNE-80.101, ASTM-305
D052 Planetary mixer. This very robust mixer is expressly designed for the efficient mixing of cement pastes and mortar,
with **three** automatic sequences of mixing cycle, in compliance with: EN 196-1, EN 196-3:2005, EN 480-1 **Specifications**.
Bowl capacity is 4,7 litres Two speeds can be selected:
140 or 285 rpm for the revolving action
62 or 125 rpm for the planetary action
It is possible to select the manual working, or one of the two automatic programs. By operating automatically on changes of speed, stops and mixing sequences, outlined by acoustic signal, the unit performs the mixing cycle. The unit is equipped of an automatic sand dispenser which fills the sand into the mixing bowl for a period of 30 seconds (EN 196-1 program). Complete with safety door conforming to CE Safety Directive; if opened it automatically stops the machine.
Supplied complete with stainless steel bowl, but **"without beater"** which has to be ordered separately (see mod. D053.01 or D053.02).
Power supply: 230 V 1ph 50 Hz
Dimensions: 340x460x700 mm
Weight: 45 Kg

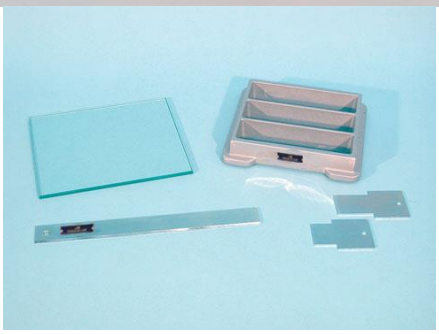
AUTOMATIC MORTAR MIXER
EN 196-1 / EN 196-3 / EN 412-2 / EN 459-2 / EN 480-1 / UNE 80801/83258 / EN ISO-679 / NF P15-314
D053 This very robust mixer is expressly designed for the efficient mixing of cement pastes and mortar,
with **three** automatic sequences of mixing cycle, in compliance with: EN 196-1, EN 196-3:2005, EN 480-1 **Specifications.**
Bowl capacity is 4,7 litres Two speeds can be selected:
140 or 285 rpm for the revolving action
62 or 125 rpm for the planetary action
It is possible to select the manual working, or one of the two automatic programs. By operating automatically on changes of speed, stops and mixing sequences, outlined by acoustic signal, the unit performs the mixing cycle. The unit is equipped of an automatic sand dispenser which fills the sand into the mixing bowl for a period of 30 seconds (EN 196-1 program). Complete with safety door conforming to CE Safety Directive; if opened it automatically stops the machine.
Supplied complete with stainless steel bowl, but **"without beater"** which has to be ordered separately (see mod. D053.01 or D053.02).
Power supply: 230 V 1ph 50 Hz
Dimensions: 340x460x700 mm
Weight: 45 Kg

Accessories:
D053.01 Stainless steel bowl, capacity 5 l.
D053.02 Stainless Steel beater with bayonet fittings
D053.03 Sand bags standard in 1350 g. according to EN 196-1

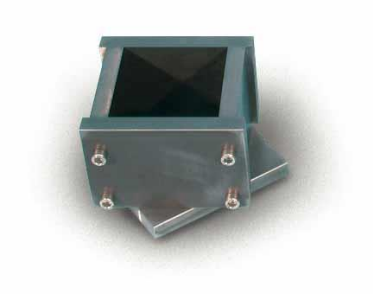
UNE-EN 196-1, 413, 459, ISO-679, UNE-80.101
D055 Three gang mould completely removable for preparing manufactured prisms of 40x40x160 mm. Steel construction fully rectified. All parts of the mould part are numbered for ease of assembly.
Internal dimensions: 40.0 ± 0.4 x 40.1 ± 0.3 x 160.0 ± 0.8 mm. (Width x Depth x Length)
Weight: 8 kg



Accessories:
D055.01 Feed hopper, made of aluminum.
D055.02 Large and small scraper to EN 196-1
D055.03 Straighe edge 300 mm long.
D055.04 Glass plate 200x200x5 mm to cover the mould



NF P18-401
D056 Three gang mould completely removable for preparing manufactured prisms of 70.7 x70, 7x282, 8 mm.
Weight: 8 kg



BS 4550
D057 Cubic mould totally removable, for preparing manufactured cubic specimen of 70.7 x70, 7x70, 7 mm.
Weight: 3 kg

Vibrating machine for 70,7 mm cube moulds
Standard: BS 4550
D059 The mould is mounted on a vibration platform with excentric mechanism. The machine is supplied complete with separate control panel with timer, but **"without cube moulds"** to be ordered separately.

Power supply: 230V 1ph 50 Hz 250 W
Weight: 100 Kg

JOLTING APPARATUS AUTOMATIC
UNE-EN 196-1/ UNE 80.101/ ISO 679/ NF P15-413/ BS 3892
D061 Used to Compact cement mortar prisms, constructed to compaction moulds triple 40x40x160 mm. Driven by an electric geared motor to raise the top board at a rate of 60 beats / minute, dropping in free fall from a height of 15 mm. Equipped with an electronic system that allows programmed to 60 beats / minute in the test required, with automatic stop. The table assembly, cleat arms and has a total weight of 20.0 ± 0.5 kg Supplied complete with control module with digital number of tiers. On-off switch.
Power supply 220 V, 50 Hz

Accessories:
D055 Three gang mould specimens 40x40x160 mm mortar.
D055.01 Feed hopper 4x4x16 cm. aluminum
D055.02 Large and small scraper to EN 196-1

SPECIMEN CURING CHAMBER
EN-196-1/ UNE 80.102/ ASTM C87, 109, 190, 191/ EN ISO 679
D070 Moist wardrobe curing and preserving specimens of mortar and concrete under conditions of temperature 22 ° C ± 2 ° C and humidity up to 100% RH (adjustable) controlled by the control panel and PT100 sensor with digital displays for temperature and humidity programmable and switch-off. This has a heating and humidification, dehumidification to 65% RH (optional) and automatically regulated refrigeration equipment, which keeps these two parameters within the programmed values. Given the compact design is ideal for testing laboratories where space is a constraint. Since its installation is simple, this makes the wet locker on a laptop. Comes complete with 4 shelves specimen stainless steel. The doors can be double or sliding sheet.
TECHNICAL DATA
External dimensions: 1,320 x 500 x 1,550 mm h. Approx.
Power supply: 220V, 50Hz 750W
Empty weight approx.: 120 kg approx.
REGULATION
Temperature range from 18 ° to 40 ° C.
Relative humidity range: up to 100% (saturation)
Temperature Stability: ± 0.5 ° C
RH Stability: ± 2%

D070.01 Dehumidifier

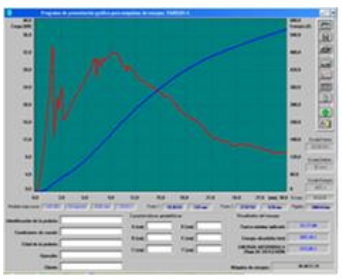
COMPRESSION AND FLEXURAL TESTING MACHINE "HIGH PERFORMANCE" WITH DUAL TESTING CHAMBER AND TWO INDEPENDENT MEASURING RANGES 300 KN AND 15 KN WITH LOAD CELLS
EN-196-1/ EN ISO 679/ ASTM C109, C348, C349/ NF P18-411, P15-45/ UNE 80101, DIN 1164/ BS 3892, 4550, 4551

D075 Automatic testing machine with dual independent test area and double piston for 300 KN and 15 KN capacity for compressive strength - Bending, standardized specimens of cements, mortars 40x40x160 mm. EN 196-1, 80101 UNE governed by computer module generation with a high-performance microprocessor, showing the graph during the test process. Made with high quality components to test compression / flexural specimens 4x4x16 cm. or other assays, as long as not exceeding the capacity of the machine. Using compression devices / flexure. There are two load cells with high accuracy.

MEASUREMENT AND CONTROL SYSTEM USING PANEL (Automatic)

The control panel is operated by an electronic microprocessor which performs servo control of the test machine closed loop driven digitally via an external personal computer. The high speed of the computer, allows you to make very precise control of the actuator of the testing machine and digital filtering allows maintaining high resolution and stability in the signs of the variables of reading.
The electronic module holds several key functions:
• Receive the steering commands entered from the computer
• Establish communication with the computer to communicate the state of the media in real time
All necessary control and display is performed via a computer program working under Windows interface.

SPECIFICATIONS:
Load cell: 300 and 15 KN
Light between plates: 310 mm.
Plate diameter: 165 mm.
Accuracy: ± 0.1
Dimensions: 1800x500x700 mm approx. (Excluding the computer table)
Power supply: 380 V III + N + T
Weight: 400 kg approx
Supplied with the latest computer flat screen, computer table, screen test area protection, Software CD overall test program and instruction manual in Castilian.
The flexion-compression devices must be ordered separately



UNE-EN 196-1/ UNE80.101/ ASTM C349/ EN ISO 679/ NF P15-451
D080 Compression Device for portions of prism mortar specimens 40 x 40 x 160 mm. with compression plates of special steel

UNE-EN 196/ EN ISO 679
D081 Flexure Device for tests mortar specimens of 40 x 40 x 160 mm. The device is placed between the plates of the machine.

COMPRESSION AND FLEXURAL TESTING MACHINE
UNE EN 12697-34 / UNE 103.502 / EN 13108 / ASTM D1559 / BS 598:107
D029 Machine capacity 50 KN for flexion-compression tests (while not exceeding the capacity of the machine). Manufactured by a sturdy frame with two columns chrome. The upper deck where it engages the load cell and the swivel plate serves as closure of the test frame. This can be positioned at will with locking system. Operation via the gear motor to the load applied by a spindle at constant speed. It has dual limit. Control module available with digital display with two display to measure the force, deformation or penetration and potentiometric sensor for measuring strain or specimen thickness. Comes complete with protective screen test area.
Capacity: 50 KN.
Dimensions: 1550 x 500 x 450 mm.
Distance between tie bars: 300 mm.
Power: 220 V, 50 Hz

Accessories:
D029.03 Metal structure for the positioning of the machine

CEMENT COMPRESSION MACHINE 500 KN, CYBER-PLUS EVOLUTION
Compression machine 500 kN with Cyber-Plus evolution control unit (semi-automatic model).
Designed to perform compression tests on portions of prism 40,1x40x160 mm, cubes side 40, 50, 70, 100 mm and 2"; cores with max. height of 180 mm, by using the suitable compression devices described in next pages (accessories mod. D080).

- Two columns high stiffness frame.
- Max. vertical daylight between platens: 185 mm
- Platens diameter: 153 mm
- Ram travel: 45 mm approx.
- Accuracy: Grade 1 starting from 1/10 of the scale
- Supplied complete with lower compression platen and coupling piece to easily fix the compression device.
- Power supply: 230V 1ph 50Hz 750W
- Weight: 300 - 330 kg

ACCESSORIES:
CONSOLE HOUING THE SERVO-PLUS EVOLUTION
D104.04 The pump assembly and the digital system are encased to enhance the design and look of the machine

Machine motorized system Cyber-Plus Evolution 500 KN capacity

D090

Machine motorized system Cyber-Plus Evolution 250 KN capacity

D091

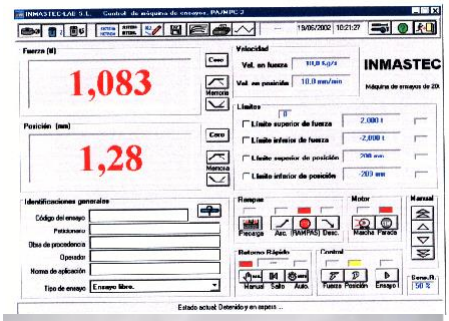
Machine motorized Servo-Plus Evolution, 250 and 500 KN capacity

D092 / D104.04 (Console Housing)

UNIVERSAL MACHINES (MULTIPURPOSE) ELECTROMECHANICAL FLEXURAL, COMPRESSION AND TEMSILE TEST
EN 13286-47, EN 196-1/ UNE 103.502, 67100-85/ ASTM D1833/ AASHTO T193/ BS 13772:4/ NF P94-078
Electromechanical multitest load, automatic compact to 200 or 300 KN capacity for compression-deflection tests mortar specimens CBR and Marshall tests, compression tests on flexural materials and vials, with load cell, microprocessor console managed by latest computer. Actuating speed is adjustable between 0.1 mm. / Min and 100 mm. / Minute and 0.1 Kg. / Sec. and 1000 Kg. / sec. The machine has an on-off switch, limit switch and emergency stop button.
Supplied complete with microprocessor management module, computer and manual (grips for tensile trial not included).
• External dimensions: 2200 x 1200 x 500 mm.
• Distance between plates: 700 mm.
• Distance between columns: 620 mm.
• Piston stroke: 0-400 mm.
• Maximum force: 200 to 300 KN.
• Resolution of force: 1 N
• Displacement resolution: 0.01 mm.
• Magnetothermal switch
• Power indicator light.
• Frame Weight: ≈ 900 kg approx.
Power supply: 220V AC, single phase over ground
S155 Universal machine capacity of 200 KN
S156 Universal machine capacity of 300 KN

Accessories:

S155.05 ENAC certificate calibration with issuance "in situ" for machines (budget request).
S155.01 Load cell 50 KN capacity on machines for coupling with corresponding couplings.
E015 Set manuals holder jaws. This equipment is designed to be used with the multiensayos presses depending on the capacity of each machine.
Supplied with two sets of pliers, one flat and one round for V.
Forceps flat: for flat specimens of 0 to 10 mm thick
Round tongs: 0 to 7 mm in diameter.
Tweezers in V: for round specimens from dia 8 to 14 mm.
Note: The machine does not include flexural device, which must be ordered separately



GROUP I&S