

INDEX

Description

Page No.

Abrasion Testing 2
 Autoclave 2
 Balances 2
 Ball Mills 12
 Baroid filter press 6
 Bending Strength Testing 3, 15
 Brookfield Viscometer 22
 Bullers Rings 2
 Calcimeter 3
 Clay Hardness Testing 3
 Cup Handle Teting 3
 Colour matching / measuring 4
 Density Cans 4
 Densometer 4
 Dishwasher resistance 4
 Dilatometer, DTA 5
 Dimensional characteristics 6
 Drying cabinets 16
 Extruders 19
 Fast Fire Kiln 7
 Fast Mills (planetary grinding) 12
 Filter Press 6
 Flame Photometer 7
 Frost Resistance 7
 Flow Cups 23
 Furnaces 8
 Gallenkamp viscometer 22
 Gas analyser 8
 Glaze thickness 9
 Glossmeter 9
 Grinding Jars 12
 Hardness Testing 10
 High Shear Mixers 15
 Impact Testing 10
 ISO 10545 tiles testing 11
 Jar Mills 12



Jaw crushers 12
 Kilns 13
 Luxmeter 14
 Mixers 15
 Modulus of Rupture 15, 3
 Moisture Determination 14
 Ovens 16
 pH Meters 16
 Particle Size Analysers 17
 Planetary Mills 12
 Plasticity Testing 3
 Presses 18
 Pilot Clay Plants 18
 Pugmills 19
 Pyknometers 4
 Roughness Tester 19
 Sieve Shakers 17
 Slipperiness / Slid testing 19
 Thermal Shock testing 20
 Thermometers 20
 Torsion Viscometer 22
 Triple Roll Mills 21
 Vicat Apparatus 21
 Viscometers 22
 Water absorption 23

ABRASION TESTING

Abrasion testing machines suitable for carrying out abrasion tests on a variety of ceramic surfaces are available. For the tile industry the PEI (wet method) is the traditional method for checking the abrasive resistance of a charge to a glazed surface. To measure the depth abrasion of an unglazed tile the sample is exposed to a rotating steel disk, and the length of the chord is measured to calculate the volume of material removed.



Product codes.

Model PEI/300/D, with 3 rotating heads (above right)
 Model PEI/100/D, with 1 rotating head
 Light cabinet viewing box PEIBOX/B
 Model AP/10 Depth Abrasion Tester (above right)
 Payne Pin Abrasion Tester

01CI0104/1
 01CI0103/2
 01CI0170/1
 01CI0107
 PPAT2

AUTOCLAVES—Craze testing

“Crazing” is formed by small cracks appearing in the glazed surface of the test piece. The resistance to crazing is determined by subjecting the test piece to high pressure steam in the tank. Once the cycle is complete a coloured dye is washed over the glazed surface and wiped off. If crazing has occurred, the dye will enter the cracks and will remain after the excess is wiped off. The pressurized tanks are all made from stainless steel AISI-304 suitably insulated with rock-wool, while the supporting frame is made from epoxy painted steel.

Thanks to the programmable microprocessor the unit can carry out a serial of standardized cycles in conformity to **UNI EN ISO 10545-11** norm but also any customised cycles as the user may wish.

Max working pressure: 10 bar (183.2° C)

- Electrical heating with minimum inertia
- Cooling by coil water controlled by a solenoid valve
- Cover closing by means of hand small wheels and VITON gasket

Product Codes

Autoclave GT-350	Chamber 350mm diameter x 365mm high	GT0140
Autoclave GT-450	Chamber 450mm diameter x 450mm high	GT2026
Autoclave GT-550	Chamber 550mm diameter x 625mm high	GT0150
Autoclave GT-550/750	Chamber 550mm diameter x 750mm high	GT1574



BALANCES

E.J.Payne Ltd offer a complete range of mechanical and electronic balances with weighing ranges from 2.1 grams and readability of 0.000001g for extreme accuracy, up to 600kg with a 10 gram readability.

Please ask for a quote stating:

- maximum weight required
- readability (increments) required
- Weighing units required (grams / ounces etc).



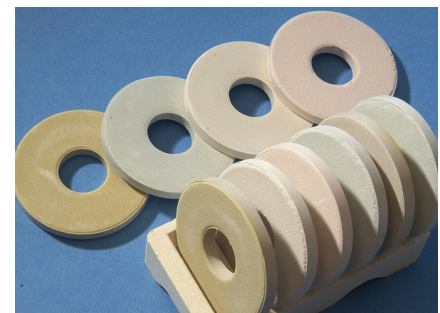
BULLERS RINGS

Bullers Rings have been designed so that they are suitable for any type of kiln/furnace and can be conveniently positioned in almost any location on the kiln car due to their practical size.

There are five different types of Bullers Rings with overlapping operating parameters that allow ceramic manufacturers to monitor and control a wide range of firing temperatures from 750°C (1382°F) to 1420°C (2588°F). Mantec believes they are the most flexible and cost efficient temperature control devices available today.

The most common applications for Bullers Rings are in the firing of:

Heavy Clay (Bricks & Roof Tiles), Sanitaryware, Tableware, Wall/Floor Tile, Refractories



CALCIUM CARBONATE TESTER—Calcimeter

Used to determine the percentage of calcium carbonate in the clays used in the ceramic tile and brick industries or in other products such as limestone, marl, soils in general, sands, etc..

They normally comprise of a container in which a reaction takes place between the calcium carbonate and diluted hydrochloric acid (HCl), with the formation of carbon dioxide (CO₂). The carbon dioxide is proportional to the amount of calcium carbonate contained in the sample being tested and, therefore, the determination of its volume allows the percentage of the carbonate in the sample to be established. The carbon dioxide is collected and measured in an appropriate device connected to the above-mentioned container.

CLAY HARDNESS / PLASTICITY



The “Payne” Clay Hardness Testers (or Pigstickers) are designed to give an arbitrary value of hardness of clay pugs or pressed clay

Driven into the clay manually, the instruments will offer a repeatable on-line process control test.

The **Pfefferkorn Plasticity Tester** (right) is an instrument for evaluating the workability of ceramic materials.

The measurement is based on the falling of a calibrated plate on to an underlying test body, which has previously been shaped using the special forming tool provided with the instrument.

The plasticity tester has two reading scales: One measures the deformation in mm, The other determines deformation of the test body according to the Pfefferkorn tests.

Product Codes:

Clay Hardness Tester (Standard Spring)

CHT001

Clay Hardness Tester (Heavy Duty Model)

CHT005

Pfefferkorn Plasticity tester

PFEFF001

The **DM/34** is an instrument devised for determining the penetration depth of a flat headed point on green and pressed ceramic tiles. The basic device is for the production of floor and wall ceramic tiles, with particular reference to single firing. It can be supplied on a stand for use on tiles up to 70 x 70cm, or as a portable instrument. Each unit is supplied with a calibrated spring and a set of 5 flat head pins.

DM/34. 01C11830



CUP HANDLE TESTER / LOW RANGE M.O.R. MACHINE

The “Payne” Cup Handle Adhesion Test Machine has been developed to give a repeatable test procedure to determine the adhesion test of cup handles to their bodies.

The unit consists of a falling weight, a spring balance with a maximum reading finger, and adjustable clamping holders to suit all sizes and shapes of cup.

As the strain on the cup increases the dial finger on the spring balance increases. At the ultimate point the handle will break away from the body. The dial finger will revert to zero but the maximum finger will remain at the maximum point attained.

Optional conversion kit to change the machine to a 5kg maximum capacity modulus of rupture machine. (See right).

Scale: 0—5kg

Product Code: CHST001



COLOUR MEASURING / COLOUR MATCHING

Colour affects people's perceptions. As a result, the selection of a product's colour is becoming increasingly important to overall product strategy. Precise, uniform colour control is now affordable for any organisation, whether within a company, or between a company and its customers or suppliers.

The CR-10 PLUS represents the entry point to objective colour measurement. Compared to many other entry level devices, the CR-10 PLUS is a true colorimeter in full compliance with CIE, ISO and DIN 5033 standards. Extremely simple to use, the CR-10 PLUS allows fast colour difference measurements between a target colour and a sample in just 2 steps. On the LCD screen colour difference are shown in CIELAB $\Delta L^* \Delta a^* \Delta b^*$ and ΔE^*_{ab} or $\Delta L^* \Delta C^* \Delta H^*$ and ΔE^*_{ab} values.

Very compact design, weighs only 420g.

Whether an item's colour is good or bad can influence consumer purchases. Since colour variations of white are especially obvious, it has become increasingly important to control colour from raw materials through the manufacturing process. Furthermore, there is a growing need to quantify what effect storage during transportation has on the whiteness of a product.



DENSITY CANS (Pyknometers)

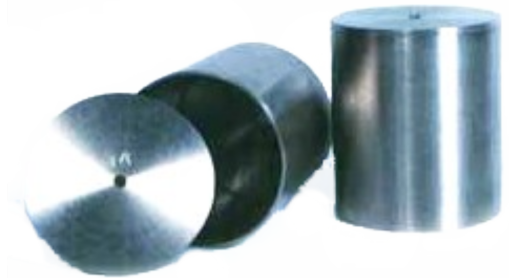
A Pyknometer is a straight sided stainless steel vessel with a close fitting lid. It is considerably stronger than the old style conical can, and the margin for operator error is greatly reduced, therefore providing greater consistency.

The pyknometer lid has a fine hole drilled in the centre to expel any excess material. The volume of the pyknometer with the lid in place is stamped on the lid, and each lid and body are stamped with an individual serial number to ensure that the correct lid is applied to each vessel.

Each pyknometer is checked prior to despatch, and is supplied with a individual certificate of calibration.

Product Codes

100cc	PYK100
250cc	PYK250
300cc	PYK300
500cc	PYK500
1,000cc	PYK001
Imperial Pint	PYKIMP



DENSOMETER (Apparent density)



Instrument for determining the apparent density (porosity) of raw ceramic tiles

As the porosity of raw pressed pieces depends on the chemical and physical features of the granulate, it's distribution and humidity, as well as the pressing power applied, it is extremely important to know this parameter. This will enable the other variables that contribute towards forming the finished product (i.e. raw and fired mechanical strength, shrinkage etc.) to be determined. Therefore, this method for determining porosity (which allows us to determine the compactness, or the uniformity of compacting, of raw ceramic articles) can be used as alternative, or as a valid support to traditional penetration methods. The instrument requires, but does not include a laboratory balance.

Model DDA/1

Product Code: 01CI4545

DISHWASHER RESISTANCE TEST

The DWT/1 Equipment is manufactured to test tableware resistance to the detergents used in dishwashers according to BS EN 12875-4. The equipment comprises of a stainless steel tank with a close fitting lid, fitted with heating elements which can be controlled to 75°C +/- 1°C.

The tank is manufactured from stainless steel and is insulated. The tank has an automatic top up device that needs to be coupled to a water supply and an insulated lid

Water is circulated using a pump and the temperature is controlled by a thermostat and temperature is measured using a hand held digital thermometer fitted with a suitable probe.

The test pieces are put into stainless steel test tanks which are suspended in the heating tank.

Inspection of the samples prior to testing and after testing requires a viewing cabinet in which the samples can be placed for visual checking.

DILATOMETER / DIFFERENTIAL THERMAL ANALYSIS (Thermal expansion)

Thermo analytical methods are extensively used in all fields of materials characterization. Particularly in the areas of ceramics and glasses, thermal methods such as pushrod dilatometry yield vital information for the production of the materials and for their later application.

Dilatometry is a technique at which a dimensional change of a substance is measured as a function of temperature while the substance is subjected to a controlled temperature program.

Many international norms such as DIN 51045, ASTM E 831, ASTM D 696 and ASTM D 3386 describe this technique and the exact procedures in detail.

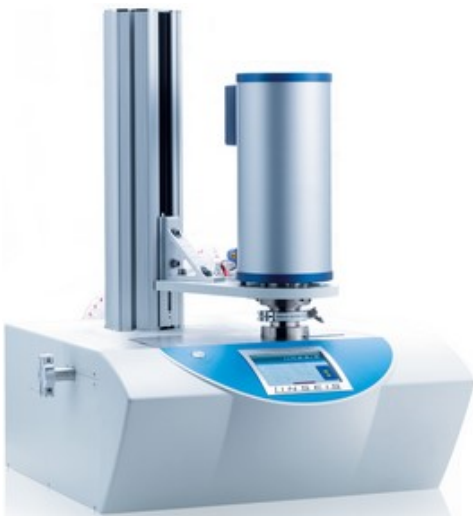
The specific materials properties gathered from this are as follows:

- Linear thermal expansion (dL)
- Sinter-temperatures and sinter-steps
- Determination of glass transition (T_g)
- Phase changes
- Optimization of burning processes
- Determination of thermal expansion coefficient (CTE)
- Influence of additives
- Volume changes
- Rate controlled sintering (RCS)



The newly developed DIL L75 Platinum Series is especially tailored to the needs of the glass and ceramic industries. High resolution and stability, wide measurement range, robust and compact design are only some of the advantages of the new, cost-effective system.

The system can be equipped with three furnaces, allowing measurements to be carried out from room temperature up to 1000°C / 1400°C or even up to 1600°C.



DTA uses a dynamic measuring principle. This instrument will measure endothermal and exothermal heat flow between the sample and reference (enthalpy).

In general these heat flows are characteristic of chemical or physical changes of the sample. The test sample and an inert reference material are heated simultaneously in the same atmosphere.

Both the sample and reference material temperatures are measured with thermocouples. Then these 2 thermocouple output voltages are subtracted from one another. There suit is a low voltage signal which is proportional to the endothermal and exothermal reaction. Endothermic sample reactions absorb heat and exhibit a lower sample temperature when compared to the reference material. Exothermic reactions produce heat and exhibit a higher sample temperature when compared to the reference material.

Temperature range RT - 1600 °C

Differential - measuring system -

Thermocouple PtRh(10)/Pt.

The sensitivity range of the Delta T-signal is selectable between 50 -1000uV.

DIMENSIONAL CHARACTERISTICS OF TILES

Universal Gauge DDS Series, complete with software for acquiring and elaborating data. Semi-automatic laboratory instrument for determining the dimensional characteristic in the tiles (length, orthogonality, flatness, warping, straightness of sides, curvature/ bending of the sides) according to UNI EN ISO 10545-2 standard.

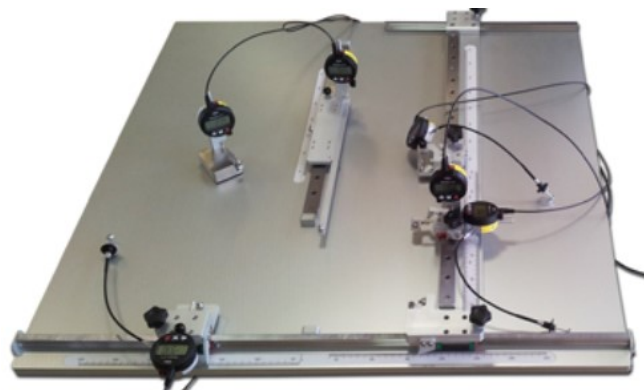
General features: Digital gauge, accuracy 1/100 mm. Measuring dimensions: from 80x80 up to 1300x1300 mm (depending on models). Measuring thickness: from 3 up to 15 mm.

Supplied with: 6 digital gauges 1/100 mm, 1 notebook with O.S. and data, CEN/04 software pre-installed and tested, 3 lifting and auto-stop cables for side comparators, kit of supports for tile thickness from 3 up to 15 mm.

DDS/700/D (Bench Type): Tile Size: 80x80 to 700x700mm

DDS/1000/D (Floor Support Type): Tiles Size: 80x80 to 1000x1000mm

DDS/1300/D (Floor Support Type): Tiles Size: 80x80 to 1300x1300mm



DIMENSIONAL CHARACTERISTICS OF TILES

Wireless Dial Gauges Versions

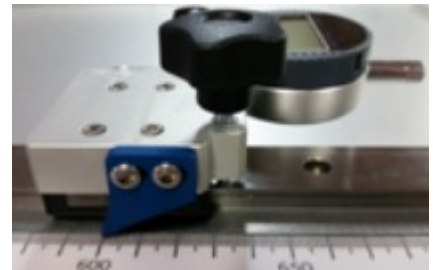
DDS/700/DW (Bench Type): Tile Size 80x80 to 700x700mm.

DDS/1000/DW (Floor Support Type): Tile Size 80x80 to 1000x1000mm

DDS/1300/DW (Floor Support Type): Tile Size 80x80 to 1300x1300mm

Linked with dataCEN/04 software

- Software in a Windows environment with guided installation instructions, offering the possibility to customise company information and logos in order to automatically create test reports complying with standards.
- Comparator resetting function, making reference to a sample plate and simultaneous acquiring of 6 measurements with just one click
- Create display and print charts of all measurements made.
- Export the measures in file excel type.
- Window with 6 virtual displays for reading comparatory information in real time.



DataDimension- Universal Gauges for acquiring and managing data.

These instruments are suitable for determining the flatness, rectilinearity, squareness and length of the side of ceramic tiles. Built according to UNI EN ISO 10545-2 norm. One single instrument can make all the above four measurements, as required by the standard. The fixing system of the comparators lets them be positioned in just a few seconds, depending on the tile size to be tested. The same system is used for the surface and lateral supporting feet. Power supply: 220V single-phase 50/60Hz

Equipped with six digital comparators and serial cable, interface for connection to a computer complete with serial cable, data CEN/04 software with USB key for data acquiring and management, 8 stainless steel feet for tiles thickness 8-10 mm, 5 stainless steel feet for tiles thickness 6-8mm, and 2 keys.

Model DDV-650 for sizes 10 x 10cm to 65 x 65cm

GT1508

Model DDV-950 for sizes 10 x 10cm to 95 x 95cm

GT1509

Model DDV-1300 for sizes 10 x 10cm to 130 x 130cm

GT1655

Model DDV-1600 for sizes 10 x 10cm to 160 x 160cm

GT1727

Model DDV-1800 for sizes 10 x 10cm to 180 x 180cm

GT1681



CALIBRATION PLATES

Manufactured from aluminium alloy, anodized, and ground on all the surfaces. Thickness 15 mm.. Supplied complete with a control certificate and a wooden case.

Tolerances (at 20 °C.):

1)Dimensionals:

- On the thickness, ± 0.1 mm.
- On the dimensions, ± 0.1 mm.

2)On the shape:

- On the flatness 0.15 mm.
- On parallelism and squareness, 0.1 mm.



FILTER PRESS (Baroid)

The Low Pressure Filter Press is the most effective means of determining the filtration characteristics of sludge, cement mortars, ceramic slips etc.



The Filter Press assemblies consist of a reservoir mounted in a frame, a pressure source, a filtering medium and a graduated cylinder for receiving and measuring filtrate.

The Filter Press Units are constructed of anodized aluminium, stainless steel and chrome plated brass. The working pressure is 100 psi (7.03 kg/cm²) and the filtering area is 7.1 in² (45.80cm²)

Multiple Unit filter presses permit simultaneous running of one to six filtration tests. Each of the assemblies consist of a frame with the indicated number of complete filter cells.

Manifolds are complete with air hoses, cut-offs and bleeder valves, but require and not do not include a pressure regulator and hoses for connection to compressed air.



FLAME PHOTOMETER PFP/7

Single emission flame photometer for the routine determination of Na, K, Ca, Li, and Ba
Wide range of clinical, industrial and teaching applications including examination of:-

- pharmaceutical and biochemical samples
- plant and animal tissues
- minerals, cements and ceramics
- oils and greases
- biological and clinical fluids

Limits of detection: Na \leq 0.2ppm / K \leq 0.2ppm / Li \leq 0.25ppm / Ca \leq 15ppm / Ba \leq 30ppm

Reproducibility: \leq 1% / Coefficient of Variation for 20 consecutive samples using 10ppm Na set to read 50



FROST RESISTANCE TESTING



Tank for determining resistance to frost, model DFR/60

Suitable for performing the test envisaged by the **UNI EN ISO 10545-12** standard for tiles of up to 60 x 60 cm, or 60 x 120cm

Stainless steel tank and climatic cell.

Large clearances within the cabinet and easy access to the tank and climatic cell, guarantee easy maintenance.

- Climatic tank capacity: test samples up to the size 60 cm x 60 cm complying with the norm UNI EN ISO 10545-12 (capacity of 10 tiles)
- Double overlapping tray for large and small sizes
- Complete submersion in water of the test samples
- Heating system for the reservoir water
- Touch screen control panel
- Video-graphic recorder with display and data storing on compact Flash (data processing software included) for recording the temperatures of the tank, reservoir and the room
- Pre-set program that cannot be changed for the test complying with the norm UNI EN ISO 10545-12
- Storage of 9 customized programs

FAST FIRE TEST KILN

The CVKN is a laboratory kiln with which it is possible to simulate the entire firing curve of a continuous industrial (roller) kiln.

It can be programmed both for heating and for cooling; programming cycles with a heating time of about 27 minutes to arrive at the maximum temperature of approximately 1300°C. and a cooling time of about 16 minutes to drop down to a temperature of about 300°C.

The kiln structure is made of steel, stove-enamelled with epoxy-paints, and is thermally insulated with ceramic fibre and low density refractory bricks.

The temperature and the firing curve are controlled by a K1PX microprocessor based controller, with which it is possible to program 4 cycles of 8 steps each.



FURNACES

E.J.Payne Ltd offer a full and extensive range of laboratory furnaces

The extensive range of **tube furnaces** includes wire heated tube furnaces to 1200°C, silicon carbide heated furnaces to 1600°C, molybdenum disilicide heated elements for 1700°C, and lanthanum chromite elements for heating 1800°C furnaces.

Many of the furnaces can be either horizontal or vertically mounted or supplied on an L-bracket to offer both methods of operation.



Chamber Furnaces offer the user numerous chamber sizes and maximum temperatures possibilities up to 2,300°C, with different heating rates. They are all fitted with an upward action parallel link door which keeps the hot face away from the operator. The door is linked to a power cut-off switch for total operator safety.

The CWF and RWF models feature a unique heating module, consisting of a high quality alumina based hard element carrier, housing a free radiating coiled wire element, on either

side of the chamber. These elements compensate for heat loss and optimise temperature uniformity within the chamber.

The RHF series feature oversize Silicon Carbide heating elements having power in reserve for longer life. The power is electronically limited when the furnace is new, so that the ageing of the elements is easily corrected and heating performance is maintained.. Two different types of insulation are used. Hard wearing refractory brick is used around the doorway and in the floor to give abrasion resistance, while lightweight ceramic fibre is used in other areas to ensure energy efficient fast heating and cooling.



GAS ANALYSER



The K905 Combustion Analyser is easy to use for domestic and industrial boiler flue gas measurement and analysis.

It operates on all boiler types and can display 8 parameters simultaneously showing measurements and calculations of boiler efficiency and pollution.

The K905 measures Oxygen (O₂) 0 - 21%, Carbon Monoxide (CO) 0 - 4,000ppm, differential pressure, and temperature (inlet, flue gas and differential), and with the addition of extra sensors can measure NO (0 - 100ppm or 0 - 5,000ppm), NO₂ (0 - 1,000ppm), and SO₂ (0 - 100ppm or 0 - 5,000ppm).

The K905 calculates CO₂, the CO / CO₂ ratio, excess air, combustion efficiency and NO_x (if an NO sensor is fitted).

Fuel Types: Natural Gas, Butane, Propane, LPG, 28 sec oil, 35 sec oil, Heavy Oil, solid fuel and user fuel.

GLAZE THICKNESS MEASUREMENT

GLAZE THICKNESS MEASUREMENT.

Glaze thickness measurement is an important factor in all areas of the Ceramics Industry. E.J.Payne Ltd offer a range of portable instruments for carrying out tests on both fired and unfired pieces of ware.

Unfired Glaze Thickness.

DIAL GAUGE PENETROMETERS.

Metric (0.001mm) and Imperial (1/1000" [thou]) measuring digital gauge penetrometers are available for testing glaze thickness on unfired ware. Supplied with a fine needle (GTP005) for twice fired items, or with a flatter needle for single fired item (GTP006), these units can be either hand held or mounted on production lines.

HARROW DEPTH GAUGES

Harrow depth gauges are designed to measure the thickness of glaze within a known range on unfired ware. The harrow consists of a wheel with two outer guide tracks, and three inner wheels of known differing diameters reducing by 1/1000 inch. As the harrow is drawn across the test piece, the number of grooves created will indicate the glaze thickness.

DIGITAL COATING THICKNESS GAUGES

The 456 range of coating thickness gauges is Technical Superiority in the palm of your hand. Whilst easy to use, it is packed with features, making it possible the best coating thickness gauge in the world.

The recently introduced 456 is probably the most advanced coating thickness gauge on the market. Available in integral (internal probe) or separate probe format to suit your application need. Integral probes are ideal for flat or uneven surfaces; separate probes allow the user to access tight areas or measure coatings on small components. Separate probe versions are ideal for measurement on almost any metal substrate irrespective of form and offers greater access in confined spaces.

Fired Glaze Thickness.

POCKET (PEN) MICROSCOPE.

The pocket microscope is ideal for measuring glaze thickness values on both fired and unfired pieces of ware.

The internal gratitudes measure in either 1/25mm or 1/50mm depending on model selected.



GLOSSMETERS

Increasingly specifications and standards require a physical assessment of gloss. Gloss measurement is necessary to monitor the uniformity, compatibility or possibly the deterioration of any protective gloss finish.

Gloss is measured by directing a constant intensity light beam at an angle to the test surface and monitoring the reflected light. Different surfaces require different reflective angles. Novo-Gloss glossmeters cover the range necessary to measure any surface from high gloss to matt, providing a quantitative value to gloss measurement.

Each Novo-Gloss™ Glossmeter is available in statistical versions, single, dual or triple angle geometry. The 406 is available as single or dual angle models. Each has a memory of up to 200 readings which can be connected to the Novo-Soft™ Software for further analysis and archiving.

Features:

- Gloss readings from matt (non-reflective surfaces) to mirror finish
- Continuous measurements for variable surfaces
- 200 reading memory
- Unique calibration tile condition warning
- Quick, automatic calibration
- Menu driven operation in multiple languages
- LED light source is long lasting and stable
- Full traceability to National Standards, including BAM.

Measurement Ranges:

60 degree: 0 - 1,000 GU, resolution 0.1 GU, reproducibility \pm 0.5 GU

20 degree: 0 - 2,000 GU, resolution 0.1 GU, reproducibility \pm 0.5 GU

85 degree: 0 - 200 GU, resolution 0.1 GU, reproducibility \pm 0.5 GU



HARDNESS TESTING

Mohs Mineral Pencils

Comprises 8 pencils made from aluminium, 10mm diameter x 146mm long to which the mineral with a sharpened head is attached.

The mineral is very thick and has a diameter of 6mm

The pencils are supplied in a carrying case in the following hardness:

5, 5.5, 6, 6.5, 7, 7.5, 8 and 9



Mohs Minerals

Mohs Minerals for Hardness Scale Testing

Set of 14 Mohs scale minerals. The minerals are packed in an elegant wooden carrying case, and squared in approximate dimensions of 30x30x10 mm. The hardness' are: **2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8 and 9.**

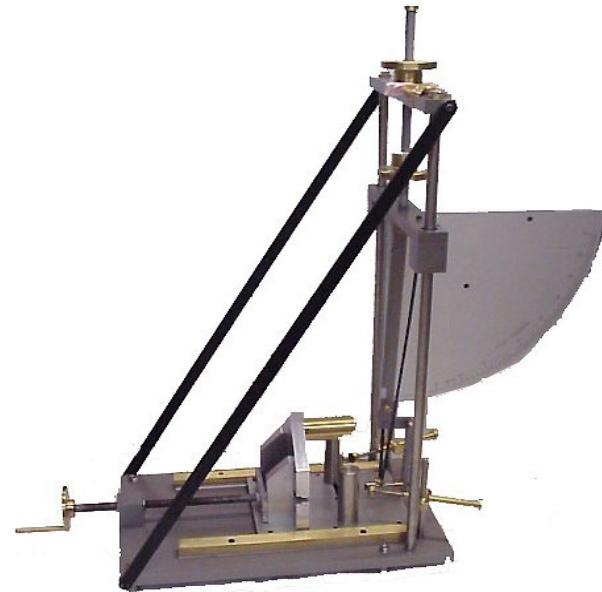
IMPACT TESTING

Impact / edge test hammers have been designed to measure the resistance of ceramic tableware items to the effects of impact applied to the samples.

Heavy Duty Impact Tester

One dual scale machine is now available for carrying out impact tests according to A.S.T.M. test method C 368, the lower scale for bone china domestic tableware, and the heavier for carrying out tests on more robust ware (e.g hotelware).

The impact tests are carried out on either glazed or unglazed samples at the centre of both flatware and hollow ware, at the rim of hollow ware, and edge chipping tests at the rim of flatware. The tests at the centre of the of the specimen are carried out to determine: (a) the magnitude of a blow that will be required to produce and initial fracture and (b) the amount of energy necessary to produce complete failure.



Edge Chipping Testers

The Payne Edge Chipping Tester has been developed as a low cost "in-house" test instrument to give a reproducible indication of edge chipping resistance. The hammer head is fitted to the end of a pendulum arm, which is manually withdrawn to a pre-designated point against the scale, and then released. Any damage which occurs should be visually measured and recorded against other samples.



Impact Resistance Test

Instrument for the determination of the resistance to the impact of the ceramic tiles according to **UNI EN ISO 10545-5** standard.

Determination of the coefficient of restitution by dropping a steel ball from a fixed height onto the test specimen and measuring the height of rebound.

Available with accessories to comply with :
ASTM and UNI EDL 294 standards



ISO 10545 standard test instruments

UNI EN ISO 10545 - 2

Dimensional characteristics of ceramic tiles. Universal gauges suitable for testing the flatness, squareness, rectilinearity and length of the sides of ceramic tiles. Instruments suitable for testing tiles sizes from 10 x 10cm up to 180 x 180cm. (see page 6).

UNI EN ISO 10454 - 3

Determination of Water Absorption: Standardised tanks VTD for testing according to the boiling method, or VSVD tanks for testing according to the vacuum immersion method (page 23)

UNI EN ISO 10454 - 4

Determination of Modulus of Rupture—Bending Strength testing of ceramic tiles up to 125 x 195cm. (page 15)

UNI EN ISO 10454 - 5

Instrument for the determination of the resistance to the impact of the ceramic tiles. Determination of the coefficient of restitution by dropping a steel ball from a fixed height onto the test specimen and measuring the height of rebound. (page 10)

UNI EN ISO 10454 - 6

The AP/10 is an instrument for the depth abrasion determination of unglazed ceramic tiles, The test consists of exposing the sample to the abrasive action of a steel disk rotating against the surface while corundum is fed from the fixed hopper at a given rate between the disk and the sample surface. (page 2)



UNI EN ISO 10454 - 7

Standardised Abrasion Tester for the Determination of Glazed Ceramic Surface Resistance. Designed to carry out tests in accordance with the P.E.I. (wet) method (page 2)

UNI EN ISO 10454 - 8

The GT-100 dilatometer is developed for thermal expansions testing in the laboratories of ceramic industry

UNI EN ISO 10454 - 9

Standardised Cooling Tanks, suitable for determining the resistance to thermal shock. Tiles with a low porosity (water absorption of less than 10%) are immersed in water (VR/60/A tank). Glazed tiles with water absorption of over 10% are indirectly cooled without immersion (VR/60/B tank). (Page 20)

UNI EN ISO 10454 - 11

Laboratory instrument for the cracking test (micro-cracking of glaze) on tiles after water-steam, test by the use of a coloured substance over the glazed surface. (Page 2)

UNI EN ISO 10454 - 12

Tank for determining resistance to frost, model DFR/120. Suitable for performing the test for standard for tiles of up to 60 x 120 cm, with a capacity of up to 10 tiles per test. (Page 7)

UNI EN ISO 10454 - 13

Determination of Chemical resistance.

UNI EN ISO 10454 - 14

Determination of resistance to stains

UNI EN ISO 10454 - 17

Slipperiness Metering platform. An operative, wearing a safety harness, walks backwards and forwards on the platform while it is being inclined at a rate of 1° per second until slipping occurs, which makes the movement come to a halt at the critical angle of slipperiness. (Page 19)



JAR (BALL) MILLS & Grinding Jars

The G90 series jar Mills are a range of fixed speed bench mounted roller mills used to grind ceramic (and other) materials in grinding jars of varying capacity.

- G90 Single jar Mill. Suitable for 1 x 9 litre or 4.5 litre, 2 x 2.25 litre or 3 x 1.125 or 500ml grinding jars
- G94 Single jar mill as above, except with electrically interlocked guard
- G91 Double jar mill Suitable for 2 x 9 litre or 4.5 litre, 4 x 2.25 litre or 5 x 1.125 or 500m grinding jars
- G95 Double jar mill as above, except with electrically interlocked guard.

Optional upgrades include: variable speed motor; run out timer.



Multi-tier Jar Mills

The G series Jar Mills are also available as multi tier mills, and are all capable of using a wide combination of jars. All are fitted with adjustable rollers running on heavy duty ball bearings with fully adjustable jar steadies fitted to each tier and are effective for the full length of the jar regardless of jar combinations. All the machines are solidly constructed from fabricated steel with individual drive and control to each tier

Grinding Jars – Porcelain

These grinding jars are produced from aluminous porcelain, fired at high temperatures, non-porous and suitable for the chemical, pharmaceutical, colouring, glaze and paint industries. The outer surface is glazed brown, with two ground rolling crowns, suitable for any kind of roller mill. Wide mouth to make loading, unloading and washing procedures easier. Supplied complete with porcelain

plug closed by a hand wheel and rubber gasket.

Sizes available: 1.5 litre, 3 litre, 5 litre, 10 litre and 15 litre.

FAST MILLS, SD-SERIES (Planetary Grinding)



SD-Series Fast Mills are a modular concept in laboratory mills. They are extremely sturdy and well-balanced machines, made with oversized mechanical components that can work without maintenance for years in the hardest conditions. They are indispensable in colour factories and the ceramics industry (for glaze preparing and research labs), but can also be used in numerous other industrial sectors (pharmaceutical, food, cosmetics, etc.), as well as schools, research labs, artistic ceramics, etc. This range of machines comes with up to four independently controlled milling stations, which will accept either 1000ml or 300ml porcelain jars. (1000ml models can carry 300ml jars with the addition of a counterweight.)

Model SD/1-1000, 1 station capacity 1000ml	01C13110
Model SD/2-1000, 2 stations capacity 1000ml	01C13111
Model SD/3-1000, 3 stations capacity 1000ml	01C13112
Model SD/4-1000, 4 stations capacity 1000ml	01C13113

JAW CRUSHERS

Coarse and initial size reduction of hard to brittle materials

Jaw crushers are used for the rapid, gentle crushing and pre-crushing of medium-hard, hard, brittle and tough materials. Their variety of materials offered, such as heavy-metal free steel, efficiency and safety makes them ideal for sample preparation in laboratories and industrial plants. The throughput and final fineness depend on the type of instrument, the gap width and the crushing properties of the sample. Jaw crushers are particularly suitable for the preparation of rocks, minerals, ores, glass, ceramics, construction materials, brittle metal alloys, slag, synthetic resins and many other hard, brittle substances.

- BB51: For material feed size up to 35mm
- BB100 For material feed size up to 50mm
- BB200 For material feed size up to 90mm
- BB300 For material feed size up to 150mm



KILNS—TEST FIRING CHAMBERS

FALCON CHAMBER KILNS

The Falcon range of electrically operated Front Loading style kilns is reliable in performance and efficient in terms of power-input requirements and energy saving capabilities.

The updated versions of these kilns now include the following standard features on all models:

Chamber capacities from 50 to 1250 litres (1.8 to 46 ft³)

Choice of Efficient Low Thermal Mass Linings for firing to 1,300° C (FL range) or 1,350° C (FS range)

Choice of plug in temperature controllers from the Microtech range of Microprocessor Temperature Controllers.

Over temperature protection



TEMPERATURE GRADIENT KILNS

The range of Temperature Gradient Kilns available from E.J.Payne Ltd is manufactured in Stoke-on-Trent and has become an essential part of the Ceramic Laboratory. Traditional kilns have incorporated single chambers with 9 measuring points in a single muffle. However modern demands have led to the introduction of multi-chamber gradient kilns, so that each individual chamber can be independently programmed.

SINGLE CHAMBER: The purpose of this gradient kiln is to obtain a series of temperature readings from samples during a single firing cycle. The style of kiln is ideal for trials of ceramic glazes, colours and clay bodies, insulators and sanitaryware etc.

In this style of kiln a fixed gradient of approximately 20/25°C would be apparent between each of the nine measuring point. Overall there is an approximate gradient of 180°C across the nine thermocouples between the “hot” and “cold” ends.

MULTI CHAMBER: The new range of individual chamber temperature gradient kilns, The TG.3, TG.6 XL and the TG.9 Mk.IV are unique in design as they offer the user the ability to set the top temperature to be achieved in each chamber. Hence the user is no longer constrained to a fixed gradient, as was the case with the traditional gradient kilns. Each chamber has its own thermocouple and electrical contactor that is linked back to the TC.S2 / TC.M2 microprocessor controller. This allows the user to program the firing cycle for one of the chambers (this will be the hottest chamber).

The temperatures in the remaining chambers will then be set as differences in temperature.



ER SERIES ROLLER KILNS

This range of kilns is suitable both for laboratory use and for small production runs. They feature a sturdy steel structure containing heat insulating material comprising low-density refractory bricks and preformed ceramic fibre sheets.

They are particularly resistant to high temperatures and thermal shock.

Description

The kiln consists of a sturdy steel structure, which encloses the thermal insulation, consisting of low density refractory bricks and preformed ceramic fibre sheets, highly resistant to high temperature and thermal shock.

The kiln has several zones with different characteristics, viz.:

- Entrance and smoke evacuation zone
- Preheating zone
- Firing zone
- Cooling zone.



LUXMETER

Digital Lux Meter

- Easy to use light meter with wide measuring range up to 400000 Lux.
- Ideal for environmental monitoring health and safety checks and industrial applications.
- Measures both Lux and Footcandles user selectable.
- Impact resistant ABS case with protective rubber holster.



MOISTURE TESTING

MICROSPEAR

If materials are to be used in a process, such as ceramics or concrete manufacture, it is also usually important to know the moisture content before, during and after the process.

The Microspear is used for the fast and accurate water content measurement of bulk materials for industry.

The instrument measures moisture and temperature of minerals and building materials at depths up to six feet (nearly 2 metres) - simply by insertion. The digital readings are shown instantly. It has a built-in computer which gives it the flexibility to handle a wide range of materials and water contents.



Microspear, 1 metre length
Microspear, 2 metre length

Product Code **AG001**
Product Code **AG002**

MOISTURE DETERMINATION BALANCES

Designed to quickly, effectively and affordably measure moisture content, the MB Series Moisture Analysers incorporate state-of-the-art halogen heating with precision weighing technology to give a fast and accurate method for moisture content determination. Perfect for applications in the pharmaceutical, chemical and research industries; versatile and rugged enough for continuous operation in food and beverage, quality control, environmental and many other applications. The MB Series Moisture Analysers feature excellent repeatability properties for consistent accuracy during testing

The Standard Moisture Analyser MB90

The MB90 is the standard model for moisture determination, leading the industry in performance/value. The MB90 features a maximum sample capacity of 90 g, with a readability of 0.001g and repeatability to 0.02% (10 g sample)., Max temperature 200°C

The Advanced Moisture Analyser MB120

For Maximum Value, the MB120 is the standard in high performance moisture content determination. The MB120 features a sample capacity of 120g, with a readability of 0.001g and repeatability to 0.015% (using 10 g sample). Max temperature 230°C

The Basic Moisture Analysers MB27, MB25 & MB23

Speed, Simplicity and Affordability

The new OHAUS MB27, MB25 and MB23 Basic Moisture Analysers combine high quality and durable construction into a sleek, compact design. These balances offer dependable, accurate, results for a wide variety of applications.

The MB27 features a sample capacity of 90 g, with a readability of 0.001g and repeatability to 0.05%
The MB25 features a sample capacity of 110 g, with a readability of 0.005g and repeatability to 0.05%
The MB23 features a sample capacity of 110 g, with a readability of 0.01g and repeatability to 0.2%



MIXERS / STIRRERS

E.J.Payne Ltd has for many years supplied the IKA RW20 overhead stirrer as a standard Laboratory stirrer. This instrument has been a best seller for years, and is still the best value for money stirrer in its range.

Built in a sturdy, slim casing the RW20 Digital is suitable for stirring jobs up to 20 litres (H₂O) with a constant power drive. The motor has two speed ranges for universal use from 60 to 2000 rpm, and it is fitted with a hollow chuck to allow stirring shafts of 1-10mm diameter to be used.

The new RW20 digital (pictured right) is fitted with an LED speed display for greater accuracy and reproducibility, integrated into the housing



High Shear Laboratory Mixers.

The Silverson L5 series of laboratory mixers are ideal for routine laboratory work, reassert & development, Quality Assurance checking and small-scale production in all industries.

The L5 series is suitable for the widest range of applications - mixing, emulsifying, homogenising, disintegrating, dissolving - with an efficiency and flexibility unmatched by other machines. With capacities from 1ml up to 12 litres and the ability to mix inline with flow rates up to 20 litres per minute, it offers excellent reproducibility when scaling up to full scale production and provides an accurate and easy means of forecasting the performance of larger Silverson machines under full scale working conditions

L5M Model (pictured left) features touch screen control with digital tachometer, programmable integral timer and amperage display, all accessed via the Mode button.

L5T Mixer Identical to the model L5M but supplied with tachometer only.

L5R Mixer Identical to the model L5M but supplied without the tachometer, amperage display or integral timer.



Model L2/AIR (Compressed Air)

An efficient, lightweight machine powered by an intrinsically safe air motor suitable for use in Flameproof areas. The L2/Air Motor Unit is powered by a 0.25hp, 6000 rpm variable speed motor, which requires 60psi (4.2 kg/cm²) compressed-air supply and consumes 8 cfm (226 litres) at full speed. Fitted with speed regulator and muffler. Complete with air regulator and gauge, water filter and lubricator. Supplied with manually adjustable bench stand.

MODULUS OF RUPTURE (BENDING STRENGTH) TESTING

Modulus of Rupture Machines measure the flexural breaking load (Bending Strength) of sample bars / ceramic tiles up to 700mm square by applying a three point load to the test piece. The range of Bending Strength machines available cover uses in tableware, sanitaryware, porcelain and ceramic tile manufacturing plants.

Mechanical Modulus of Rupture Machines.

The rise and fall platform is driven by an electric motor, which delivers a constant speed of elevation to the lower platform. The dial gauge on the spring balance is fitted with a maximum finger which indicates the breaking point in kilograms. This range of machines is suitable for tiles up to 40cm x 40cm Available with 10kg, 25kg, 50kg or 100kg scales.

Hydraulic Modulus of Rupture. (right)

The MOR/1-M/E is a manually operated hydraulic system, suitable for carrying out tests on samples with widths ranging from 40 to 300mm, and with a maximum thickness of 20 / 25mm. Available with 1,000kg scales.



MOR/5-TS Series Electronic models

Standardized devices for determining the flexural breaking load and modulus of green, or dried, or fired ceramic tiles. In accordance to the **UNI EN ISO 10545-4** norm. Scale: 0,5—800 Kg with a reading of 0,01 Kg (10 g) across the full range. (Minimum breaking load that can be obtained, 0,5 Kg) Minimum tile size 10x10 cm.

MOR/5-TS/65 For tiles up to 65 x 65cm
MOR/5-TS/125 For tiles up to 105 x 125cm

MOR/5-TS/95 For tiles up to 95 x 95cm
MOR/5-TS/185 For tiles up to 125 x 185cm

OVENS / LABORATORY DRYING CABINETS

The **MIN** and **OV** series ovens are **General-purpose laboratory ovens, with a temperature range of 40 – 250°C.**

The exterior is constructed from sheet steel finished in easy clean powder coated paint. The interior chamber is made from mild steel coated with aluminium (CLAD) with a stainless steel chamber available as an option. Fitted with fixed shelf runners and removable chrome plated wire grid shelves. Heated by incoloy sheathed elements; positioned below the chamber floor for natural convection units and fitted around the fan on the back or side wall of the chamber for mechanical convection units.

Chamber sizes: 6, 18, 30, 40, 50, 75, 100, 125, 150 and 200 litres



PRIME series ovens are **General-purpose fan assisted laboratory ovens, with a temperature range of 40 – 300°C.**

The exterior is constructed from sheet steel finished in an easy clean powder coated paint. The interior chamber is made from stainless steel chamber with rounded corners on MAX units. Fitted with fixed shelf runners and removable chrome plated wire grid shelves. The top vent is fitted with a clip to hold a mercury in glass thermometer. These horizontal style units are fitted with the controls on the side.

Chamber sizes: 30, 50, 75, 100, 125, 150 and 200 litres capacity

Large Capacity Ovens. LCO Ovens.

Of the same design as the smaller units these ovens offer a much larger capacity.

The vertical style units have a single door, the horizontal style units are fitted with twin doors. The heating element in these ovens is placed in the base fan duct for sizes up to 500 litres, and in the side fan duct for sizes 650 litres and upwards.

All units have as standard a PID Microprocessor controller, with dual displays of set point and actual temperature that are auto-tuned to each individual unit to optimise the heat up, overshoot and control of temperature.

Standard models range between 250 and 1,250 litres



pH METERS



The 8100 pH and temperature meter features an easy to read, LCD display and is supplied as a kit which includes a 8100 pH meter, general purpose combination glass electrode, temperature probe, 4.01 and 7.00 pH buffer solutions and carrying case.

The 8100 pH meter indicates pH over the range of 0 to 14 pH with a resolution of 0.01 pH and temperature over the range of 0 to 99.9 °C with a resolution of 0.1 °C. The pH readings are automatically temperature compensated over the operating range of 0 to 50 °C utilising the temperature probe supplied.

PRODUCT CODE: 860-810

PARTICLE SIZE ANALYSIS

Laser Particle Size Analysers..

The state of the art technology incorporated by Malvern into the Mastersizer range delivers speed of measurement, exceptional reproducibility and an ability to compare the results to other techniques. Particles within a wide size range from sub-micron to a few millimetres are measured accurately and non-destructively, allowing you to recover your sample if it is expensive or in short supply.

The Mastersizer range offers:-

Wide dynamic range - from 0.01µm to 3500µm with the Mastersizer 3000.

The **Mastersizer 3000** is the latest generation of the world's most popular particle sizing instrument. Incorporating expert engineering and applications know-how into every stage of its design, it delivers:

- Class-leading particle sizing performance in a compact footprint.
- Intuitive software with built-in expertise to ease your workload.
- Flexible reporting to display your data the way you want it.
- Rapid and effective wet dispersion.
- Fast, reliable particle size measurement of fragile & cohesive dry powders.

The **Mastersizer 3000E** provides a cost-effective, entry level particle sizing system which can be upgraded as required. It is available with two different performance levels: Mastersizer 3000E Basic

- Particle size range from 0.1 – 1000µm
- Manual dispersion units only
- Basic software, with updates and bug fixes only
- Anytime upgrade option to Mastersizer 3000E Extended



TEST SIEVES AND SHAKERS



SV001 motorised bench mountable shaker, suitable for sieves up to 315mm. The sieving action is provided by an off set weight motor which imparts random multi-directional motion to the sieve stack. The action provides an ideal movement for particle sizes up to 20mm. A timer is fitted to provide automatic stop on completion of test.

The shaker will accept 10 x 200mm diameter or 6 x 300mm diameter sieves with lid and receiver.

The unit is supplied with standard screw type clamps.

The **SV005** Sieve Shaker uses electromagnetic impulses to impart a triple vibrating action, - Vertical / Lateral / Rotational

The shaker is of a simple and sturdy construction making it ideal for continuous and intense use. It is operated and controlled via a separate control panel enabling high precision, performance and repeatability.

This unit will accept 200, 250, 300 and 315mm, 8 and 12 inch diameter sieves.

Test Sieves.

Test sieves are manufactured to the highest quality and are available to every National and International Specification. The sieves are certified, each sieve is supplied with a Certificate of Conformity and is individually numbered to provide full traceability.

Diameters range from 100mm or 3inch up to 450mm or 18inch, with the frame materials being manufactured from Brass, Stainless steel or Plated steel.

The "screen" is made from either woven wire mesh or alternatively perforated plate with apertures from 125µm to 20 micron (1mm for perforated plate sieves).



PRESSES

Bench Mounted Laboratory Presses.

Built with quality materials and accurate finishing these are suitable instruments for producing laboratory samples, specifically for the ceramics industry, but also for different industrial sectors. The mould is interchangeable, and the required size should be stated at the time of order from the list of sizes below.

The control board is fitted with a general switch and pilot light, double handed control for the pressing procedure, and a push button for the specimen extraction. The specimen extraction is hydraulic.

Model MIGNON/S—The pressing power can be adjusted up to a maximum of 20,000kg, Pressing piston bore - 150mm diameter. Stroke of the hydraulic ejector: 30mm, Maximum continuous operating pressure - 120 bar, Installed power – 1.5HP

Product Code: 01CI1840

Model MIGNON/SS—The pressing power can be adjusted up to a maximum of 40,000kg, Pressing piston bore - 150mm diameter. Stroke of the hydraulic ejector: 30mm, Maximum continuous operating pressure - 220 bar, Installed power – 3HP

Product Code: 01CI1845



Floor Standing Presses

Built into a compact and elegant structure made of steel, treated with epoxy paint, stove enamelled at 180°, these presses are hydraulically operated and entirely automatic, with the exception of the powder charging operation, which is manually effected.

The presses feature:-

A hydraulic ejector;

Electronic control panel, permitting a completely automatic operation of the press (except for the loading of the powder to be pressed).

Model P800/STP: - Pressing force: 80 Ton, Maximum operating pressure: 195 bar, Diameter of the cylinder: 230mm, Installed power: 3kW, Working stroke of the piston: 130mm, Stroke of the hydraulic ejector: 50mm,

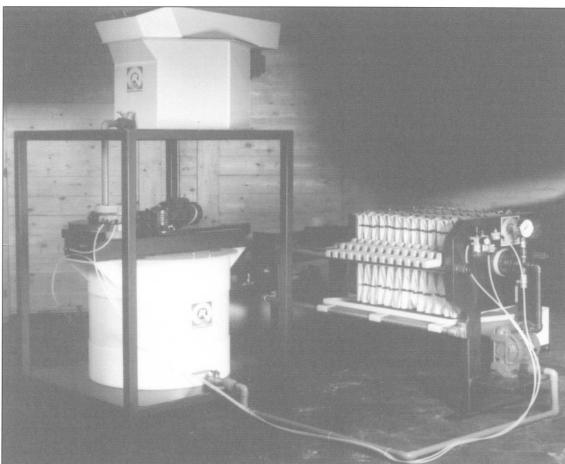
Product Code: 01CI1849/1

Model P1000/STP: - Pressing force: 110 Ton, Maximum operating pressure: 203 bar, Diameter of the cylinder: 250mm, Installed power: 3kW, Working stroke of the piston: 130mm, Stroke of the hydraulic ejector: 50mm,

Product Code: 01CI1850/1



PILOT CLAY PLANTS



E.J.Payne Ltd supply a range of Pilot Clay Plants for small capacities (up to 100kg per pressing cycle) to allow full pilot scale production within the laboratory. Polypropylene blunger tanks and storage arcs, with stainless steel blungers and mixing paddles are housed in a steel frame, with a 200mm diameter vibratory mesh to control the particle size of the material being transferred to the arc from the blunger. The filter press is closed by a hand hydraulic system and is fed by an Air operated diaphragm pump.

PUGMILLS / (EXTRUDERS)

All G-Series Pugmills are constructed on the same principle, aluminium bodies which are detachable for easy cleaning, non-rusting individually adjustable blades are fitted as standard to the pug shaft which in turn runs in two taper roller bearings (on some models). These bearings which are protected from the clay by an oil seal and retaining plate which must make G-Series pugmills the best engineered on the market.

De-Airing Pugmills

Through continuous research and development and the use of only high quality materials we are able to offer a machine that can give continuous production of a well de-aired plastic body with the minimum of maintenance.

All G-Series de-airing pugmills incorporate alloy bodies and blades and are fitted with high quality vacuum pumps and drive units, safety limit switches and overload protected switchgear.

A unique feature of G-Series de-airing pugmills is that they all incorporate a anti-feedback tube system within the de-air chamber, this prevents the clay being pushed back and blocking the vacuum chamber and also because of its unique design G-Series is also able to offer a vertical de-airing pugmill which gives all the features of a de-airing pugmill with the space saving advantages of a vertical pugmill and the ability to produce unheard of quality in hollow extrusions.

Tile Extruder G70

The G70 tile extruder is a very versatile machine. Besides extruding tiles, mouldings, coils etc. can be extruded with the use of the optional die plates. With the standard 100 mm diameter nose cone supplied with the machine other shapes such as hollow forms can be extruded with the use of optional die plates. To obtain optimum performance with the G70 tile extruder, one must be willing to experiment, keeping in mind the variables that are present when working in clay, the importance of moisture content, die balance, shapes etc.



ROUGHNESS METER KR100

Compact, portable, easy-to-use, digital instrument with built-in sensor for measuring texture on flat, cylindrical surfaces.

Features: Measuring Range RA: From 0.05 to 10,0µm, Rz: From 0.1µm 50µm. Accuracy: ISO Class 3. Resolution: 0.05µm. Measuring Length: 10,25-0, 8-2,5mm. Sensor: Diamond-headed piezoelectric. Indicator: Multi-purpose LCD. Speed of Movement: 1mm/sec. Supplied complete with: Battery, Battery Charger, Calibration block and case. Dimensions: 106 x 70 x 24mm Net Weight kg: 0.2



SLIPERINESS / SKID TESTING

TORTUS III

Slips, Trips and Falls account for over half of all reported injuries, costing employers and organizations over £300 million pounds per year. The Health & Safety at Work Act, 1974 emphasises that all employers must take steps to control slip and trip risks in the workplace.

The Tortus III measures directly the dynamic co-efficient of friction as it traverses a surface or flooring material to be used by pedestrians. The measurements recorded are date/time stamped and can be printed from an integral printer, or downloaded as data files onto a USB memory stick.. The unit can be mains or battery operated

PENDULUM SKID TESTER

The **PENDULUM** measures the frictional resistance between a rubber slider mounted on the end of a pendulum arm and the test surface. This provides highway and flooring engineers with a routine method of checking the resistance of wet and dry surfaces to slipping and skidding.

The Pendulum Skid Tester is based on the Izod principle. A pendulum consisting of a tubular arm rotates about a spindle attached to a vertical pillar. At the end of the tubular arm a head of constant mass is fitted with a rubber slider. The pendulum is released from a horizontal position so that it strikes the sample surface with a constant velocity. The distance travelled by the head after striking the sample is determined by the friction of the sample surface. A reading of Skid Resistance Values is obtained.

SLIPPERINESS METERING PLATFORM

This equipment is manufactured in accordance with ISO 10545-17 annex C and DIN 11530 It consists mainly of a painted steel framework with one zinc-plated platform with adjustable angle to accommodate the panel of 100cm x 50cm, with floor tiles suitable adhered.

Before the test is commenced, one must accurately lubricate the operator's shoes and the floor surface.

The operative, wearing a safety harness, walks backwards and forwards on the platform while it is being inclined at a rate of 1° per second until slipping occurs, which makes the movement come to a halt at the critical angle of slipperiness.



THERMAL SHOCK TESTING

Standardised Cooling Tanks, suitable for determining the resistance to thermal shock in accordance to the UNI EN ISO 10545-9.

According to the standard, each sample must undergo 10 heating and cooling cycles.

The sample must be heated in a thermostatically controlled drying oven and cooled in accordance with one of two methods, depending on the water absorption of the samples examined. Tiles with a low porosity (water absorption of less than 10%) are immersed in water (VR/60/A tank).

Glazed tiles with water absorption of over 10% are indirectly cooled without immersion (VR/60/B tank).

Standardized tank, model VR/60/A. (right)

Designed for cooling ceramic tiles by immersing them in water; suitable for sizes of up to 60x60 cm.

Entirely made of stainless steel.

Part number: 01CI2810/5

Standardized tank, model VR/60/B.

Designed for the indirect cooling of ceramic tiles, without immersion; suitable for sizes of up to 60x60 cm.

Tank structure made of stainless steel.

Top aluminium plate with adjustable feet made of stain-less steel, handles and raised edge for retaining the aluminium granules.

Part number: 01CI2812/5



DIGITAL THERMOMETERS

The Therma 1 and 3 digital thermometers are rugged and easy to use instruments that operate through the range of -100 to 1370 °C with a 0.1 °C or 1 °C resolution.

The Therma Elite incorporates all the features of a Therma 1 thermometer, but with the addition of a backlit display, max/min memory function and a mode button for the selection of 0.1/1 °C/°F. The thermometer also incorporates a calibration trim function (± 2 °C) which allows users to compensate for thermocouple probe errors.

The differential digital thermometers allow the user to use two type K thermocouple probes simultaneously. The display can be switched to show probe T1 or T2 temperature or the difference between probes T1 and T2 (T1- T2). This facility allows, for example, the temperature drop across radiators or the temperature rise or fall of two items to be measured.

The differential thermometers measure temperature over the range of -50 to +550°C with a 1°C resolution or -49.9 to +199.9°C with a 0.1°C resolution. Both thermometers feature a custom, easy to read, LCD display with °C, T1, T2, diff, hold, open circuit and low battery indication.

RayTemp Infrared Thermometers are ideal for uses in all industries, they are compact, light weight and easy to use. Simply aim and pull the trigger to display the temperature of the item being measured. In addition the clear, easy to read, LCD will display the maximum temperature. Along with low battery alerts, laser and backlight indication and an auto power off facility that turns the instrument off after 15 seconds to maximise battery life. Measurements displayed in °C or °F.



MICROPROCESSOR BASED THERMOMETERS

The MicroTherma microprocessor based thermometers measure temperature over the range of -210 to +1760°C with a 0.1°C or 1°C resolution, autoranging 0.1°C up to +199.9°C, 1°C thereafter. Each microprocessor thermometer incorporates an easy to read, multi-function 3½-digit LCD display with open circuit, low battery, hold, max/min and °C/°F indication.

The thermometers should never need re-calibrating as the built-in microprocessor enables the instruments to continuously and automatically carry out self diagnostic re-calibration. An additional feature allows the user to adjust the reading (± 2.5 °C) to offset any probe errors, correcting any inaccuracies of the thermocouple probe. Each thermometer thereafter will automatically store, display the offset and adjust the instrument for the known probe error, maximising system accuracy. Seven models are available that utilise type K, J, T, N, R, S or E thermocouple probes. Each instrument incorporates both max and min readings with a reset function. The unit also features an auto power-off facility which maximises the battery life, turning the instrument off automatically after 30 minutes.



TRIPLE ROLL MILLS

We offer a wide range of products for processing the most difficult materials in development, laboratories and production. In just one working cycle it is possible to disperse and homogenize substances, to reduce the particle size and to break up agglomerates. The result is a homogenous paste forming the perfect basis for further processing.

Areas of application:

The three-roll mills are used for intensive fine grinding, dispersion and homogenization of pasty masses to free-flowing materials

- Ceramics and glass colours
- Printing inks
- Electronics
- Cosmetics
- Dental fillings, dental impression masses
- Greases
- Ceramic masses
- Ointments

The EXAKT Three-Roll Mills are available in four different model series:

G-Line Series, powerful, precise and versatile: EXAKT 50 Plus, EXAKT 80E Plus

E-Line Series, reliable process control: EXAKT 80E Plus, 120 EH-450

S-Line Series—The High-performance models: EXAKT 80S Plus, EXAKT 120S Plus. EXAKT S-Line

Three Roll Mills offer the most precision and reproducibility with market leading gap settings down to 5µm.



VICAT APPARATUS



Art. 06CI2595

For determining the consistency and setting times of a normal cement mix. Model EO/54 with set of accessories in compliance with EN European specifications.

Can also be used in other industrial fields (tableware, sanitary ware, various ceramic bodies, etc.) for various non-standardised tests.

Comprises a steel base, light alloy support, stainless steel sliding rod, adjustable index graduated scale, and counter weight.

A needle spindle or a consistency probe is fixed to the rod.

Complete with a set of 6 \varnothing 1.13 mm needles, \varnothing 10 mm consistency probe, mould supporting disk, 3 plastic truncated-cone moulds with inner diameters 70x80 mm, height 40 mm and glass thermometer, scale -10+50 °C.

Total weight 5 kg.

Product Code: 06CI2595

VISCOMETERS

PAYNE TORSION (GALLENKAMP TYPE) VISCOMETER

Developed with the Ceramic Industry in mind, (but easily modified for other use), the "Payne" Torsion Wire Viscometer is simple to use and maintain.

The machine has three levelling points for easy adjustment, a PTFE bearing and a unique sample table which is raised vertically or rotated horizontally into position.

All accessories are fitted and adjustments easily made by means of the "brass thumb screws". This principle removes the need for fiddly screwdrivers or allen keys.

The standard model is supplied with a 30swg torsion wire, an 11/16" cylinder bob and a stainless steel sample cup.

Product Code: VIS003

ELECTRONIC (DRIVEN) VISCOMETERS

Brookfield viscometers employ the well-known principle of rotational viscometry; they measure viscosity by sensing the torque required to rotate a spindle at constant speed while immersed in the sample fluid. The torque is proportional to the viscous drag on the immersed spindle, and thus to the viscosity of the fluid.

For the user, rotational viscometry has several advantages:

The continuous rotation of the spindle allows uninterrupted measurements to be made over long periods of time-dependent fluid properties.

The rate of shear the sample fluid is subjected to is constant, so the instrument is suitable for measuring Newtonian and non-Newtonian fluids.

By rotating the spindle at several different speeds, shear dependent behaviour of non-Newtonian fluids can be detected and analysed.



DV-E Low Cost Digital Viscometer The DV-E combines economy and ease of operation with traditional Brookfield excellence. The Brookfield DV-E has set a new world standard for value in viscosity measurement. Simplified controls allow operators to change test parameters quickly with the push of a switch and turn of a knob.

The digital display ensures easy and accurate readout of test results for simultaneous measurement of viscosity and torque.

DVPlus Viscometer. The DVPlus Viscometer is the latest entry-level viscometer with an advanced user interface and best-in-class features. The newest model is suitable for all applications where accurate viscosity and yield stress measurements are needed. The easy-to-use, stand-alone interface makes DVPlus the perfect Vis-

cometer for busy labs.

DV2T Touch Screen Viscometer. The Most Versatile Viscometer continuous sensing viscometer with a new 5 inch full colour touch screen display.

Displays:

Viscosity (cP or mPas)

Temperature (°C or °F)

Shear rate / stress

% Torque

Speed / Spindle

Step program status



VISCOSITY FLOW CUPS

Simple to use cups for the approximate measurement of apparent viscosity in a wide range of materials including paints, varnishes, lacquers, inks and other viscous products.

BS-ISO Flow Cups. (For flow times 30 – 100 seconds)

To BS3900 part A6, 1996; ASTM D5125; EN535 – ISO2431; DIN 53224.

For flow times 30 – 300 seconds

B-Type Flow Cups (For flow times 30 - 300 seconds)

As specified in former BS3900 Section A6, 1971.

Ford-Type Flow Cups (For flow times 55 – 100secs (1), 40 – 100 secs (2), 30 – 100 secs (3, 4, 5) With detachable jet. To ASTM D1200.

Zahn Flow Cups.

Stainless steel with 30mm looped handle with ring which allows cup to be held vertically. Cup capacity 44ml. To ASTM D816 and ASTM D1084



WATER ABSORPTION

Thermostatically controlled tanks for Water Absorption Tests. (Non vacuum) -

VTD60

Suitable for determining the water absorption of ceramic tiles, according to UNI EN ISO 10545-3 .

General features:

- Stainless steel tank and sample basket.
- Basement and cabinet for switch board made of dry painted sheet metal.
- Cover with handles and vent pipe.
- Basket for containing ten 25x25 cm tiles or five 60x60 cm tiles.
- Electric heating 4.5 kW armoured elements.

Cooling with electro valve controlled water cooling coil.

Dimensions of instrument body: 126x60x114 cm, Total net weight: 150 kg.

Part number: 01CI2803



Tank for vacuum water absorption tests VSVD/60.

Suitable for rapidly determining the water absorption of ceramic tiles under the vacuum immersion method according to International ISO standards 10545-3 and ISO 10545-12

Suitable for tiles up to 60cm x 60cm

(The device can be programmed for testing cycles as requested by the standard and, furthermore, for various other cycles up to a vacuum value of -65 KPa)

General features:

- Stainless steel tank and sample basket.
- Basement and cabinet for switch board made of dry painted sheet metal.
- Aluminium cover with handles, and fly wheels for locking.
- Vacuum pump, power 0.35 HP.
- Automatic cycle test.
- Control board with keyboard and LCD display for test cycle setting and checking.
- Programmable vacuum range: from -1 up to -65 KPa (-650 mbar / -6630 mm/H2O).
- 4 board-selected, water levels for adapting the level to the size of the tiles being tested.

Part Number: 01CI2804/1



PLEASE NOTE:

THIS IS ONLY A SMALL SAMPLE OF THE MOST POPULAR ITEMS OF EQUIPMENT OFFERED BY E.J.PAYNE LTD.

WE ARE ABLE TO SOURCE MOST CERAMIC TEST EQUIPMENT AND SHIP ALL OVER THE WORLD.

INDIVIDUAL MORE DETAILED DATA SHEETS ARE AVAILABLE FOR EACH OF OUR PRODUCTS.

IF YOU CANNOT FIND THE INSTRUMENTS / EQUIPMENT YOU REQUIRE, PLEASE CONTACT US ON:

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