



# Proeti

Commitment to Quality





# COMPANY PRESENTATION

## WHO WE ARE?

We began our activity in 1985, manufacturing laboratory testing equipment to control and test construction materials used in Civil Engineering works. Since then, we have progressed to cover a complete range of equipment for testing Concrete, Cement, Asphalt, Steel, Rocks, Aggregates and Soils.

Our aim is to offer our clients personalized attention, analysing their needs and providing them with solutions based on our experience and knowledge acquired over a period of more than 30 years.

## TECHNICAL SERVICE

We have a large team of Engineers and qualified Technicians at our clients's disposal, which offers continuous technical assistance both from our facilities and at our client's premises.

We possess ENAC laboratory accreditation to calibrate and issue official certification for both our own machines and those of other manufacturers.

## I+D DEPARTMENT

Based on an initial product design, our team of Engineers makes continuous technological improvements to the product, changing its technical specifications and applying state-of-the-art Technology available on the international market.

## PRESENCE ON-LINE

In accordance with the new computing technologies, our clients may visit us at our website [www.proetisa.com](http://www.proetisa.com), from where they can also request technical assistance, documentation, budgets, and make any other kind of on-line enquiries.

## INTERNATIONAL NETWORK

When we began our activity, we only covered the domestic market. Nowday, we have managed to increase our international presence and our equipment can be found in over 70 countries.

## QUALITY

The quality of our equipment is guaranteed by our group of Engineers who, together with our factory personnel, design, manufacture, assembly, calibrate, check and test all machines before to delivery our clients.

Our ISO 9002 quality system, ENAC calibration Laboratory and EC trademark guarantee this.





# AGGREGATES AND ROCKS

## DRYING OVENS

EN 932-5, 1097-5; ASTM C127, C136, D558, D559, D560; BS 1377:1; UNE 103300

### P0200 - P0229

These ovens have been specially designed for drying large quantities of samples. Metal structure with double chamber and thermal insulation. Internal enclosure, trays and stainless steel baffle door. Analogical or digital indication.

- Serie AF (Forced Air)
- Serie CN (Normal Convection)

Available capacities from 36 up to 720 L.



## SIEVES

EN 933-1, EN 933-2; ASTM E11

### A1100...

Sieves with diameters from 200 to 450 mm, made of stainless steel what provides a long permanence and high resistance to them to the corrosion. Meshes in woven wire or sheet perforated both round and square. All the sieves are supplied with qualit certificate.



## GRID SIEVES

EN 933-3; NF P18-561

### A0530 - A0540

For aggregate flakiness index  
A set comprising a series of 13 sieves measuring 30x30 cm with bars from Ø5mm to 15 mm. Available openings from 2,5 to 40 mm.



## LABORATORY SIEVE SHAKERS

EN 932-5; ISO 3310-1

### A0507 - A0511

This simple and robust sieve shaker has triple vibrating action (vertical, horizontal and rotacional). The electronic panel of control, provided separately, allows you to programme sieving times, vibration intensity and pauses between vibrations. Available models from Ø 200mm up to 450 mm (8" or 18").

## SAMPLE SPLITTERS

EN 933-3; BS 812:1, 1377:2, 1924:1; ASTM C136, C702; UNE 83120; AASHTO T27, T87; NF P18-553

### S0010—S0016

Used to divide samples into representative parts by means of a series of hoppers. Made of painted sheet metal and supplied with three simple containers. Hoppers size from 76 to 6,35mm (3" to 1/4").



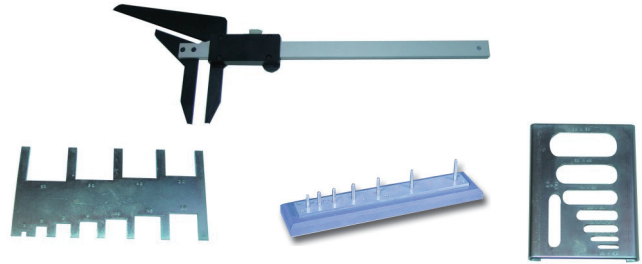
# AGGREGATES AND ROCKS



## SHAPE COEFFICIENT OF ROAD AGGREGATES BS 812 - EN 933-4 - ISO 3310-1-2 - DIN 4226

### A0600—A0606

Slotted gauge to measure the flakiness index of the aggregate.  
Bar gauge to determine the elongation index of the aggregate.  
Gauge to determine the shape coefficient of the aggregate.  
Vernier Calliper to determine the shape factor of aggregates for concrete.



## LOS ANGELES MACHINE

EN 1097-2; ASTM C131; AASHTO T96; UNE 83116; NF P18-573; CNR N° 34

### A0625

Designed to determine the resistance of aggregates to abrasion. Supplied complete with set of standard steel balls (12) and extractable container.  
Dimensions: 1120 x 860 x 820mm.  
Weight: 350 kg.



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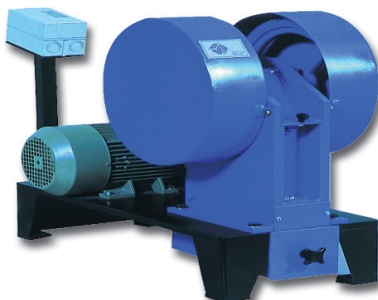
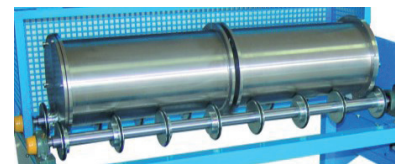


## MICRO-DEVAL MACHINE

EN 1097-1, EN 13450; NF P18-572, NF P18-576; UNE 83115; CNR N° 109

### A0655

Used to determine the quality of aggregates by abrasion. The machine essentially comprises a heavy steel frame on which four stainless steel cylinders Ø 200x154 ± 1mm. are mounted. It is supplied complete with four stainless steel drums, digital revolution counter which stops automati-cally and steel cabinet with safety microswitch.



## LABORATORY CRUSHING MACHINE

EN 933-3; UNE 83.120

### A0670

Used to crush aggregates, minerals and similar materials in laboratory, when a reduction the simple size is necessary.  
The maximum opening of the loading jaw is 80 x 50mm.  
The granulometry of the crushed material can be regulated up to 1mm.  
Power supply : 1.5Hp.  
Collecting container capacity: 5dm<sup>3</sup>/hour.

A





# AGGREGATES AND ROCKS



## SKID RESISTANCE COEFFICIENT (SKID TESTER)

EN 1097-8, EN 1338, EN 1339, EN 1341, EN 1342, EN 13036-4, EN 1436, ASTM E303

### A0661

Pendulum designed for both site and laboratory applications to perform two types of tests:  
- For measuring pavement (road asphalt) surface frictional and skid resistance properties.  
- For polished Stone value tests on aggregates (curved specimens) from accelerated polishing tests.

## ROCK CLASSIFICATION TEST HAMMER

ASTM D5873 / ISRM

### A0715

Designed to carry out non-destructive tests on rock core samples. Made from aluminum frame with graduated scale.  
Impact energy: 0,74 Nm.  
Range of measure: 10-20 N/mm<sup>2</sup>



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## DETERMINATION OF THE POLISHED STONE VALUE

EN 1097-8, EN 1341, 1342, 1343; BS 812:114; NF P18-575; CNR N.105

### A0661

Accelerated Polishing Machine

It measures the resistance of road aggregates, paving stones, paving blocks to the polishing action of vehicle tyres on a road surface.

Dimensions: 1800x820x600 mm

Power supply: 30V 50Hz 1pH 750W

Weight: 175 kg

# A

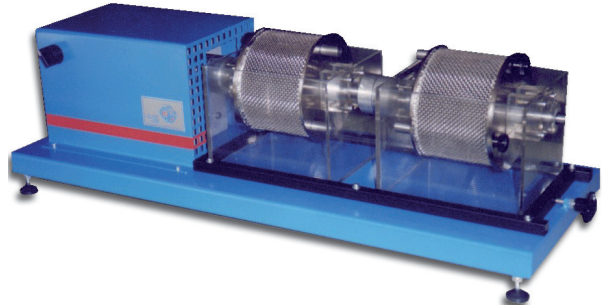
# AGGREGATES AND ROCKS



## SLAKE DURABILITY TESTER NLT-251; ASTM D4644

A0675

To determine rock deterioration while subjected to wear by water. This consists of a base-mounted motor that rotates two stainless steel drums measuring  $\varnothing 140 \times 100$  mm with a mesh size of 2 mm at 20 rpm.



## HYDROSTATIC WEIGHING FRAME EN 12390-7; BS 812:2, 1881:114

P0030

Bouyancy balance system (Specific gravity frame)  
Used with the electronic scales. It consists of a rigid rigid frame which includes a water tank mounted upon a platform.  
Dimensions of the frame: 500 x 500 x 1200 mm.  
Weight: 50 kg

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## DIGITAL POINT LOAD UNIT ASTM D5731

A0679

Point load unit with a digital pressure gauge.  
Capacity: 55 kN  
Maximum diameter of sample: 4" (101,6 mm)  
Supplied complete with wooden carrying case, goggles and accessories.  
Dimensions: 400x530x720 mm.  
Weight: 25 Kg



## ROCK SHEAR BOX APPARATUS ASTM D5607 - ISRM

A0685

Used to determine the strength and slope stability of rock size max 115x125 mm or cores max. dia. 102 mm, both in the field and in the laboratory.  
Available in analogical or digital version.

# A





# AGGREGATES AND ROCKS

## HOEK CELLS FOR ROCK TRIAXIAL TESTS ASTM D5873

### A0691 - A0694

Used to measure the strength of cylindrical rock specimens which are subjected to triaxial compression. The basic Hoek cell consists of the following:  
Cell body complete with two screwed end caps and two self-sealing couplings, two spherical seats and pistons, hardened and ground, one specimen jacket.  
Available different models and dimensions.

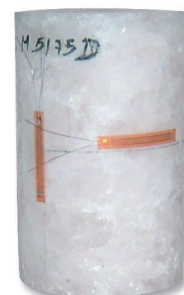
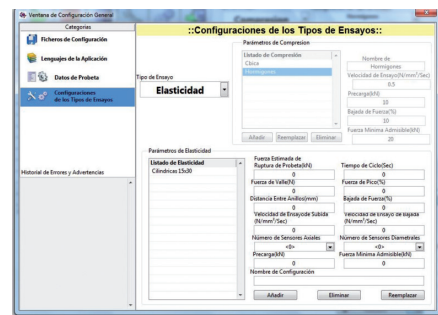


## ELASTIC MODULUS OF ROCK SPECIMENS IN UNIAXIAL TRIAXIAL TEST ASTM D7012; UNE 22950-3

To develop the test, it is necessary to have a machine with automatic control of load gradient. PROETI proposes its servo-controlled fully computerized with breaking software, which allows to realize all kinds of tests and an efficient control of the machine.

With the appropriate accessories, among others, it is possible to develop and calculate automatically the following tests:

- Calculation of elasticity (Young, Poisson and shears).
- Flexotracción
- Indirect tensile test, Brazilian method.
- Elastic modulus in concrete or rock samples
- Triaxial test in rocks



# AGGREGATES AND ROCKS



## OTHER PRODCUTS:

Abrasimeter	A0654
Abrasion Testing Machine	A0650
Accelerated polishing machine	A0660
Aggregate crushing value	A0630
Aggregate crushing value	A0517...
Aggregate impact value apparatus	A0635
Aggregate shape index gauge	A0606
Air jet sieving machine	A0504
Ball mill	A0672
Bar grid sieves	A0530... A0542
Barton profimometers	A0718...
Bernard calcimeter	A0615
Böhme abrasimeter	A0646
Bulk density measures	A0576... A0579
Chapman glass flask	A0597
Coring machine two speeds motor	A0705
Cutting-off machine	A0698
Density baskets	A0565...
Deval Machine	A0656
Device for indirect tensile strength in rock samples	A0681
Dietrich-Frühling calcimeter	A0616
Dorry abrasion testing machine	A0651
Efflux index apparatus	A0519
Electromagnetic sieve shakers for sieves	A0507... A0510
Filler compaction apparatus	A0590
Flakiness/thickness gauge	A0600
Hardness tester for aggregates soft particles	A0640
High capacity sieve shaker	A0515
Hoek Triaxial cells	A0691
Horizontal extruder	A0706
Impurities test bottles	A0618
Jaw crusher machine, laboratory	A0670
Length gauge	A0601
Los Angeles machine	A0625
Methylene blue, equipment	A0555...
Microdeval Machine	A0655
Moisture/Temperature meter "Microlance"	A0568
Point load tester apparatus	A0678
Portable rocks direct shear apparatus	A0685
Pyknometers EN 1097-6 standard.	A0561
Reaction conainer	A0610
Rock clasification hammer	A0715
Roller bottle	A0545
Sample trays heavy-duty galvanised and stainless steel	A0001... A0015
Sand absorpion test	A0560
Sieve brushes	A0501... A0503
Sieves	A1100...
Siphon can apparatus	A0580
Slake durability meter	A0675
Soil colour chart + 2 tropical charts	A0617
Stirrer, electronic	A0550
Swing sieve shakers, capacity 6 sieves Ø 8" plus lid and receiver.	A0505 - A0506
Tribometer	A0645
TRRL Pendulum Skid Resistant Tester	A0661
Ultrasonic cleaning baths for sieves	A0490 - A0491
Volumetric coefficient gauge	A0602
Wet washing sieves	A0458... A0461





## PERMEABILITY OF CEMENT

EN 196-6; ASTM C204; BS 4359; NP F-15442; AASHTO T153

### C0010

Blaine Air Permeability (Fineness) Apparatus

Used to determine the fineness of Portland cement in terms of the specific surface expressed as total surface area in square centimetres per gram of cement.  
Available in manual or automatic version.



## DETERMINATION OF SETTING TIME AND CONSISTENCY OF CEMENT AND GYPSUM

EN 196-3:2005; EN 13279-2; ASTM C187, C191; AASHTO T131; NF P15-414, P15-431; UNE 80102

### C0015 - C0016

Vicat Apparatuses (Hand-operated or Automatic)  
Used for setting time and consistency.



## MORTAR COMPACTION

EN 196/1; NF P15-413; ISO 679; BS 3892; UNE 80101; D.M.3/6/68

### C0100

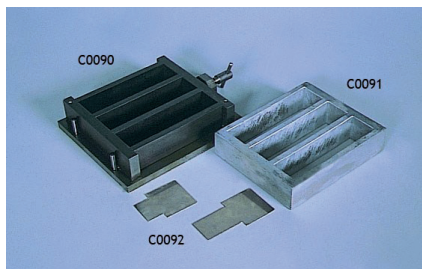
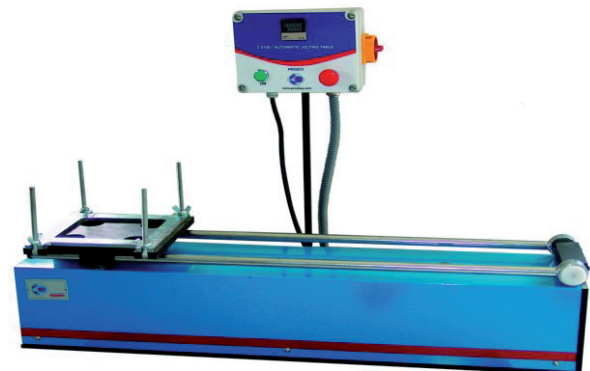
Automatic Jolting Apparatus

Automatic jolting table, use for the settlement of 40 x 40 x 160 mm. mortar specimens.

Automatic pulse counter, start/stop control and connection cable.

Dimensions: 980 x 280 x 400 mm.

Weight: 60 kg..



### C0090

Three-gang mould for 40 x 40 x 160 mm. mortar specimens

EN 196/1; NF P15-413; ASTM C348; BS 3892

Manufactured in steel, entirely removable. All parts are marked with an identification number for a correct assembling; surfaces are grinded and tolerance is held within 0,1 mm. as requested by Standards.

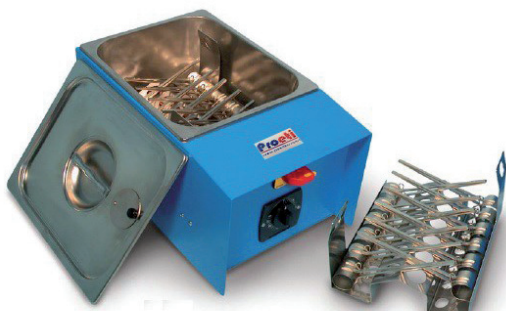
## SOUNDNESS OF CEMENT AND LIMES

EN196/1; NF P15-413; BS 6463; UNE 80102; D.M. 3/6/68

### C0030

Le Chatelier water bath

Made of stainless steel and incorporates a 1000 W. heater enabling the water to reach boiling point within 30 minutes. It can hold up to 12 Le Chatelier moulds in the removable rack supplied with the bath.



# CEMENTS



## SOUNDNESS OF CEMENT AND LIMES

EN196/1; NF P15-413; BS 6463; UNE 80102; D.M. 3/6/68

### C0030

Le Chatelier water bath

Made of stainless steel and incorporates a 1000 W. heater enabling the water to reach boiling point within 30 minutes. It can hold up to 12 Le Chatelier moulds in the removable rack supplied with the bath.



## MORTAR MIXERS

EN 196-1; EN 196-3, EN 413-2, EN 459-2, EN 480; ASTM C305M; AASHTO T162

Designed for the efficient mixing of cement pastes and mortar, with four automatic sequences of mixing cycle.

CE versions include a safety door conforming the safety directive, if opened it automatically stops the machine.

Supplied complete with stainless Steel bowl 4,7 litres capacity and stainless Steel beater.



## VISCOSITY AND FLUIDITY OF MORTARS

EN 445; NF P18-358; P18-507

### C0068

Flow cone apparatus

Used for viscosity and fluidity determination of mortars, muds, grouts, etc.

Cone top diameter: 155 mm.

Total length: 290 mm.

Capacity: 1700 mm.

Entirely brass made, it is supplied complete with four interchangeable nozzles

Ø 8, 9, 10 and 11 mm., adjustable stand and plastic container



### C0024

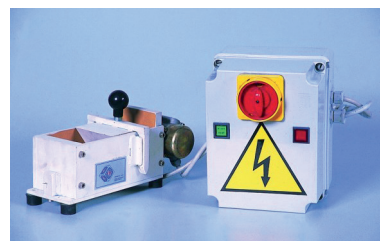
Mortar Workability Apparatus

EN 413/2; NF P18-452

Designed to test concrete mortar for dynamic workability and also to ensure optimum proportioning of mortar constituents (sand, water, cement, as well as cement/sand and water/cement ratios) compatible with given application.

Dimensions: 400 x 200 x 200 mm.

Weight: 18 Kg.



## CONSISTENCY OF FRESH MORTAR

EN 413/1, 459/2; DIN 4211

### C0018

Plunger Penetration Apparatus

Used 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.

Dimensions: 200x200x700 mm.

Weight: 8 Kg.





# CEMENTS

## C0106

### Large capacity curing cabinet

**EN 196-1; EN ISO 679; ASTM C87, C109, C190, C191**

For curing large quantities of mortar and concrete specimens, at controlled humidity and temperature.

Humidity range: 95% to saturation

Temperature range: from ambient to +30°C, accuracy  $\pm 1^\circ\text{C}$ .

The cabinet requires a compressed air source.

Inside dimensions: 1090x470x1200 mm

Overall dimensions: 1370x570x1600 mm

Power supply 220-240 V 1ph 50 Hz 2000 W

Weight: 100 Kg.



## C0110 - C0125

### Compression/flexural testing machine with dual Testing chamber and two independent measuring range 250/15 kN, with load cells, H0206-Touch servo-control unit

**EN 196/1; ASTM C109; BS 3892; DIN 1164; NF P18-411; UNE 80101; AS 2350**

This testing machine of high performance, advanced solutions and top quality components is equipped with two load chambers with two independent measuring ranges. It is suitable to perform:

Flexural tests on cement prisms 40, 1x40x160 mm (with the range 0 - 15 kN)  
 Compression tests on portions of prism 40, 1x40x160 mm broken in flexure, cubes side 40, 50, 70, 100 mm 2", cores with max. height of 180 mm (with the range 0 - 250 kN) by using the suitable compression devices .

We offer alternative models with different capacities and technical features, For further information, contact our Sales Department or the dealer of your area.



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## H043 - H0442

### Pull-Off Apparatus

**EN 12504-3; ASTM C900; BS 1881**

The dynamometer measures the adhesive force and the tensile strength of two layers of materials (concrete, facing plasters, mortars, building plasters, lime etc.) and is particularly suitable for applications concerning testing repairs of any structure where the bond strength between two layers is an essential factor.

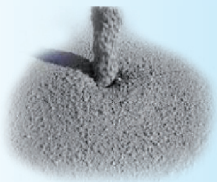
Compact, light, for use in any location, this Pull-Off Tester is fitted with a load cell and high resolution large digital display unit; it is therefore suitable for measurements from low loads up to 16 kN, granting a wide working range and ideal for a large number of applications and materials. The direct tensile force is applied by rotating the hand wheel.





## OTHER PRODUCTS:

Air entrainment meters	C0050... C0051
Apparatus for determining fly ash by wet method	C0013
Apparatus for determining the water permeability EN 1015-21	C0073
Automatic jolting table	C0100
Beckman thermometer	C0045/4
Blaine permeability meters	C0010... C0011
Bulk density of lime	C0058
Calorimeter EN and ASTM with thermometer	C0045
Cement tube samplers	C0001... C0002
Cement moulds	C0040
Compression device for 40 x 40 x 160 mm. samples EN	C0115
Compression device for 50 mm. and 2" samples ASTM C109	C0115/3
Compression testing machine 300 kN. motorized one gauge	C0108
Compression testing machine 300 kN. motorized two gauges	C0109
Compression Testing Machine 500 kN. Capacity	C0125
Compression/Flexural Machine dual range 300/15 kN. + H0206/Touch	C0117
Compression/Flexure testing machine 250 kN. Capacity + H0206/Touch	C0110
Cracking test mould	C0075
Curing cabinet dimensions 900 x 700 x 800 mm.	C0107
Device for measure the apparent density of cement	C0067
Device for measure the apparent density of plaster	C0067/1
Device to measure the penetration	C0023/1
Equipment for water retention	C0070
Equipment to determine the steam permeability on hardened mortars EN 1015-19	C0072
Falling ball apparatus	C0023
Flame photometer	C0005
Flexure device for 40 x 40 x 160 mm. samples EN	C0116
Flow cone apparatus with interchangeable nozzles Ø 8-9-10-11 mm	C0068
Flow tables	C0019... C0022
Funnel groove	C0064
Immersion cooler up -10°C	C0105/1
Kleine apparatus	C0059
Large curing cabinet dimen. ext. 1350 x 570 x 1600 mm.	C0106
LCL Plasticity meter	C0024
Le Chatelier glass flask 250 ml. Capacity	C0065
Le Chatelier set	C0030... C0034
Length comparator with analogical/digital	C0037...
Length comparator with digital dial gauge 15,3 x 0,001mm	C0037/D
Mortar mixers	C0085
Mould for cube samples 70,7 x 70,7 mm.	C0096
Mould for removal the sample	C0071
Pat test	C0038
Plaster extensometer	C0039
Plunger penetration apparatus	C0063
Press 300/20 kN. servocontrolled, digital (H0206/Touch)	C0123
Slaking vessel	C0062
Three gang mould for cube samples 50 mm. side	C0095
Three-gang mould 40 x 40 x 160 mm. EN	C0090
Three-gang mould 70 x 70 x 280 mm. hardness 200 HV	C0097
Tubing to connect C0106 to air compressor	C0106/2
Vibrating machine for 70,7 mm cube moulds	C0098
Water bath for cement curing samples	C0105



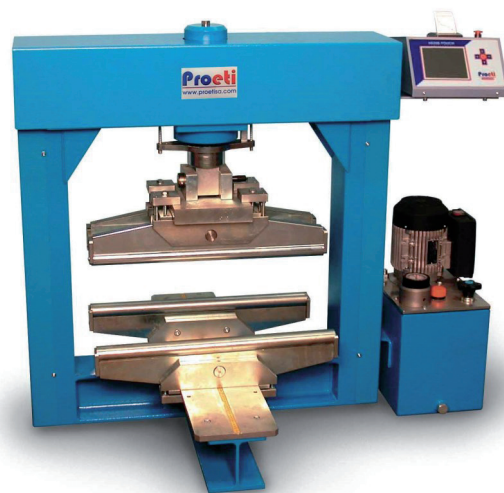
## COMPRESSION TESTING MACHINES

EN 12390. 12394; BS 1881; NF P18-411; DIN 51220, 51223; UNE 7242, 83.304, 7281; ASTM C39; E4; AASHTO T22, T71

### H0200 - H0285

These machines are designed to meet requirements for material compression tests, specifically on standard concrete test specimens. They are designed to conform to International Specifications as: EN, ASTM, AASHTO, BS, NF, DIN, UNI, UNE. They are available in 1500 kN, 2000 kN, 3000 kN, 5000 kN capacity, both hand-operated and motorized, with electronic digital display measuring system, and hydraulic power pack, servo-controlled or totally computerised. The different versions give the possibility to test cubes, cylinders, blocks.

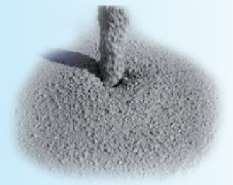
All the machines can be equipped with safety guards.



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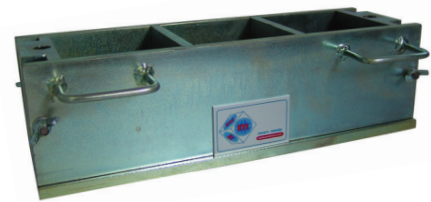
## SPECIMEN PREPARATION

EN 12390; ASTM C192, C31; AASHTO T23; BS1881; NF P18-400; UNE 7240

### H0060 - H0105

#### Moulds

Complete range of moulds manufactured in Steel or plastic, to making cubic, cylindrical or beam concrete samples.



## SLUMP CONE SET

EN 12350/2; BS 1881: 102; AASHTO T119; ASTM C143; NF P18-305, P18-451; UNE 7103, 83313

### H0001 - H0005

#### Slump Cone Set

For measuring concrete cohesiveness. Made of galvanised sheet metal.

Rod, made of galvanised sheet.

Cone-filling hopper. Made of aluminium.

Base plate made of galvanised sheet metal, with a handle. Dimensions: 60x40cm.

Graduated stainless steel ruler, length 300 mm.

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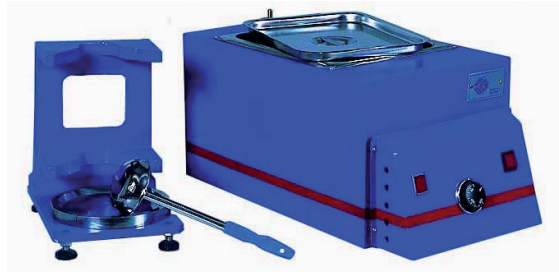
## CYLINDER CAPPING EQUIPMENT

EN 12390/2; ASTM C617, C31, C192; AASHTO T23, T126; NF P18 416; UNE 7240, 83303

### H0165

#### Melting pot capacity 10 litres

Used to melt capping compound, made internally in stainless steel with double chamber and conductivity of temperature by thermal oil. The control panel are fitted with thermostatic control of temperature and main switch.



## CURING TANKS

EN 12390-2; ASTM C31, C192, C511; AASHTO T23; UNE 7240; NF P18-404; UNI 6127, 6128, 6129; BS 1881:111

### H0120 - H121

Made from steel sheet, zinc coated to prevent it from corrosion or from robust and stable polythylene.

Available capacities: 600; 1000 y 1500 L.

## ULTRASONIS TESTER

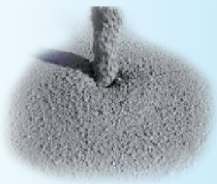
EN 12504/4; ASTM C597; BS 1881:203; UNI 9524; NF P18-418; UNE 83308

### H0394 - H0395

Used to determine the presence of faults, voids, cracks etc., in in-situ or precast concrete and for longterm monitoring of structures subject to environmental conditions.

They give data concerning the homogeneity of the concrete, by generating pulses of sound into the concrete and measuring the time the sound to travel from the transmitter probe to the receiver probe through the material.





## AIR ENTRAINMENT IN FRESH CONCRETE

EN 12350-7; UNE 7141; ASTM C231; BS 1881-106; DIN 1048

H0046 - H0049

### Air entrainment in fresh concrete

These devices are designed to determine the amount of air contained in the concrete. The main advantages from the use of the trapped air meter are as follows: ice resistance, suitability for a wide range of weather conditions, durability and improved workability.



## SETTING TIME OF CONCRETE BY PENETRATION

ASTM C403; AASHTO T197; UNI 7123

H0022

### Concrete penetrometer

This device is used to determine the time during which the concrete can be handled. It is supplied with a carrying case, and includes a set of exchangeable points with the following sections: 16, 32, 65, 160, 325 and 650 mm<sup>2</sup> and an adaptor for small points.



## CONCRETE FLOW TABLE

EN 12390-2

H0027 - H0028

Used to determine the flow of concrete. The apparatus consists of a flow table, stainless steel flow mould, tamping bar.

Two models available: hand-operated or motor-driven.

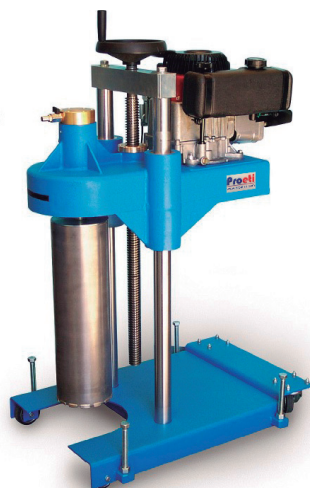
## SPECIMEN PREPARATION

EN 12390-2

H0050 - H0056

### Concrete mixers

Used to prepare concrete specimens or mixtures, these mixers ensure an uniform, efficient and fast mixture action. They are of easy and practical utilisation, absorb fewer air during mixing and are suitable for laboratory and field purposes.



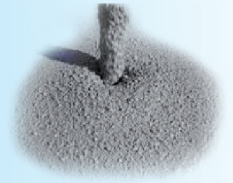
## SPECIMEN REMOVAL

EN 12504-1

H0138 - H0139

### Electric Core Drilling Machines

These devices are a simple way to obtain suitably-sized quality specimens to evaluate hardness of construction materials such as concrete.



## CONCRETE PERMEABILITY AND WATER ABSORPTION DIN 1048; EN 12364, EN 12390/8; ISO 7031

H0331

### Concrete water penetration test

This apparatus is used to determine the depth of penetration of the water into the concrete (impermeability) under known time and pressure.

The unit accepts concrete cubic and cylindrical specimens. Two models available: three place and six place version.



## REBOUND CONCRETE TEST HAMMERS

EN 12504/2; ASTM C805; DIN 1048; BS 1881:202; NF P18-417; UNE 83307; ISO DIN 8045

H0360 - H0375

### Test Hammer

Designed to perform non-destructive test on concrete structures, it gives an immediate indication of the compressive strength of the concrete using the calibration curve supplied with. Models available: analogical or digital.

## REBAR LOCATOR AND CORROSION MONITORS

BS 1881:204; DIN 1045

H0385 - H0387

It quickly locates and determines the orientation of metal rebars in concrete. Also can be used to check probabilities of corrosion in rebars within the concrete structure.

Bar diameter ranges Metric: 5 - 50mm bar diameters in 21 values.

Rechargeable power supply 7.4 lithium ion battery

Supplied with Standard Search Head, designed to meet most of your measurement requirements.

Dimensions: 155 x 88 x 42mm

Sensing area: 120 x 60mm



## DEFORMOMETER

ASTM C426; BS 1881:206

H0403 - H0408

Used to determine the strain (length changes) in concrete specimens and structures, rock strata, different parts of a structure, in remote áreas and under adverse conditions.

Different models are available with analogic or digital gauge, 100, 200, 300 mm measuring length.

The standard equipment comprises:

Strain gauge (extensometer) complete with analogic or digital indicator 0,001 mm graduations.

Calibration bar used also to fix the datum disc on the structure.

50 datum discs.

Adhesive compound for datum discs.

Carrying case.



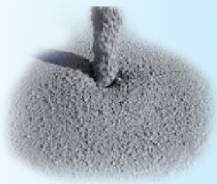
H0480 - H0481

**Crosshole Sonic Logging System (CLS)**, is used to test a wide range of foundation structures, from piles manufactured "in situ" to walls. A structure can only be tested if it can be accessed by pipes and probes, in such way that the probes can be introduced through the pipes.

When used as a system for checking structure quality, it becomes a powerful instrument for the detection and evaluation of all kinds of defects that affect concrete integrity.







## OTHER PRODUCTS:

Air entrainment meters	H0045... H0048
Apparatus to measure fe resonant frequency	H0483
Capping device for bricks	H0290
Capping retainers	H0173...
Compacting factor equipment	H0012
Compression frames for concrete pipe tests	H0280-H0281
Compression/Flexural load frames	H0270...
Compressometer for cube samples	H0253/3
Compressometer/Extensometer	H0253/2
Computerized compression testing machines	H0225...
Concrete flow table	H0016
Concrete penetrometer, pointer 650, 325, 160, 65, 32 and 16 mm2	H0022
Concrete pocket penetrometer	H0021
Concrete test hammer	H0360
Crack detection microscope 40X	H0400
Crack width gauges for walls	H0409
Cre drilling machins	H0136... H0139
Crosshole Sonic Logging System	H0480-H0481
Cube moulds made of steel	H0060... H0067
Curing tanks	H0120... H0122
Diamond blades	H0154... H0158
Diamond core bits	H0141... H0145
Digital concrete test hammer	H0375
Downhole/Crosshole Seismic System	H0482
Electric melting pots	H0164-H0165
Flexural device for concrete beams	H0276
Flexure frame to work together with compression testing machines	H0270...
Hand operated compression testing machines	H0200...
Impact test on tiles apparatus	H0018
IT-System apparatus	H0460/SIT
Joisel apparatus	H0026
J-Ring	H0013
Kelly ball penetrometer	H0017
Kits for measure deflections	H0410... H0414
K-Slump tester	H0020
Laboratory concrete mixers	H0050
L-Box	H0011
LCL Workabilimeter	H0025
Load cells	H0303... H0313
Motorized compression testing machines	H0223...
Neoprene pads (2 pcs) Ø 100 x 200 mm. shore 60	H0175...
PDA System apparatus	H0470
Plastic cube moulds	H0081... H0082
Plastic cylinder mould, samples Ø 150 x 300 mm.	H0105-H0106
Poker vibrator electric	H0115-H0116
Pull-off strength testers, capacity 5 kN. aneroid display	H0435... H0442
Pull-out test apparatus	H0430
Rebar locator model BH (without head)	H0385... H0387
Rock test hammer	H0362
Servocontrolled compression testing machines	H0224...
Slump cone	H0001
Sonic Echo System	H0484/1...
Specimen cutting machine, blade Ø 400 x 25,4 mm	H0151
Specimen cutting machines	H0150... H0153
Specimen grinding machines	H0160-H0161
Splitting tensile device for blocking pavers and cubes	H0273
Splitting tensile test device (Brazilian test), samples Ø 150 and 160 mm.	H0277
Steel beam moulds	H0085... H0095
Steel cylinder moulds	H0100... H0103
Strain gauges, analogic and digital	H0403... H0408
Testing anvil for test hammers	H0369
Three-gang moulds made of steel	H0070... H0074
U-Box	H0009
Ultrasonic concrete testers	H0394-H0395
Unit weight measure, capacity 1 L. (EN 1097:3)	H0031
Unit weight measures	H0030... H0038
Vebe consistometer	H0014
Vertical cylinder cappers	H0166... H0168
VIBRA equipment for vibration measurement	H0465
VIBRA PLUS equipment for vibration measurement	H0466
Vibrating tables	H0027-H0028
Vibrating tables	H0109... H0111
Walz consistometer	H0015
Water concrete penetration apparatus	H0330-H0331
Windsor probe	H0380

## SOIL CONSOLIDATION, OEDOMETER TEST, FREE SWELL, SWELL PRESSURE AND COLLAPSE



### S0105/SM

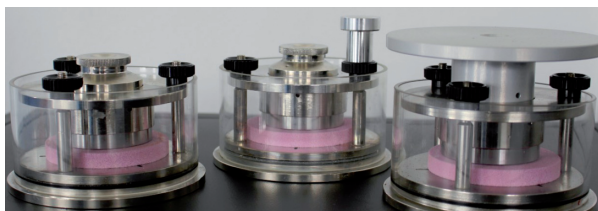
#### Automated oedometer (1 place)

Proetisa's automated Soilmatic oedometer is an innovative tool replacing traditional oedometers. Soilmatic series SEA is an automated and computer controlled system with an incremental load controller. Loads are applied or removed without needing to use compressed air systems nor place / remove loads by hand.

EDS software makes possible to program great number of incremental load steps in advance, therefore when one of the steps is completed, the system will automatically proceed to the next one. With our automated system it is possible to carry out any test performed with traditional oedometers (oedometer consolidation, free swell, pressure swell, collapse tests).

#### Consolidation cells

Automatic Soilmatic oedometer uses any consolidation cell, even those from other manufacturers. Consolidation cells from 50 mm to 200 mm.



## SOIL CONSOLIDATION, OEDOMETER TEST, FREE SWELL, SWELL PRESSURE AND COLLAPSE

16

### S0105/SM3

#### Automated oedometer (3 places)

Soilmatic Oedometer with 3 places, designed to carry out three automatic consolidation tests simultaneously. This way increases your productivity with the same test results accuracy.



## TRIAIXIAL, SIMPLE COMPRESSION AND CBR TEST

### S0150/SM

#### Soilmatic PC controlled Load Frame

The Soilmatic triaxial load frame provides compression testing for a number of geotechnical tests, and small rock samples, that must have accurate control of the rate of displacement during loading.

With accessories, the unit can perform unconfined compression (soils compression), CBR, and triaxial shear phase testing.



## S0220/SM FULLY AUTOMATED FOUR PRESSURE TRIAXIAL SYSTEM

Consist of:

### Triaxial Soilmatic Load Frame

All in one four pressure automated system for any kind of triaxial tests (TUU, TCU and TCD). It makes also possible to automatically perform permeability, consolidation and saturation tests.

### Pressure / Volume Maintainers

They can be configured and controlled in a fully automated and independent way, in order to the desired parameters. It will display sensor readings in graphs and calculate "B" coefficient in real time.

Consolidation as well as UU, CD and CU triaxial tests are fully automated. Once consolidation is completed, you will be able to use the software to calculate the appropriate breaking velocity for the material that has been consolidated. Pressure and volume maintainers will automatically keep the pressure value fixed during the test. All readings are graphed in real time during the test and stored in a database in the PC for later processing.

Hardware + Software



## AUTOMATED SYSTEM FOR DIRECT SHEAR TEST

### S0125/SM

#### Soilmatic Direct Shear Apparatus

Soilmatic Direct Shear Apparatus is a universal shear system capable of performing the consolidation, drained and undrained direct shear or residual shear stages in a completely automated way.

The system consists of a PC controlled desktop unit with PID control to accurately apply vertical and horizontal loads to the soil sample to be tested.

The standard system is delivered together with 5 kN force transducers for horizontal loads and 5 kN force transducers for vertical loads.

This system can perform the consolidation stage defining as many load increments as desired and in a completely automated way. If desired, you will be able to calculate the appropriate shear velocity for the material to be tested using the consolidation curve. The system displays real time graphs with force, horizontal and vertical strain values, as well as applied load.

## AUTOMATIC CBR TEST

### Soilmatic CBR Test System of Six Positions

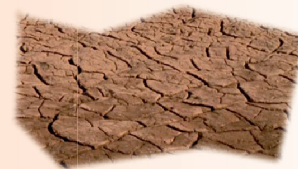
This computer-controlled system will allow you to:  
Prepare and test six CBR samples simultaneously. The data collection is done by LVDT.

Later you will be able to perform the CBR penetration test with or without load.

The upper bridge has locking systems for the loading machine.





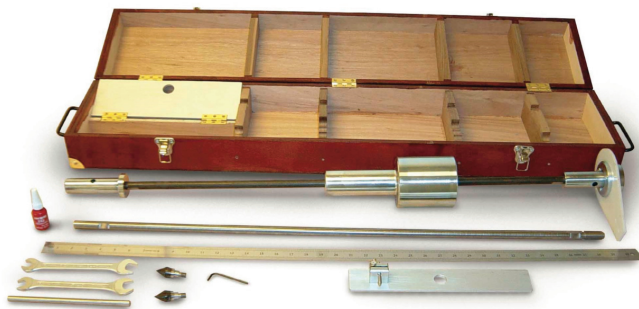


## SAMPLING AND EVALUATION

ASTM D 420; D 1452, D2937; CNR NI'22; AASHTO T86, T202; BS 1377:9

### S0001 - S0004

Designed for terrain investigation and exploration. Manufactured in galvanised steel. Supplied with a "T"-shaped handle.



### S0554

#### Penetrómetro dinámico de cono (DCP)

TRL – Transport Research Laboratory UK – ASTM D6951-03  
Portable hand operated equipment.

The equipment consists of:

- Drop sliding hammer 8 kg weight, falling height of 575mm
- Impact anvil with driving rod
- Penetration rod with conical 60° point and 20 mm dia.
- Bar wrench, spanners, accessories.
- Wooden carrying case

Dimensions (in case): 1210 x 340x190 mm approx.

Weight: 29 kg

## PARTICLE SIZE ANALYSIS

ASTM D422; AASHTO T88; UNE 103.102

### S0065 - S0081

#### Densitometer sedimentation method

The purpose of this test is to determine the granular composition of sieved soils by measuring the density of soils in suspension.



## CLAY CONTENT IN THE FINE AGGREGATE

EN 933/9; UNE 83180; NF P94-068; XP P18-593

### Methylene blue test

This test determines the presence of clays in fine materials used in road construction.



## DETERMINATION OF SAND EQUIVALENT

EN 933-8; NF P18-598; CNR N.27; UNE 83131, 7324

### S0060 - S0063

This test is used to determine clay, lime and dust proportions in granular soil and fine aggregate.

## DETERMINATION OF LIQUID LIMIT

ASTM D4318; AASHTO T89; BS 1377:2; NF P94-051; UNE 7377, 7002

### S0040 - S0042

#### Casagrande Method

Used to evaluate the relationship between the moisture percentage of a soil sample and the number of blows required to close a groove made into the soil, and therefore to determine when a clay soil changes from a plastic to a liquid state.

The unit comprises a removable brass cup which through a cam device drops on a bakelite (or hard rubber base).

Models available: hand operated or automatic.





#### DETERMINATION OF PLASTIC LIMIT

ASTM D4318; AASHTO T90; BS 1377:2; UNI 10014; UNE 103-104; NF P94-051; CEN ISO; TS 17892-12

#### S0047

Plastic limit is defined as the lowest moisture required for the formation of soil cylinders, with a diameter of approximately 3mm, that can be rolled without the cylinders breaking apart. Complete with carrying case.



#### SHRINKAGE LIMIT

ASTM D 427; AASHTO T 92; UNI 10014; UNE 103-108; NF XP94-060-1; BS 1377:2

#### S0048

Used to determine the maximum moisture content at which the soil does not shrink after drying the sample. Complete with carrying case.



#### CONE PENETROMETER METHOD FOR LIQUID LIMIT AND SHEAR STRENGTH DETERMINATION

CEN ISO; TS 17892-12; BS 1377:2; NF P94-052-1; CEN ISO; TS 17892-06

#### LIQUID LIMIT

The test is based on the relationship between the moisture content at which clay soils pass from a plastic to a liquid state. This value is obtained from the penetration capacity of the standard cone allowed to free fall into the sample for a period of 5 seconds.

#### SHEAR STRENGTH

The cone penetrometer is also suitable to measure the shear undrained strength of undisturbed and reconstituted soil samples as per CEN ISO/TS 17892-06.

#### B0165 - B0166

Analogical and digital penetrometers, consists of aluminium base with levelling screws and spirit level, chromed vertical rod with micrometric vertical displacement device, slider, brass made, with free fall, stop and release push button, automatic zero set.

#### PROCTOR TEST: MOISTURE-DENSITY RELATIONSHIP

EN 13286-2, EN 13286-47; ASTM D558, D698, D1557; AASHTO T99, T134, T180, T193; BS 1377:4, 1990, 1994, 1924:2; CNR N° 69; NF P94-093, P94-066, P98-231-1; DIN 18127; NLT-108-91; UNE 103-500, 103-501, 7365, 7255

#### Moulds

Used for determining the relationship between the moisture content and density of compacted soils. Made of steel tube protected against corrosion. Various models are available, in compliance with various international standards.

#### Proctor rammers

Used to compact the soil sample into the mould. Made of steel tube protected against corrosion. Available in two versions, in compliance with International standards, Army type or tubular.





Instead of the manual compaction

**S0290  
CBR/PROCTOR AUTOMATIC COMPACTION**

Designed to compact Proctor and CBR specimens, it ensures an extremely uniform compaction degree, granting reliable and repeatable test results. It accepts moulds having dia. 4" and 6", 100 and 150mm.

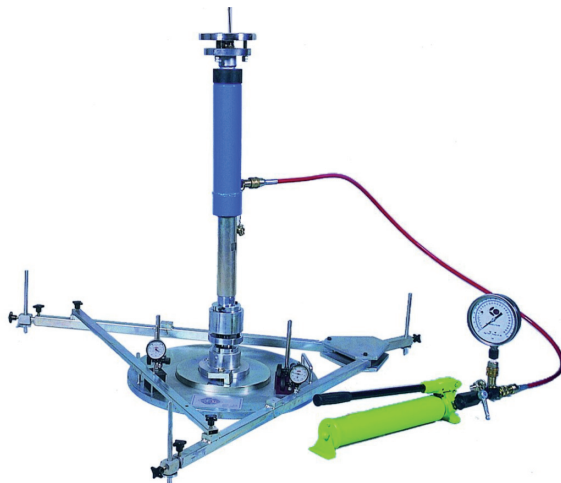


**CBR, MULTITESTER AND CBR/MARSHALL LOAD FRAMES**

EN 196/1, 12697/34, 13286/2; ASTM D1883, D1559, D2166, D1074, D1138, D1635 C321; AASHTO T245, T193, T208, T167, T169, T97; NF P98-251/2, P94-093, P94-078; NLT 159/73, 111/78; BS 1377

Designed to realise test with different ranges of strength, from 50 to 200 kN. Its highly versatile Multitest Machine that can be used in most standard tensile and bending tests.

- Three different measurement systems:
- Analogical display with dynamometric ring.
  - Digital display with touch module.
  - Fully computerised.



**PLATE BEARING TEST**

ASTM D1194, D1195, D1196; BS 1377/9; DIN 18134; NF P94117-1; P98200-2; UNE 7391 - NLT 357

**S0545 - S0547**

This test is performed for the determination of the bearing capacity of a soil in-situ on road constructions, foundations, road subgrades, airport and highway pavements. Capacities: 100, 200 or 600 kN





MULTITESTER LOAD FRAMES. COMPRESSION/BENDING AND TENSILE TEST. COMPUTER-CONTROLLED.  
CAPACITIES: 100, 200 AND 300 kN.



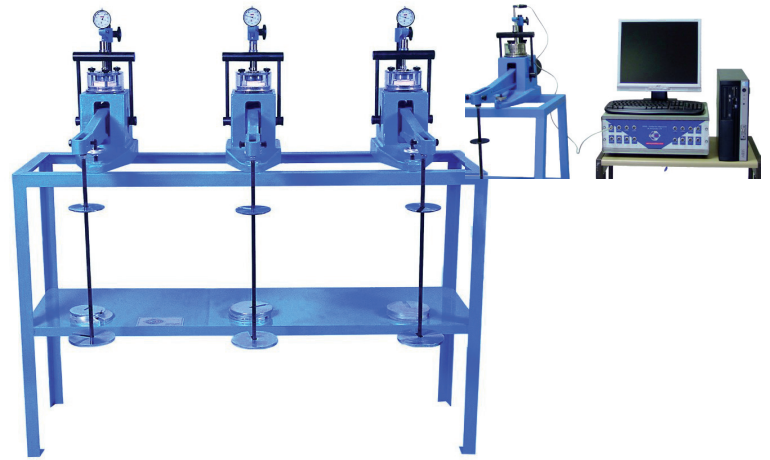


## CONSOLIDATION TEST

ASTM D2435, D3877, D4546; BS 1377:5; AASHTO T216; NF P94 090-1, P94-091; UNE 103-405, 103-601, 103-602; CEN-ISO-TS 17892-5

### S0105...

The one-dimensional consolidation test of a soil sample enables to ascertain the settlement characteristic over a given period of time. The soil specimen under test is axially loaded and laterally contained. Loads are applied with progressive increases and the settlement values are read on a dial gauge or on a digital display (LVDT).



## DIRECT SHEAR TEST

ASTM D3080; BS 1377:7; AASHTO T236; NF P094071/1

### S0125

Used to determine the resistance to shearing of all types of soil specimens, both consolidated and drained, undisturbed or remoulded. The machine can accommodate specimens dia. 50, 60, 100 mm, and square 60x60, 100x100 mm.

Three versions available.

Analogical version with touch screen.

Digital version with data acquisition.

Fully automatic version.

## TRIAxIAL TEST

ASTM D2850-032, D4767-95, D7181-11; NF P94-070, P94-074; BS 1377-8; CEN-ISO; TS 17892-8.9

The application of local loads or pressure on soil determines its deformation, settling and yield.

The experimental research used to determine the relationship between these loads and the subsequent deformation, in order to determine soil shear strength.

The test is performed by placing the cylinder soil sample in a rubber membrane and subjecting it to isotropic hydraulic pressure.

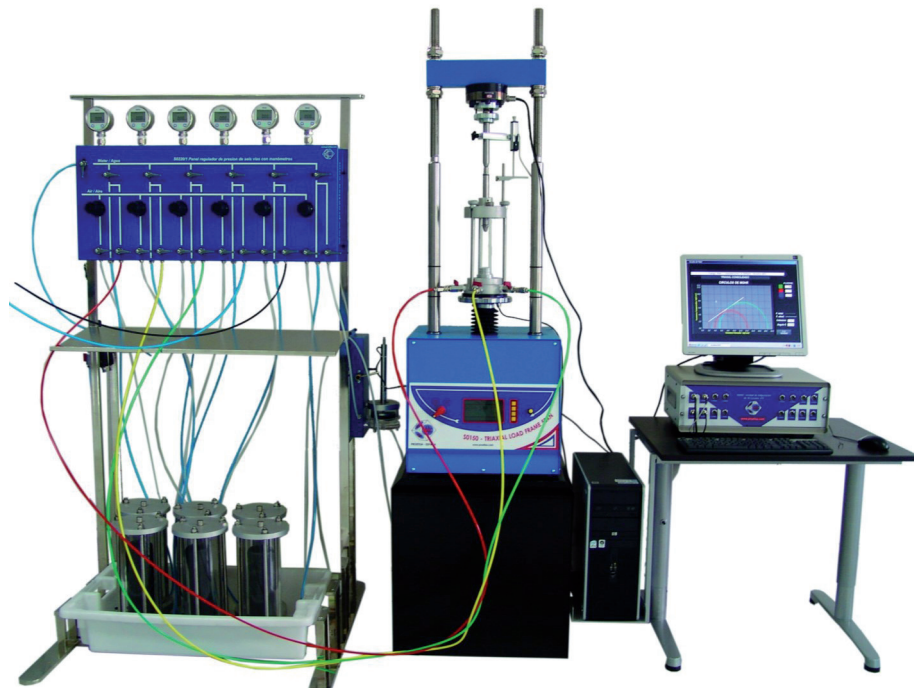
Afterwards, an axial load is applied to the specimen by means of a piston so that the soil sample is deformed at a constant speed.

The Triaxial test can be performed using the following methods:

*Non-consolidated, undrained test. (UU)*

*Consolidated, undrained test. (CU)*

*Consolidated, drained test. (CD)*





## "IN SITU" DENSITY METHOD OF THE VOLUME METER ASTM D2167; AASHTO T205; CNR N° 22

S0419 - S0421

Designed to determine "in situ" density of fine granulometry compact terrain.  
Capacities: 1600, 3000 or 6000 ml.



## CONSTANT AND FALLING HEAD PERMEAMETER ASTM D2434; BS 1377:5; AASHTO T2158

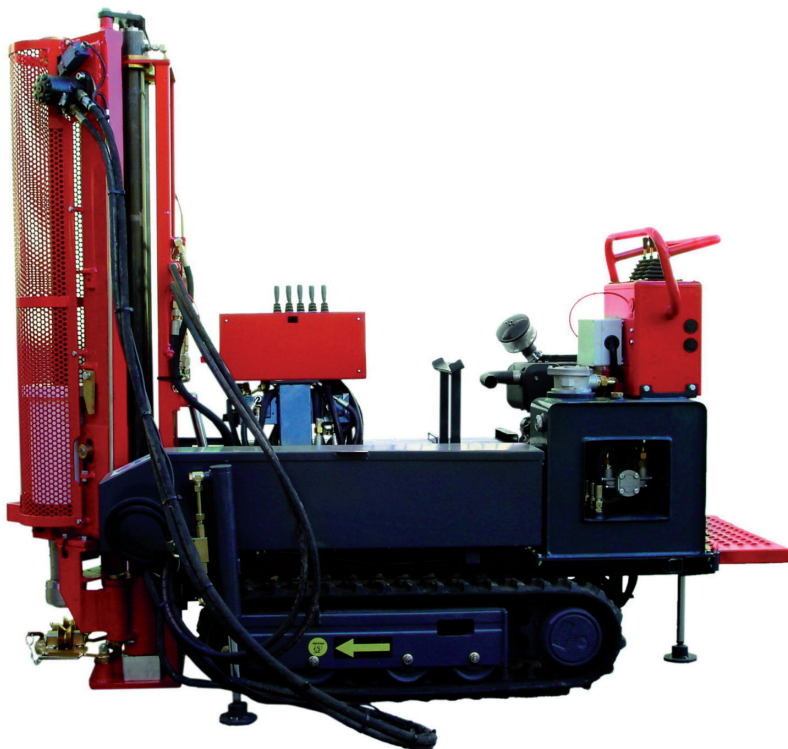
Used to determine the permeability of granular, gravel and sand soils. The specimen is formed in an acrylic permeability cell, and water is passed through it from a constant level tank.

## NUCLEAR METHOD

ASTM D6938-08, D2922, D2950, D3017; BS1377

S0475 - S0500

PROETI-CPN nuclear meters provide a fast method of determining moisture content and/or density "in situ". They have several applications, among which is compaction control of landfill material and layers of asphalt pavement and measuring moisture in structures.



## DYNAMIC PENETRATION TEST UNE 7308; ASTM D3550; D1587; NI-ISSMFE

S0548 - S0549

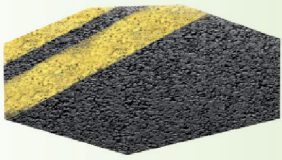
Hydraulic dynamic penetrometer

Used to determine the thickness of various layers of soil and therefore useful for road construction, compaction control and to measure the relative density of terrain with low cohesion.  
Designed to be handled by a single operator.  
Capable of performing the following tests:  
DPSH, SPT, BORROS



**OTHER PRODUCTS:**

Auot-Graphic apparatus for unconfined compression test	S0543
Balloon density apparatuses	S0419
Baroid balance	S0527
Baroid Mud pressure filter	S0529/6
Baroid sand content kit	S0529/1
BDH set for chemical soil tests	S0090
Calibrated sand	S0423
Carbide ampoules (pack of 100)	S0032/2
CBR Motorised load frames	S0349...
CBR Mould	S0300
CBR/Marshall Motorised load frame, 50 kN capacity, 1,27-50,8 mm/min. - ASTM	S0350
CBR/Proctor Modified moulds	S0262...
Champan flask 200 ml.	S0037
Constant head permeameter...	S0506
Dial pocket penetrometer	S0530
Direct Shear apparatus	S0125
Dynamic Medium Penetrometer with explosion engine 30 kg.	S0553
End-over-end shaker	S0056
ermeameter for constant and falling head tests	S0507
Extension rod 900 mm. length	S0001/3
Falling head permeameter	S0505...
Front loading oedometer	S0105
Glas flask 1 L.	S0098/1
Hand extruder	S0001/2
Ion exchange apparatus	S0085
Kit for Organic matter tests	S0092
Kit to determine the alkaline content in chlorides and water hardness	S0096
Laboratory mixers	S0020
Laboratory Vane test apparatus motirised	S0140
Lambe apparatus	S0120
Light weight hand operated dynamic penetrometer, 10 kg.	S0552
Load bearing plates	S0545...
Mackintosh prospecting kit	S0022
Marsh funnel viscometer Ø 4,7 mm.	S0528
Marshall stability mould	S0358/03
MC-3-122 Portaprobe Density-Moisture meter	S0480
Motorised sand equivalent shaker	S0063/1
Multitester load frames 50 kN. control+speed adjustment	S0365...
Pinhole apparatus for dispersibility determination	S0515
Plastic limit complete set	S0047
Pocket penetrometers	S0531
Proctor Penetrometer	S0417
Proctor/CBR Automatic Compactor	S0290
Radiation Monitor-4	S0504
Realive density apparatus	S0410...
Ring Penetrometer	S0418
Sample splitter 2"	S0011
Sample splitters 3"	S0010 - S0017
Sampling equipment	S0008
Sand density test set	S0423...
Sand equivalent complete test set...	S0060
Sand replacement apparatus	S0435...
Sedimentation test set	S0069...
Shrinkage limit complete set	S0048
Sodium hexametaphosphate (1 kg)	S0071
Soil colour charts	S0093
Soil prospecting and sampling kit	S0009
Speedy misture meters	S0032...
Standard Proctor Rammer (Army) 2,49 kg. Ø 50,8 mm. (UNE-NLT)	S0252
Standard Proctor Rammer 2,49 kg. Ø 50,8 (ASTM-AASHTO-CNR-UNE-NLT)	S0253
Standard Proctor Rammer 2,5 kg. Ø 50±0,5 mm. (EN-NF-BS)	S0251
Standard Proctor test	S0254...
Sulphate shaker	S0098
Surface soil sampler Ø 100mm. 10 kg. drop hammer	S0007
Surface soil sampler Ø 73 x 66mm. 5 kg. drop hammer	S0006
Torvane - Pocket Vane Tester	S0538
Triaxial test	S0150...
Universal Compactor Proctor, CBR and Marshall	S0292
Universal hand-operated extruder	S0024
Universal Multipurpose machine 50 kN.	S0358
Universal Multipurpose machine 50 kN. Tensile+compression	S0358/05
Universal Multi-Speed load frame 50 kN capacity, 0,5 - 63 mm/min	S0355
Vane Testers	S0535...
Water level probes	S0561
Wax melting pot	



# BITUMEN - ASPHALT

## MULTITESTER AND CBR/MARSHAL MACHINES

EN 196/1, 12697/34, 13286/2; ASTM D1883, D1559, D2166, D1074, D1138, D1635 C321; AASHTO T245, T193, T208, T167, T169, T97; NF P98-251/2, P94-093, P94-078; NLT 159/73, 111/78; BS 1377

These kinds of machines have been designed to cover a very extensive range of efforts that reaches from 50 to 200 kN. as standard option.

Their versatility allows to be used in most of the normalized tests with limited speeds, non only in compression but also y flexural and tensile tests.

As measure system ww offer three alternatives: - Analog indicator with dinamometric ring. - Digital display with touch-screen module. - Computerized control systeme of speed, force and displacement



## CUANTITATIVE EXTRACTION

EN 12697/1; ASTM D1856; AASHTO T164; CNR NI'38

### B0020 - B0021

#### Centrifuges

Used for the determination of bitumen percentage in bituminous mixtures  
Available models capacity 1500, 3000 g. and conitnuous flow filterless.



## MARSHALL COMPACTION

EN 12697/34, EN 12697-10, EN 12697-30; ASTM D1856, D1559; AASHTO T164, T245; CNR NI'38; NF P98-251/2; NLT 159

### B0040 - B0042

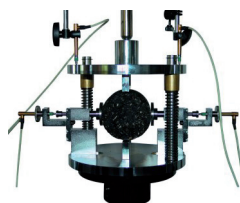
Devices for the manual or automatic compaction of bituminous samples

## MARSHALL SAMPLE PREPARATION

Marshall mould, manufactured from plated Steel against corrosion.

Filling collar, to be adapted to the Marshall mould.

Base plate to be adapted to the Marshall mould.



### B0055

#### MARSHALL load frame 50 kN. capacity.

Ruggedly constructed with frame to encompass the strain and loads, easy to use, it is designed to operate with the minimum of maintenance. Platen rate is 50.8 mm/minute also maintained under load thanks to an over-powered electric motor.

Horizontal clearance: 270 mm.

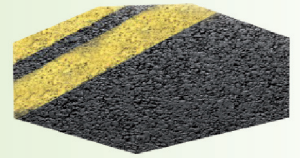
Pistón travel: 65 mm.

Dimensions: 550 x 370 x 1500 mm.

Weight: 90 kg.

#### Availables measure systems:

- Dinamometric ring
- Data acquisition 8 channels module, load cell and displacement transducer.



## Water baths for Marshall specimens

EN 12697-34, EN 13108; ASTM D1559, D5571; AASHTO T245

Used to maintain in water Marshall specimens at constant temperature of  $60 \pm 1^\circ\text{C}$  and asphalt specimens at  $37,8 \pm 1^\circ\text{C}$ . These baths are also idea for general laboratory use. Internal tank and cover are stainless Steel made, outside box is from painted steek sheet with wool insulation.

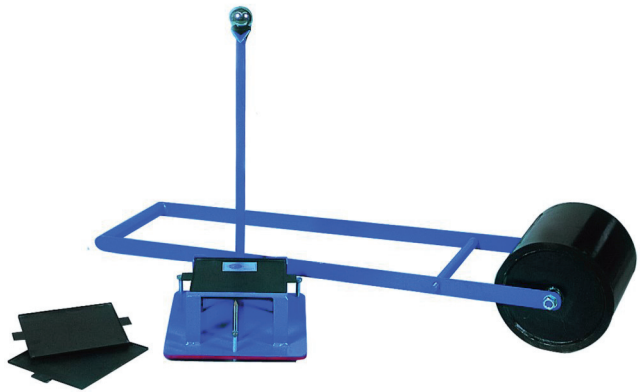


## "Vialit" - Binder adhesion test

EN 12272-3; NF P98-274-1

Used to evaluate the global adhesion and the active adhesion between bitumen and aggregates for road surfaces realization, the equipment is formed by:

- 3 metal test plates 20 cm. side.
- Stel ball  $\varnothing$  50 mm. and 500 gr. of weight.
- Compaction roller hand operated.
- Mettalic base with three vertical support points and metallic rod 500 mm, height.



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## PLANETARY ABRASION TESTER

EN 12274-5; ASTM D3910

### B0100

The machine consists of an electric motor with a vertical testing shaft with planetary rotation, abrasion head, specimen immersion bath, testing base measuring dia. 310 x 5 mm. thick, three ring moulds and a semi-rigid plastic disc of dia. 300 mm.

Dimensions: 530 x 550 x 800 mm

Weight: 70 kg.

## PENETROMETERS STANDARD AND AUTOMATIC

EN 1426; ASTM D5; BS 2000; NF T66-004; AASHTO T49; UNI 4162; UNE 7013; NLT 124; CNR N° 24

### B0165 - B0166

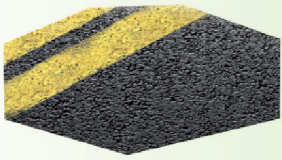
Used to determine the consistency of a bituminous sample under fixed conditions of load, time and temperature.

Analogical version with dial graduated  $360^\circ$  (division 0,1mm) and digital with 5 digits display, resolution 0,01mm



Full range of products at [www.proetisa.com](http://www.proetisa.com)





# BITUMEN - ASPHALT

## THIN FILM AND LOSS ON HEATING DETERMINATION . TFOT METHOD

EN 12607-2, EN 13303; CNR N°50; ASTM D6, D1754; AASHTO T47, T179; BS 2000; UNE 7110; NF T66-011



### B0150

#### Asphalt oven with rotating shelf

Internal chamber and external frame all made from stainless steel, double wall insulation with fiberglass, double door. Temperature control by digital thermoregulator. The plate rotates at 5-6 rpm.



## EFFECT OF HEAT AND AIR ON A MOVING FILM OF ASPHALT. RTFOT METHOD

### RTFOT METHOD

EN 12607-1; ASTM D2872; AASHTO T240

### B0151

#### Rolling Thin-Film Oven

External frame and internal chamber are stainless steel made with insulated fiber-glass intermediate chamber. Provided of large glass door for inspections.

## DUCTILIDAD Y PUNTO DE ROTURA

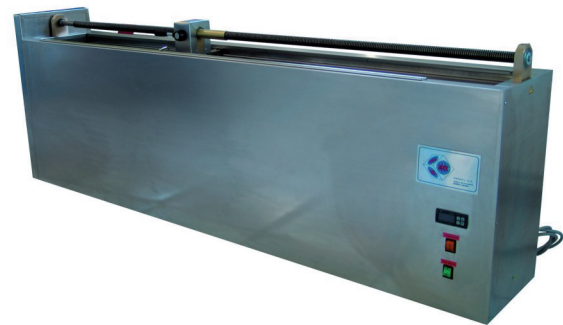
EN 13589; EN 13398; ASTM D113; AASHTO T51; NF T66-006; NLT 126; UNE 7093; CNR N° 44

### B0190 - B0193

#### Ductilometers

Used to determine the bituminous ductility, that is to say, the distance to which a briquette of molten bitumen can be extended under controlled conditions, before its breaking.

Optionally they can be supplied with refrigerating cooling system for tests with water temperatures from +5° to +25°C and data acquisition system with microprocessor.



## SAYBOLT VISCOMETERS

ASTM D88; D244; AASHTO T72; UNE 7066, 51021

### B0175 - B0176

Used to determine the viscosity of petroleum products at specified temperatures between 20 and 100 °C (70 to 210°F). Equipped with dual safety thermostat to prevent accidental over-heatings. Available with one or two tubes.



## SOFTENING POINT TEST

EN 1427; ASTM D36; AASHTO T53; NF T66-008

### B0160

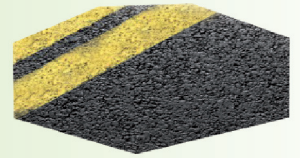
#### Ring and ball set to determine the softening point

The softening of bitumen depends, among other factors, on the temperature of the substance, where, as the temperature is raised, the softness of the bitumen increases.

The set consists in:

- 2 Brass tapered rings.
- 2 Ball centering guides.
- 2 Steel ball Ø 9,5mm.
- Support frame.
- Glass beaker 800 cc.





## ASPHALT CONTENT IGNITION FURNACE

EN 12697-39; AASHTO T164; NLT384/00; ASTM T 308-99

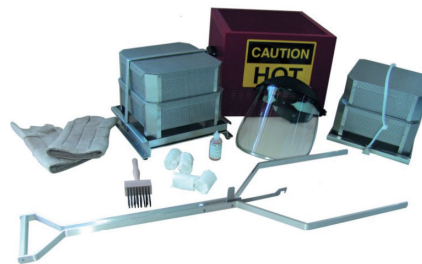
### B0031

Designed to determine the asphalt content of bituminous paving mixtures. A 1200-1800 gr. sample of asphalt can be tested in 30-45 minutes. The furnace incorporates an internal scale, that automatically monitors the sample weight throughout the ignition process, saving valuable technician time and increasing productivity in the lab.

An RS232 port provides data interface with personal computer for graphical data analysis.

Supplied complete with sample incineration baskets, trays, covers, handle, cooling cage, insulated plate, gloves, face shield and rolls of printer tape for 5000 test..

Temperature range: 200 – 650°C.



### B0060

#### “Non nuclear” asphalt density gauge PQI 380

AASHTO TP 343-12; ASTM D 7113-05

- Full Color VGA display
- LED backlight for easy visibility in light or dark situations
- Customizable Project Entries
- Customizable Mix Entries
- Diagnostics reading mode
- Data Management Screen and the ability to disable data logging
- Rugged, Lightweight, Aluminum Shell (Reflective vinyl graphics for safety)

The PQI 380 also utilizes an advanced GPS system which enables position and independent time logging. A USB port enables the user to easily download data files in a comma delimited file and print out the data. The high capacity Nickel Metal Hydride rechargeable batteries are user replaceable. The easy to navigate user interface will ensure that you get setup quickly on jobs and begin taking reading in just seconds.



### B0222

#### Benkelman Beam

CNR N° 141; NF P98-200-2; AASHTO T256-77

Designed to measure the road deflection during the passing of vehicles.

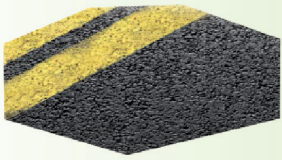
Alluminium ally made, complete with dial indicator and accessories

Supplied complete with carrying case.

Length: 2500 mm.

Weight: 16 kg.





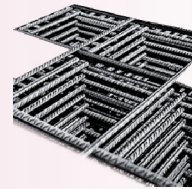
# BITUMEN - ASPHALT

## OTHER PRODUCTS:

30kN Servo-hydraulic dynamic testing system  
AMPT/SPT Asphalt Mixture Performance Tester  
ASC- Asphalt Shear Box Compactor  
Asphalt content ignition furnace  
Asphalt indentation penetrometer  
Asphalt oven with rotating shelf (TFOT method)  
Asphalt penetrometers  
Automatic asphalt large capacity 32 L.  
Automatic binder extraction unit  
Automatic Marshall compactor  
Bacon sampler 237 ml. Capacity  
Ball and ring apparatus  
BBR - Bending Beam Rheometer  
Bearing plate test  
Benkelman beam apparatus  
Bimetallic thermometers  
Binder recovery vacuum pump  
Bitumen measuring instrument, capacity 750 mL  
Bottle roller machine  
Breaking value of cationic emulsions  
Centrifuges  
Cleveland electric tester  
Constant load spray device  
Dean-Stark apparatus  
Determination of solubility of bituminous binders  
DSR - Dynamic shear Rheometer  
Ductilometer 1500 mm.  
Duriez mould Ø 80 mm.  
Emulsion particle charge tester  
Engler Digital Viscometer  
Equipment for determine the asphalt distillation  
Equipment for distillation of cut-back asphalts  
Fraas apparatus  
Grip Tester MK2 for measuring the skid resistance.  
Gyratory compactor  
Hot extraction apparatus  
Hubbard Field specimen mould  
Hubbard-Carmick type pycnometers  
Indirect tensile devices  
Kerosene centrifuge  
Kumagawa Extractors  
Laboratory Mixer  
LCS permeameter  
LEUTNER testing head  
Marshall load frame  
Marshall mould  
Marshall stability mould  
Mot straight edge, length 3 m.  
Pavement quality indicator (PQI 380)  
Pensky Martens digital viscometer  
Planetary abrasion tester for wearing determination  
PRD mould (Percentage Refusal Density)  
Pressure Aging Vessel PAV3  
Reflux extractors  
Rolling Thin-Film Oven  
Rotating viscometer  
Saybolt Digital Viscometers  
Smartracker double wheel Hamburg Wet/Dry  
Soil Density Gauge SDG200  
Solvent recovery still  
Standard Digital Viscometers (TAR, BRTA)  
Steel roller compactor, small device  
Tag viscometers  
Tar distilling equipment  
Thermostatic water baths  
Thickness meter  
Torsion meter  
Travelling beam device with autographic recorder  
Universal hydraulic testing machine  
Vacuum pycnometer 10 L. capacity  
Vialit test equipment.  
Wheel Tracker Machine  
Wilhelmi softening point apparatus

B0241  
B0126  
B0129  
B0031  
B0063  
B0150  
B0165... B0166  
B0127  
B0032  
B0041  
B0130  
B0160  
B0188  
B0225... B0226  
B0222  
B0210... B0211  
B0064  
B0003... B0004  
B0001  
B0162  
B0019... B0024  
B0145  
B0107  
B0164  
B0169  
B0186  
B0190... B0193  
B0085  
B0205  
B0152... B0153  
B0157  
B0155  
B0195  
B0250  
B0123  
B0010... B0011  
B0065  
B0138... B0139  
B0047  
B0030  
B0028... B0029  
B0038  
B0245  
B0058/01  
B0055  
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B0058  
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B0108  
B0062  
B0035  
B0170... B0171  
B0120  
B0147  
B0159  
B0050  
B0240  
B0200  
B0221  
B0116  
B0014  
B0097  
B0110  
B0163





**UNIVERSAL SERVO-HYDRAULIC TESTING MACHINES**  
**EN 10002-1; DIN 50125; UNE 7184; ASTM A370**

**E0001 - E0004**

Designed for testing on metallic and nonmetallic materials: tension, compression and bending. The frame structure is designed to carry out tensile test through the jaws located in the clamping heads, while at the top between the head and the bridge, with the appropriate devices, can be made bending, compression, folding, hardness, pres-sing and other tests according to International Standards, Computer control in closed loop of the different test parameters (force, displacement and deformation). Available standard capacities: 400KN, 600KN, 1000KN, 2000KN.



**UNIVERSAL ELECTROMECHANICAL TESTING MACHINES**  
**EN 10002-1; DIN 50125; UNE 7184; ASTM A370**

**E0010 - E0016**

Electromechanical drive by c.c. servo-motor and two recirculating ball screws for to gurarantee easiness of operation and constant speed during the test. Base case of reduced dimensions where it is included the motor, gear reducer and transmission the screws, as well as the electronic regulation of servo-motor.

Two zone test (upper and lower) equally they prepared to apply indistin-tively tensile and compression loads. Universal load cell (tensile/compression) installed in the upper beam, to allows measurer efforts in both zone tests. Easy installation of all tools test (tensile, compression, flexural, Brinell, etc) in both zone tests. The tensile grips are installed in the upper zone Capacities from 20 to 300 kN.

**RESLIENCE TESTS**  
**DIN 50115**

**E0070 - E0072**  
**Charpy/Izod Pendulums**

To determine the energy absorbed breaking a notched specimen in only one stroke The machine is equipped with a pendulum hammer and safety protection Capacities availables: 150, 300, 450 or 750 Joules. Measure systems: analog or digital.



**HARDNESS TESTER**

**E0090 - E0093**  
**Rockwell Hardness Tester 713 SRD**

This kind of hardness tester has been developed to carry out Rockwell Standard tests (with loads of 60, 100 and 150 kp.) and Rockwell Superficial (with loads of 15, 30 and 45 kp.). But also, it has other additional loads that allow to carry out other test like Brinell and Vickers.



## OTHER PRODUCTS:

Bar bending machine auto-programmable

Broaching machines, hand operated and motorized

Charpy pendulum analogic 150 J. capacity + safety protection

Computerized, Electro-mechanical Universal Testing Machines 5 kN... 300 kN. capacity

Computerized, Servo-hydraulic Universal Testing Machines 600 kN... 2000 kN. capacity

Hardness Testers (Rockwell, Brinell, Vickers)

Marking-off machine

Specimen cutting machines

E0065

E0079 — E0080

E0070... E0073

E0010

E0002

E0093... E0112

E0060

E0064/1

# GENERAL EQUIPMENT

## GENERAL LABORATORY

We have a wide range of laboratory equipment and accessories for all kind of testing and applications.

### Analytical, mechanical and digital Scales

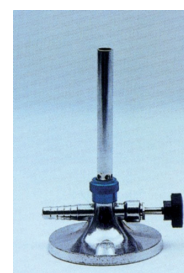
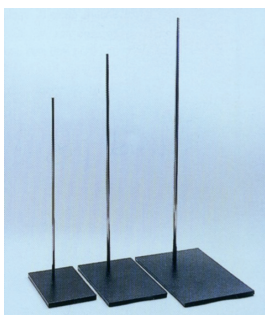
Range form 110gr until 600 kg.

### Dinamomteric rings

Manufactured in special treated Steel. Supplied with dial gauge and oficial ENAC certificate.  
Measure ranges, from ,0,5 until 200 kN.

### Scientific glassware and porcelain

Dissectors. Beakers, flasks, cylinders, pyknometers, pipettes, capsules, mortars, crucibles....



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# GENERAL EQUIPMENT

## OTHER PRODUCTS:

Aluminium scoops	V0183...
Bunsen burners	V0285...
Crucible tongs	V0275...
Dial gauges	V0015...
Digital stop watch	V0070
Field tools	V0041
Force Transducers	V0027
Furnace muffles	V0370
Gloves	V0033
Hot plates	V0125...
Laboratory glassware (Pycnometer, dessicators, beakers, pipettes, burettes, flasks)	V2370...
Load cells	V0026...
Magnetic stirrers	V0135
Metallic water tanks	V0105
Mixing bowls stainless steel	V0360...
Plastic bottles	V0060
Porcelain accessories (crucibles, capsules, mortars)	V8002...
Proving rings	V0002...
Sample containers	V0218
Sample trays	V0180...
Set of mineral Mohs	V0069
Soil hydrometers	V0960
Spatulas	V0246...
Stainless steel beakers	V0325...
Thermometers	V1001...
Thermostatic baths	V0115...
Vacuum pumps	V0410
Vernier calipers	V0074...
Weighing bottles	V2320...





# Proeti

**MATERIAL TESTING EQUIPMENT**

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