Welcome to the Labotronic Catalog.
Company specialized in the supply and repair of equipment for ceramic laboratory.
If you are looking for something that does not appear in the catalog, please contact us and we will seek all the information you want.
Thank you very much for your attention.
LABOTRONIC, S.L.
DETERMINATION OF DIMENSIONS AND UALITY EN ISO 10545-2

Combined precision instruments to measure the length of the sides, the orthogonality of adjacent sides and the parallelism of the opposite sides, the concavity and convexity, the warping, the curvature of the sides of the ceramic tile according the Standard EN98 and ISO 10545-2

PLUCOMETERS HZ3

C02313 PLUCOMETERS HZ3/600
C02314 PLUCOMETERS HZ3/700
C05459 PLUCOMETERS HZ3/800
C05858 PLUCOMETERS HZ3/1050
C05857 PLUCOMETERS HZ3/1600

DATA PLUCOMETERS DHZ3

Precision instruments suitable to measure in continuous or programmed mode ceramic tiles or other objects. Supplied with software for the acquisition/recording and data calculation. Using the software ISO 10545-2, supplied with the instrument, it measures the length of the sides, the orthogonality of the adjacent sides and the parallelism of the opposite sides, the concavity and convexity, the warping and the curvature/bending of the sides of ceramic tiles according the Standard EN98 and ISO 10545-2. Using the software HD4, optional, besides to see and to acquire the initial measure compared to the sample, it records all the subsequent variations that the object could have in the time.

C02326 DATA PLUCOMETERS DHZ3/600
C02328 DATA PLUCOMETERS DHZ3/700
C05452 DATA PLUCOMETERS DHZ3/800
C05862 DATA PLUCOMETERS DHZ3/1050
C05863 DATA PLUCOMETERS DHZ3/1600
ZEROING PLATES

Precision reference plate to set to zero the instruments for the dimensional measurement: grinded aluminium reference plate with thickness between 8 and 12 mm due to the size; sharp edges rounded off; anodized on all the surface; holes for easy handling; on request other sizes are available; tolerance: up to the nominal size of 600x600 mm at the temperature of 15÷22 °C ±0,06 mm on the orthogonality, on the dimensions, on the sides curvature, on the flatness and on the planarity.

Format 600 x 600mm.
Format 450 x 450mm.
Format 300 x 300mm.
Format 250 x 300mm.
Format 800 x 400mm.
Format 1000 x 500mm.

SPessonorm EN

Instrument for the measurement of tiles thickness according to what prescribed by the European Standard EN 98 and ISO 10545-2. The instrument must be used, to get the automatic operation, in combination with the Dataplucometer DHZ3.

C02568 SPessonorm EN
Standard factory
- Calibre Digital Shop high quality
- Modern design
- Display with digit height of 7.5 mm/10mm
- Long life guaranteed
- Contact measuring microlapeados
- Features: converting mm / in, on / off, output data, ABS / cero, low battery indicator
- With fine adjustment

<table>
<thead>
<tr>
<th>Code</th>
<th>Rang</th>
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<tr>
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DECIMAL FEELER GAUGE
Instruments for the rapid determination of the thickness of the tiles
- Constructed of stainless steel and light alloy
- maximum measurable thickness 20 or 50 mm
- Distance from the edge of 20 or 50 mm
- Accuracy: 1 / 10 mm

Staffing: • • If Screw blockade Housing

Mod. MDC 50/25
Apreciated. 0.05
Escot: 50
Capac: 0-25
Contac.Ø: 12
DETERMINATION OF WATER ABSORPTION, APPARENT POROSITY, APPARENT RELATIVE DENSITY AND BULK DENSITY EN ISO10545-3

Heated tank to determine the water absorption of ceramic tiles according to the Standards EN 99 and ISO 10545-3.

By this instrument the determination of water absorption is executed using the boiling method. The tiles are immersed and the water is heated until boiling and continue to boil for a time required by the Standards; then the tiles are cooled still keeping them immersed. The water adsorption is calculated as percentage of the difference of the dry mass and the mass after the standing into the tank.

**C02231 EBONORM**
Inside dimension 450x300x560 mm. 230V 50 Hz one phase

**C03609 EBONORM LARGE**
Inside dimension 760x300x860 mm 230V 50 Hz one phase

Instrument to execute the water absorption on the ceramic tiles according to the method of the sample water impregnation in immersion under vacuum.

Functional Description The instrument gives the possibility to execute tests according to the Standards ISO 10545-3, ISO 10545-12 ed ASTM C 1026-87. The cycles according to these three Standards are set on the instrument and the user can choose the wished one only by using the program selector.

Container dimensions: Ø 440 mm, height 440 mm.

If the user wants to use the demineralized water for some tests, it is necessary to get a 120 l external tank (C03517).

Dimensions:720x520x1000mm Weight: 75 kg · 230 V 50 Hz one-phase

Dimensions: 720x520x1000mm.
Poids 75kg
230 V 50 Hz une phase

**C02391**
C04468-DP/600 DEPRIMOMETER

Container dimensions: 300x750x760 mm. Maximum useful capacity: 200 l. If the user wants to use the demineralized water for some tests, it is necessary to get a 200 l external tank (C05165). Dimensions: 1250x850x1400 mm. Weight: 140 kg 230 V 50 Hz one-phase.

DETERMINATION OF THE RESISTANCE TO IMPACT BY MEASURING THE RETURN COEFFICIENT.

IMPACT TESTER

Instruments for measuring the coefficient of restitution according the standard ISO 10545-5 and the determination of the impact resistance according the standard UNI EDL 294 of the ceramic tiles.

C03360 IMPAC TESTER FOR ISO 10545-5
This instrument is composed by a base and the Kit for tests according to the ISO Standard. The determination of the impact resistance of ceramic tiles is made by measuring the coefficient of restitution (ISO Standard) or by the impact breaking work. The coefficient of restitution for two impacting bodies, is defined as the ratio between the relative speed of departure and the one of approach.

Making tests according to the ISO Standard it is advisable to have always ready some set of blocks for the calibration C03434, because each block, due to the possible damage of the tile surface at the impact of the steel ball, rarely it can be used for more than one calibration. Adding the kit C03786 you can make with this instrument also test according to the Standard UNI EDL 294. 230 V, 50/60 Hz, monofase, 50 W

Equipment: blocks (5 pieces) for calibration of Impact tester

C05460 IMPACT TESTER FOR UNI EDL 294
This instrument is composed by a base and by the Kit for tests according to the UNI Standard. The impact breaking work is the product of the mass of the ball breaking the specimen, the drop height and the acceleration of gravity.
Features - according to the Standard UNI EDL 294. The instrument in this version can be modified to meet the specifications of the French Standard CSTB 3243. Adding the kit C05443 it is possible to make test according the ISO 10545-5 · 230 V, 50/60 Hz, monofase, 50 W
Equipment - ball holder, wooden case, Ø 63.5 mm ball and 30 kg sand

DÉTERMINATION OF THE RESISTANCE TO ABRASION

CERAMIC CAP ABRASIMETER

Instrument for the determination of the resistance to abrasión of the unglazed ceramic tiles according to the Standars EN 102 and ISO 10545-6
Easy to use and with solid construction. Electric operation. Disk thickness: 10 mm. Electronic control of the disc speed with auto shut-off of the instrument at the achievement of the selected number of revolutions. 230V 50/60 Hz one-phase, 0.4 kw
C05205

ABRASIMÈTRE W3B A 3 STATIONS

Instruments for the determination of the resistance to abrasión of the glazed ceramic tiles according to the Standars EN 154 and ISO 10545-7. W3B
Solid and easy to use with electric power supply. 3 testing stations. Automatic stop at the end of set revolutions. Possibility to operate with wet charges (PEI) or dry charges (MCC). 230V, 50/60 Hz one phase, 0.25 kw.
C04292
ABRASIMÈTRE W1 A 9 STATIONS

Solid and easy to use. Electrical working. 9 testing stations. Automatic stop at the end of set revolutions. Possibility to operate with wet charges (PEI) or dry charges (MCC). 230V 50/60 Hz monophase, 0.4 kw.

ABRALUX ASTM-ISO

Viewing box to verify the abrasion degree of the glazed ceramic tiles according to the Standards ASTM C 1027 and ISO 10545-7. 230 V 50 Hz one-phase, 0.02 kw C02371

DETERMINATION OF RESISTANCE TO THERMAL SHOK EN ISO 10545-9

C03988 - THERMAL SHOCK TANK WITHOUT IMMERS.

For the determination of resistance to thermal shock of the ceramic tiles with water absorption higher than 10% according to the method without immersion of the Standard ISO 10545-9. Reference Standard: ISO 10545-9

Functional Description
The instrument allows to execute the cooling phase of the hot-cool cycle to which, according to the ISO Standard, the tiles must be subjected for ten times. For the execution of the heating phase it is necessary a stove operating between 145 and 150 °C.

Features
- stainless steel tank supplied with tap
C03987 THERMAL SHOCK TANK WITH IMMERSION

For the determination of resistance to thermal shock of the ceramic tiles with water absorption lower than 10%, for tests according to the method with immersion of the Standard ISO 10545-9.

Functional Description
The instrument allows to execute the cooling phase of the hot-cool cycle to which, according to the ISO Standard, the tiles must be subjected for ten times. For the execution of the heating phase it is necessary a stove operating between 105 and 110 °C.

Features
- stainless steel tank supplied with tap and water volume measuring device
- complete with stainless steel basket to place vertically the tiles

Equipment
- stainless steel tank supplied with tap and water volume measuring device
- complete with stainless steel basket to place vertically the tiles

Dimensions: 450x300x560 mm  
Dimensions: 700x340x700 mm  
Weight: 25 kg
DETERMINATION OF CRAZIONG RESISTANCE FOR GLAZED TILES EN ISO 10545-11
AUTOCLAVE

AUTOCLAVE C6

Instrument for the determination of the crazing resistance of the glazed ceramic tiles. Stainless steel Aisi 304 container diameter: 560 mm, height: 650 mm
Equipment · extractable tiles holding basket made of stainless steel · safety valve set at 10 bar · manometer 0-16 bar for the internal pressure control · possibility to execute vacuum tests according to the Standard ISO 10545-3 (water absorption), according to the Standard ISO 10545-12 and according to the Standard ASTM C 1026-87 by means of the optional device Deprimometro E10283 Dimensions: 1070x1070x1460 mm Weight: 475 kg · 380 V 50 Hz three-phases 7.5 kW

CLIMATIC CHAMBER

C03773 Functional Description The chamber is suitable to carry out tests methods to evaluate the frost resistance of products (ceramic tiles or others) to be placed in places subject to frost and in presence of water. After a first wetting or sinking in the water the materials are automatically tested at multiple frost-unfrost cycles (+5/15°C ; -5/15 °C) sinking or dipping them in the water. Dimensions of the testing chamber: length under the evaporators 1200 mm, introduction length 800 mm, width 900 mm, maximum water level at 725 mm total noise is less than 65 Db Dimensions: 3450x1450x1700 mm Weight: 880 kg 400 V, 50 Hz, three-phases, 4800 W
The SP60 Portable Sphere Spectrophotometer is a convenient, cost-efficient instrument designed to provide fast, precise color measurement information on a wide range of materials, such as paper, paint, plastics, and textiles. Absolute and difference measurements are obtained for the following colorimetric systems: L*a*b*, ΔL*Δa*Δb*, L*C*h°, ΔL•ΔC*ΔH*, ΔE*ab, ΔE CIE94, XYZ, Whiteness and Yellowness per ASTM E313-98.

- Versatile—use for lab, plant or field operation.
- Easy to read, large graphical LCD display.
- Permits quick measurement and comparison of two colors without need to create tolerances or store data. Écran LCD de grande taille facile à lire.

- Up to 1,024 standards with tolerances can be stored for easy pass/fail measurement.
- Superior agreement capabilities ensures integrity of multiple-instrument color control.
- Device measures opacity, color strength in chromatic, apparent, and tri-stimulus calculations, and 555 shade sorting for precise color control of products involving plastic, painted, or textile materials.
- Simultaneous measurement of both specular-included (color) and specular-excluded (appearance) enabled to determine the influence of the specular component.
- A wrist strap and tactile side grips facilitate holding and a flip back target shoe adds flexibility.
- Rechargeable battery allows for remote use.
DETERMINATION OF COEFFICIENT OF FRICTION EN ISO 10545-17
Instruments for the determination of the slipperiness either static or dynamic. Portable, ramp and pendulum type

**C02250 SM SLIPPERINESS METER**
Instrument to measure the dynamic friction coefficient of surfaces. 
Features
- Measurement of the friction force by means of an electronic transducer connected to a slider covered by IHRD 96±2 rubber and under a determined constant weight
- Operation on dry and wet surfaces
- Possibility of connection with chart recorder and PC
- Instant display of the measured friction coefficient with the possibility to execute partial integration (every 1, 2, 5, 10 or 15 seconds) and on the whole measured surface
- 230 V, 50 Hz, monophase, 22 W

**PULLMETRE ISO**
Instrument to measure the static coefficient of friction of surfaces according the Standard ISO 10545-17 annex B (not approved).
Measurements can be executed on dry and on wet surfaces. The measured value is shown in kg on the display in the control panel and the static coefficient of friction and the average of values can be calculated by the available menu.
**C03463 RAMP SLIPPERINESS METER**  
**DIN 51130**

Instrument to measure the dynamic coefficient of friction of surfaces.  
**According the Standards DIN 51130, DIN 51097 and ISO 10545-17 Annex C.**

- Inclinable platform from 0° up to 45° (600x2000 mm) driven by an hydraulic cylinder
- On the instrument there is also a water circulating pump that is requested just to test surfaces according to the 51097 DIN
- Supplied with handrail and slinging device for the user's greatest safety
- Maximum speed of inclination of 1°/s
- Inclinometer with accuracy of ±0.1° for the determination of safety critical angle
- 400 V, 50/60 Hz, three phases, 850 W
- Dimensions: 2750x1350x3750 mm
- Weight: 290 kg

**PENDULUM SKID TESTER**

The instrument is used in many applications to test the slip resistance of wet and dry surfaces, both at the design stage and also in the investigation of accidents. According the Standards BS 812 Pt 114 and EN 1097-8.

- It measures the frictional resistance between a rubber slider mounted on the end of a pendulum arm and the test surface
- It can execute test according to the following Standards: BS 6077 Pt 1 (clay and calcium silicate pavers for flexible pavements), BS 7044 (artificial sports surfaces: person/surface interaction), BS 7188 (impact absorbing playground surfaces), BS 8204 (in-situ flooring, part 3 Code of practice for polymer modified cementitious wearing surfaces), ASTM E303 (Standard Method for Measuring Surface Frictional Properties Using British Pendulum Tester)
- Dimensions: 720x730x220 mm
- Weight: 28 kg
LABORATORY ELECTRIC KILNS
1100°C/1300°C

All MINI furnaces are equipped with an automatic system which is specially designed by MIC: the TC-500 microprocessed temperature regulator. TC-500 can store up to 9 firing curves, up to 18 segments each one. Each segment is made up of a rising/decreasing temperature ramp and one hold control. TC-500 can be programmed for auto-starting. It’s a very useful option for night working, when required. It is also equipped with 2 auxiliar output switches which can be programmed according to absolute.

LABORATORY FAST FIRING KILNS

Laboratory furnace, specially designed to try the industrial processes for the stoneware floor tiles baking. He is able to arrive at 1,300°C and to return to ambient temperature in only 21 minutes.
DRYING
NATURAL AIR CONVECTION

- Regulable temperature from room temperature +5°C up to 250°C.
- Analogic thermometer with reader up to 250°C.
- Outer construction made of steel covered by epoxy.
- Inner construction: back rest ring for shelves and storm door made of stainless steel.
- 2 inner shelves made of stainless steel regulable height.
- Homogeneity: ±2%.
- Stability: ±0,5%.

<table>
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<tr>
<td>IDL.AI 36</td>
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<td>120 L</td>
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<tr>
<td>IDL.AI 208</td>
<td>208 L</td>
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</table>
**FORCED AIR CONVECTION**

- Electronic regulation microprocessor controller and digital reading for temperature.
- Forced – air convection, with fan.
- Regulable temperature from room temperature +5ºC up to 250ºC.
- Digital temperature regulator with digital reading.
- Safety thermostat incorporated.
- Outer construction made of steel covered by epoxy.
- Inner construction: back rest ring for shelves and storm door made of stainless steel.
- 2 inner shelves made of stainless steel regulable height.
- Homogeneity: ±2%
- Stability: ±0.3%.
- Temperature/time microprocessor controlled:
  - Digital display to show actual and setting temperatures.
  - Work temperature setting
  - Time setting up to 99 hours 99 seconds.
  - Attended time function.

<table>
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<th>MODEL</th>
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<td>IDL.FI400</td>
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<td>IDL.FI720</td>
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**SIEVE SHAKERS**

The electromagnetic sieve shaker is used for particle tests separations. Measuring range begins with 0.040 mm. It has a polyurethane resin framework with an electronic power control provided of intermittence and operation time system. The sieve shaker transmits a **threedimensional movement** to the sieves to obtain a optimum particle separation. It allows 8 sieves with 50 mm useful height or 16 sieves with 25 mm useful height.
LABORATORY SIEVES Ø 200/203 MM

Metallic meshes are made in AISI 316 stainless steel according to the standards UNE 7050-3, ISO 3310-1 y ASTM E11. The perforated plates are made in AISI 304 stainless steel according to the standards UNE 7050-4, ISO 3310-2 and ASTM E323. All sieves are verified according to a strict process that allow us to guarantee the unit technical requirements. Each laboratory sieve has a manufacture certificate according to the standard EN 10204 2.1

- 0.020mm
- 0.025mm
- 0.032mm to 0.038mm
- 0.040mm to 0.112mm
- 0.125mm to 9.5mm
- 10mm to 125mm……

HAMMER MILL

The grinding mill is designed to work with different interchangeable filters with circular perforations (diameters 2, 3, 4 and 5 mm). This interchangeable filters are a great advantage because the preparation time of the machine is minimal. The drum is made in stainless steel with thermal treatment in order to get the maximum hardness. So, it has obtained mill results up to 50 microns with products like cereals, plastics, resins, minerals, vegetables, etc..
MODULAR FAST MILL

The Mill 2B are laboratory modular rapid mill and permit to make grinding test of materials (glazes, frits, etc.) put inside a container ‘jar’ together with a grinding charge made by balls and water.

The grinding operation is permitted by the rotating/swinging movement of the jar together with its content.

The grinding degree, at equal speed and grinding charge and water, varies according to the time.

Features
- possibility to use jars of 0.3 or 1.0 liters (for jar of 1.5 liters there is a different mechanism)
- the effective inside capacity of the jars is of cc 0.510-0.630 for the 0.3 l jars, of cc 0.910-1.070 for 1.0 l jars and of 1.800-1.860 for the 1.5 l jars
- sound-dampened protection according to the CEE Standards
- built-in timer
- possibility of bench mounting or installation on supporting frame (optional)
- grinding charge composed by balls Ø 19 mm made by alumina porcelain
- 220-240 V 50 Hz one-phases

JAR WITH COVER
Two models: 0.3 and 1.0 liters
**JAR TURNER MILL**

Horizontal mill for cylindrical jars

Functional Description

The jar turner mill permits the grinding of materials (glazes, frits, etc.) put inside a container "jar" together with a grinding charge made by balls and water.

The grinding operation is permitted by the rotational movement of the jar together with its content.

The grinding degree, at equal speed and grinding charge and water, varies according to the time.

Features

- layer for jar rolling made by steel rollers coated by plastic material
- possibility to operate with jars of 1,5-3-5-10-15 liters
- useful rollers length
- stretching device for transmission belts
- 400 V 50 Hz three-phases

**CILINDRIC JARS**

Jar and cover made of porcelain with mechanical locking device

- Al2O3 approx. 40%
- water absorption 0%
- Mohs hardness 7÷8

Equipment

- cover
- grinding charge

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<th>Code</th>
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<td>C01844</td>
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<td>C01846</td>
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</table>
STIRRERS

- Stirrer for liquid of high viscosity.
- Speed regulation by a microprocessor.
- Speed range: 50 – 2000 rpm.
- Maximum stirrable volume (H2 O): 40 Litros.
- Safety device against overheating and motor malfunction, with motor stop.
- Chuck with through hole: from 1 up to 10 mm.
- Several range of stirring shaft.
- Power: 120 W.
- Voltage: 220-240V/50-60 Hz.

THERMOMETER INFRARED

- LCD portable thermometer
- Range: -40+50ºC
- Resolution: 0.1ºC. (-40+100ºC)
- For the rest of the scale 1º C
- Accuracy: +/-2% or 2º C
- Laser Round (IEC Class 2)
- Ambient operative range:
  - Temperature 0-50º C
  - Relative humidity 10-90% R.H.
- Emissivity: fixed pre-set 0.85-0.90-0.95
- Response time: 500 ms. Change ºC/ºF
- Backlight

DIGITAL THERMOMETER -50 ÷ +1300°C

- Functional Description
  This digital instrument uses any K-type thermocouple as temperature sensor
- Features
  - from -50 up to 1300 ºC (from -50 up to +1999 ºF)
  - standard battery 9 V, with life of about 200 h
  - accuracy: 0.2% +/- 1ºC (1ºF) up to 200ºC (200ºF) or 0.3% +/- 1ºC (1ºF) over 200ºC (200ºF)
- Equipment
  - in the equipment is not enclosed the sensor that is a necessary optional for instrument operating
Thermo-hygrometer with clip, temperature and relative humidity indicated at the same time. Measuring range temperature: -10°C to +50°C. Measuring range relative humidity: 0% to 100%. Resolution temperature: 0.1°C. Resolution relative humidity: 0.1%. Switchable °C/°F, Memory Min./Max. and calibration.
MINIPRESS FOR LABORATORY

Laboratory hydraulic press suitable to form by pressure mould ceramic objects, tiles, test specimens, etc. The pressing force is applied by means of the upper cylinder that carries the suitable punch. The mould is filled with powder manually and, at the end of the pressing cycle, the sample is extracted by the lower oleo-dynamic cylinder.

Features
- sample extraction by means of hydraulic punch
- adjustable pressing force that is displayed on the front gauge

Equipment
- complete except the mould

Laboratory hydraulic presses, manual or semiautomatic, suitable to form by pressure mould ceramic objects, tiles, test specimens refractories, bricks, etc. From 70 to 250 t.

The pressing force is applied by means of the upper cylinder that carries the suitable punch. The lower mould is filled with powder manually or by a semi-automatic loader and, at the end of the pressing cycle, the sample is extracted by the lower oleodynamic cylinder.

Features
- sample extraction by means of hydraulic punch
- can house any type of moulds up to 200x200 mm also multicavities and special execution
- available in the semi-automatic type; with a control unit for semi-automatic pressing cycles with 2 or more prepressing phases and adjustable final pressing phase, or in the manual type
- possibility of installing a semi-automatic loader for filling the mould with powder
- in case of multicavities moulds it is obligatory to get a device for powder filling

Equipment
- the press is supplied complete to operate except die and hydraulic oil
PFEFFERKORN PLASTICIMETER

Instrument suitable for the evaluation of ceramic materials workability. The measurements is based on the verification of the deformation of the sample as consequence of the fall of the calibrated plate on the underlying test body shaped by means of the ancillary shaping tool.

Features
- The plasticimeter has 2 reading scales: one measures the deformation in mm; the second one determines the test body deformation according to Pfefferkorn experiences.

Equipment
- test body shaping tool

Dimensions: 250x370x480 mm
Weight: 24 kg

BERNARD CALCIMETER

Instrument for the fast determination of the carbonate amount in clays and ceramic materials.

STATICAL MINI GLOSSMETER

The Elcometer 406L Statistical Mini Glossmeter is a handheld gauge for measuring the gloss of flat surfaces. This gauge is available in two versions; single angle measurement 60° or dual angle 20/60°.

Menus in English, French, German, Italian, Spanish & Dutch.
**ROTATIONAL VISCOSIMETERS**

Alpha series viscometers allow fast and accurate viscosity readings. They are low budget and easy to use.
- Data displayed
  - Selected speed: r.p.m.
  - Selected spindle: SP
  - Viscosity reading: cP (mPa•s)
  - Percentage of full scale
- Relative and absolute viscosity
- Unit converter SI to CGS
- AUTO-TEST with sound and visual malfunction alarm
- AUTO-RANGE function
- User-enabled calibration
- 10 language options

Standard delivery: The equipment is supplied complete with standard spindles (4 spindles for L model, and 6 spindles for R and H models), viscometer stand and spindle protector.

**C04499**

**TORSION VISCOMETER**

**GALLENKAMP TYPE**

The Gallenkamp torsion viscometer makes viscosity measurements following the principle that a rotating cylinder immersed in a fluid is subject to a viscous drag. This cylinder is connected to a torsion wire and to a disk with a graduated scale. To make measurements the disk is manually turned and then released. The fluid’s breaking effect on the cylinder is a viscosity measurement.

**Features**
- It is made up of: a vertical torsion wire, a disk mounted on a graduated scale and a cylinder suspended under the scale
- Viscosity range approx. from 0.25 to 1000 poises
**FORD CUP**

Gravity viscometer for a quick determination of the viscosity of ceramic slips or of other liquids
- easy determination of the viscosity (°E)
- all bronze cup with anti-flow border
- cast iron supporting frame
- adjustable feet for a good levelling
- adjustable cup height with locking screw
- calibrated orifice (from Ø 1 up to Ø 8 mm)

**PYCNOMETER**

Instrument for the fast determination of the specific gravity of ceramic slips or other liquids
- stainless steel (AISI 303)
- capacity: 100 ± 0,1 cc nominal value at temperature 15°C ± 22°C
- tare: 200 g nominal value ± 0,1 g
- calibrated cap
- weight tolerance: 0 ± -0,1 g
Dimensions: Ø 48 mm h 70 mm
Weight: 200 g

**TACHOMETER**

Portable Digital contact tachometer very robust and resistant
- 5 digit LED display brilliant
- Range: 2.0 to 30,000 r.p.m.
- Accuracy: ± 0.1 rpm to 999.9 rpm
- ± 0.005% of 1000-30000 rpm
- Temperature: 0-45 °C
- The quick answer: 1 second
- External sensor input
Includes all conical points and convexes
Set points and the convex bevel to measure m / min linear
HARDNESS TESTER
The hardness tester can measure with high accuracy and reliability of a wide range of materials ranging from soft rubber to hard plastic, DIN 53505, UNE-EN ISO 868 and ASTM D-2240.

MECHANICAL CHRONOMETER
Mechanics Division analog 1/5seg. 50 mm Ø
Stainless steel metal container. 1 / 5 sec.
30 min

DIGITAL CHRONOMETER
Digital, Alarm, Divisions 1 / 100 "55x60x17 mm
Cumulative time (Split) 1 / 100 sec.
Clock, alarm and calendar 30 min
Food 1 LR44

DIGITAL ALARM
Account metallic units with base 9999 und.
DILATOMETER
Temperature range: up to 1600 °C
Sample holder
Fused silica <1100 °C
Al₂O₃ <1600 °C
Sample Length: max. 50mm
Sample diameter: max. 12mm

HEATING MICROSCOPE

ANALYTICAL BALANCE
ELITE AW224
Characteristic
All models with weighing systems and monolithic internal adjustment
Backlit display with high contrast with figures of 15 mm in height for excellent readability under any lighting conditions
Guide menu display with clear text
Balance on screen mg with analytical
Measurement time very short, with an advanced microprocessor technology
Complete application package (eg. Total net animal weighing, counting, weighing in percent ...)
RS232 serial
Readability 0.1 mg
Weighing 220 g
Internal Calibration
Tray dimensions 90 mm
**PRECISION BALANCE**

**ELITE AW4202**

**Characteristic**
- All models with weighing systems and monolithic internal adjustment
- Backlit display with high contrast with figures of 15 mm in height for excellent readability under any lighting conditions
- Guide menu display with clear text
- Balance on screen mg with analytical
- Measurement time very short, with an advanced microprocessor technology
- Complete application package (eg. Total net animal weighing, counting, weighing in percent ...)
- Interface RS232 en série
- **Product Features**
  - Readability 10 mg
  - Weighing 4200 g
  - Internal Calibration
  - Pan size 180 x 180 mm

**MOISTURE ANALYZER**

**MA35**

**General Specifications**
- Weighing max. 35 g
- Heating Technology: Infrared
- Accuracy of weighing system: 1 mg
- from an initial weight of 5 g approx.: ± + / - 0.05
- Readability: 0.01%
- Display of measured value: Humidity in% solids in%
- relationship%, residue in g
- Temperature range and settings: From 40 °C to 160 °C, adjustable in increments of 1 degree
- Data Interface: RS232C unidirectional
- Dimensions: 224mm x 366mm x 191mm
- Weight, approx. 5.8 kg

**ANALYTICAL BALANCE**

**ADVENTURE PRO**

- Windscreen unframed facilitating access
- The software SmarText friendly ™ guides users through the applications
- Flexible options include an internal calibration InCal ™, a USB or second RS232 opcional
- AV114 ................ 110 g ........ 0.1 mg
- AV264 ................ 260 g ........ 0.1 mg
**PRECISION BALANCE**  
**VOYAGER PRO**

The software includes advanced statistics, formulas, differential weighing, statistical QC, Density Determination and Pipette Calibration  
AutoCal™ internal calibration standard  
Meets OIML / NTEP  
Big screen high resolution graphics backlit with browser windows  
• Menus in five languages - French, English, Spanish, German, Italian  
GLP Impressions via RS232, with alphanumeric identification  
• Models available with regulated  
• Hook for weighing below balance  
• Protective and anti-theft ring  
12 models of accuracy and capability of 210g to 8100g for a precision of up to 0.001 g 0.1g

**ANALYSIS OF MOISTURE**  
**MB25**

• Ease of use  
• Compact  
Capacity: 110 g  
Readability: 0.05% / 0.005 g  
Temperature range: 50-160 °C by increments of 5 °C  
Power: 100-240 VAC, 50/60 Hz  
Clock: Between 1 and 99 minutes in increments of 30 seconds to 60 minutes  
Heating Technology: Halogen  
Display Type: Backlit custom LCD  
Dimensions (Width x Height x Depth): 17 x 13 x 28 cm  
Net weight: 2.3 kg

**ULTRASONIC BATHS**

Model F30/9L.  
Model F30/12 L.  
Model F30/25 L.
DIGITAL THERMÔMÈTER

These instruments use `universal probes are compatible with the thermocouple type S, J, K.