Cement is one of the ancient raw materials used in construction. It is uncertain where it was first discovered that a combination of hydrated non-hydraulic lime and a pozzolan produces a hydraulic mixture (e.g., Portland cement) that harden because of hydration chemical reactions that occur independently of the mixture’s water content; they can harden even underwater or when constantly exposed to wet weather.

Cement is essentially a binder that binds other materials together. Modern cements are manufactured by a chemical process. Raw materials are crushed, ground and blended before being heated in a rotary kiln until they combine chemically. The clinker from the kiln is then ground with gypsum to form Portland cement.

Different types of cement with different strengths and characteristics can be produced depending on the composition and quality of clinker, fly ash, silica fume, retarders, water proofers, colouring agents and other additives used in the mix.

It is essential to test the physical and chemical parameters of each cement batch produced and to identify the unique characteristics of each composition. Such parameters include specific surface and gravity of cement particles, consistency, soundness, setting time, heat of hydration, inorganic chemical analysis, loss on ignition, air content and strength.
CONDIÇÕES DE VENDA

Agradecemos que nos faça sempre que possível uma consulta de preços através do Email info@expt.pt e mencionando o equipamento pretendido (referência do equipamento e quantidade).

COMO ENCOMENDER:

Nota: Apenas aceitamos encomendas por escrito.

- Email ao cuidado de Rafael López info@expt.pt

Mencione na sua encomenda o seguinte:

- Número da nossa proposta ou descrimine o equipamento mencionado a referência do produto
- Dados para faturação com nome e endereço completo e NIF (obrigatório)
- Local de entrega.
- Nome e telefone de contacto do local de entrega

PREÇOS E PRAZO DE ENTREGA:

- Os preços indicados neste ficheiro não incluem IVA de 23% e estão sujeitos a alterações sem aviso prévio.
- Normalmente não fazemos stock deste equipamento, agradecemos que nos contacte mencionado o equipamento que pretende para informações do prazo de entrega que pode variar.
- Mais informações através do Email info@expt.pt

CONDIÇÕES DE VENDA PARA PARTICULARES:

- Local de entrega: vossas instalações com portes a debituar de 15,00€ + IVA.
- Encomendas inferiores a 100 euros impostos não incluídos, ficam a seu cargo despesas administrativas 30,00€ + IVA.
- Pagamento: antecipado no exato momento do pedido

CONDIÇÕES DE VENDA PARA INSTITUIÇÕES DE ENSINO (públicas ou privadas)

- Local de entrega:
  - Vossas instalações. Ficando os portes a cargo da EXPT para encomendas superiores a 300 euros impostos não incluídos.
  - Vossas instalações. No caso de encomendas inferiores a 300 euros impostos não incluídos, ficam a seu cargo os portes de 15,00€ + IVA
- Encomendas inferiores a 100 euros impostos não incluídos, ficam a seu cargo despesas administrativas 30,00€ + IVA.
- Pagamento: a 60 dias a contar da data da fatura
The Blaine Air Apparatus is used to determine the particle size of Portland cement, limes and similar powders expressed in terms of their specific surface.

**Comprises:** It comprises of a stainless steel cell, perforated disc and plunger. A U-tube glass manometer is fitted to the steel stand. The set is complete with rubber aspirator and filter paper.

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Le Chatelier method determines the soundness of cements and limes by using the expansion test with Le chatelier moulds according to the relevant standard.

**Comprises:** The mould consists of a spring tensioned split cylinder 30 mm internal diameter x 30 mm high with two indicator stems which measure 150 mm from the points to the centre line of the cylinder and O-ring. Standard weight 100 g ±10 g and two glass plate are supplied complete with the mould.

Le Chatelier Water Bath is use with Le Chatelier moulds for the determination of the soundness of cement paste.

**Comprises:** The Water Bath comes complete with removable rack to hold twelve moulds and cover. Build in digital Thermostat controller to regulate the water temperature from ambient to boiling point.

The Chatelier Flask is used to determine the specific gravity of hydraulic cement and lime.

**Comprises:** Glass flask 250ml capacity, with graduated neck from 0 to 1 ml and from 18 to 24 ml in 0.1 ml graduation with accuracy of 0.05 ml.

The Flow Table is used for determining consistency of mortar, lime and cement specimens. The table is 300mm dia., 10mm rop height. The one made of brass has dimensions of 100mm base dia. x 70mm top dia. x 60mm high.

**Standards:** BS 1377:2, EN 196-6, 459-2, 13286-44, BS 4359-2, ASTM C204

**CM 0101** Blaine Air Apparatus

**CM 0102** Manometer Tube

**CM 0103** Reference Cement

**CM 0104** Filter Paper (pack of 100)

**CM 0105** Cell with perforated disc

**CM 0106** Manometer liquid bottle 250 mm

**CM 0107** Le Chatelier Flask

**CM 0108** Manual Cement Flow Table, BS, EN

**CM 0109** Manual Cement Flow Table, ASTM

**CM 0110** Automatic Cement Flow Table, BS/EN

**CM 0111** Automatic Cement Flow Table, ASTM

**CM 0112** Flow Mould

**CM 0113** Tamping Rod

**CM 0114** Le Chatelier Mould Complete

**CM 0115** Le Chatelier Water Bath complete

**CM 0116** Vicat Frame Complete

**CM 0117** Initial Set Needle1.13 mm dia, EN

**CM 0118** Final Set Needle1.13 mm dia, EN

**CM 0119** Initial Set Needle 1 mm dia, ASTM

**CM 0120** Vicat Mould, EN

**CM 0121** Vicat Mould, ASTM

**CM 0122** Consistency Plunger

**CM 0123** Vicat Apparatus

**CM 0124** Vicat Frame

**CM 0125** Vicat Mould

**CM 0126** Vicat Needle

**CM 0127** Consistency Plunger

**CM 0128** Vicat Apparatus

**CM 0129** Vicat Frame

**CM 0130** Vicat Mould

**CM 0131** Vicat Needle

**CM 0132** Consistency Plunger
Cement Equipment

Automatic Vicat Apparatus

The Automatic Vicat Apparatus is designed and manufactured using the most recent and sophisticated technology, it is used for the initial and final setting time determination of cements or mortar pastes.

The apparatus is manufactured with anticorrosion components to be used in places with humidity up to 90% and 20°C.

The entire test is made in a fully automatic way and gives a very precise and repeatable result with controlled temperature as required by EN Specifications.

The results are printed on the incorporated printer and this eliminates the manual operations of installing and zeroing the paper graph on the drum.

The use of the appliance is extremely simplified by the guiding menu that is available in different languages.

CM 0133 Automatic Vicat Apparatus Complete with EN and ASTM Initial and Final needles, Consistency Plunger, 1x EN and ASTM Mould and Glass Plate.

Accessories:
CM 0124 Consistency Plunger
CM 0125 Initial needle, 1.13 mm dia EN
CM 0126 Final needle, 1.13 mm dia EN
CM 0127 Initial needle, 1 mm dia ASTM
CM 0128 Final needle, 1 mm dia ASTM
CM 0129 Needle Cleaning Device
CM 0130 Windows Software and RS232 Cable
CM 0131 Printer Paper Rolls, pack of 10
CM 0132 Mould Tank

Auto clave Apparatus
Standards: ASTM C151, ASTM C141, AASHTO T107

The Auto clave Apparatus used for accelerated soundness tests on cement.

It provides high pressure steam up to 25 Bar to help cure the cement specimens.

Comprises:
The Auto clave is made of high pressure steam chamber of dimension 114 mm ID x 406.4mm Stainless steel chamber with bolted steel cover, which is enclosed in an insulated metal housing.

CM 0142 Auto clave Apparatus Complete

Spare:
CM 0143 O-ring Lid Sealing Gasket
CM 0144 Specimen Rack

Heat of Hydration Apparatus
Standards: BS 4550, ASTM C186

This Apparatus is required for determining the heat of hydration of cement as expressed in calories per gram.

Comprises:
A constant speed stirrer (Double-bladed propeller type) extending to within 38 mm from the bottom of the flask.

A funnel (Gooch Type) with a stem of 6 mm inner dia and a body approx 25 mm long and 25 mm dia is fitted to the cork stopper for introducing the sample.

CM 0145 Heat of Hydration Apparatus Complete

Accessories:
CM 0146 Vacuum Dewar Flask
CM 0147 Beckman Thermometer, range 6°C ±0.01°C
CM 0148 Glass Filling Funnel

Cement Shrinkage Test
Standards: EN 1367-4, EN 12617-4, ASTM C151, C490, BS 1881:5, 6073

The Cement Shrinkage Test is used to determine the accelerated soundness (auto clave method) and length changes of 40x40x160 mm and other sizes of cement prisms.

Comprises:
The set comprises of length measuring frame, two or three gang steel mould according to the related standard, steel inserts for moulds and reference rod.

CM 0134 Drying, Shrinkage, Length Comparator with adjustable-height beam

CM 0135 Dial gauge 0.002mmx10mm
CM 0136 Digital dial gauge 0.001mmx20 mm
CM 0137 Reference Rod 160mm EN12617-4
CM 0138 Reference Rod 305 mm ASTM C490
CM 0139 Three Gang Prism Mould 40x40x160mm to EN12617-4
CM 0140 Two Gang Prism Mould 25x25x285 mm to ASTM C490
CM 0141 Steel Inserts, 10 pieces
Cement Equipment

Automatic Mortar Mixer

Standards: EN 196-1, 196-3, 413-2, 459-2

The Automatic mixer is perfect to mix mortars and cement material according to the required standards.

The mixer is very rigid and durable with a planetary motion for its paddle.

The mixer is electronically controlled; it has two different speeds that can be operated either on manual or automatic program mode.

Automatic Digital Mortar Mixer

Standards: EN 196-1, 196-3, 413-2, 459-2, ASTM C305

Automatic Digital Mortar Mixer is perfect to mix mortars and cement material according to the required standards.

The mixer is has the latest technology with a programmable mixing cycles conforming to EN 196-1, EN 196-3 and ASTM C305.

It has Acoustic signal synchronised with cycle steps, complete with automatic sand dispenser and Ergonomic and safe design.

Manual Mortar Mixer

Standards: EN 196-1, EN 196-3, EN 413-2, EN 459-2

The Manual mixer is a basic mortar and cement mixer according to the required standards.

The mixer is controlled by an on/off switch. It has two different speeds that can be operated on manual mode.

CM 0149
Automatic Mortar Mixer
CM 0150
Automatic Sand dispenser
CM 0151
Mixing Bowl 5 Ltr, Stainless Steel complies with EN 196
CM 0152
Paddle, stainless steel complies with EN 196
CM 0153
Scraper

CM 0154
Automatic Digital Mortar Mixer complete including sand, cement and water dispenser.

CM 0155
Mixing Bowl 5 Ltr, Stainless Steel complies with EN 196
CM 0156
Paddle, stainless steel complies with EN 196
CM 0157
Scraper

CM 0158
Manual Mortar Mixer
CM 0159
Mixing Bowl 5 Ltr, Stainless Steel complies with EN 196
CM 0160
Paddle, stainless steel complies with EN 196
CM 0161
Scraper

CM 0162
Flame Photometer supplied complete with Na, K, Ba, Ca and Li filters, connecting hoses and clips, compressor plug and drain trap

Flame Photometer

Standards: EN196-21:ASTM C114

The Flame Photometer is a device used in inorganic chemical analysis to determine the concentration of certain metal ions, among them sodium, potassium, lithium, Barium and calcium.

In principle, it is a controlled flame test with the intensity of the flame colour quantified by photoelectric circuitry.

The instrument is fitted with automatic flame failure detection for user safety, making it ideal for use in laboratory, industrial sites and educational applications.

Muffle Furnace, Loss on Ignition

Standards: EN 196-2, EN 459-2, BS 1016:4, ASTM D2361, D2795

The Muffle Furnaces are widely used for determining various properties of construction materials such as the Loss on ignition.

Vertical lift door directs heat away from user and saves counter space. A safety interlock switch disconnects power when the door is open.

Vertical lift door has maximum access with minimum head room for easy loading and unloading.

CM 0163
Muffle Furnace, 4.2 liters cap.
1200 C temp
CM 0164
Muffle Furnace, 7.5 liters cap.
1200 C temp
CM 0165
Muffle Furnace, 15 liters cap.
1200 C temp
CM 0166
Muffle Furnace, 22 liters cap.
1200 C temp
Cement Equipment

**Vibrating Machine**

**Standards:** BS 4550

The Vibrating Machine is perfect for the preparation and compaction of 70.7 mm mortar cube specimens. The vibrating shaft of the machine allows each sample to be vibrated at 12000 cycles per minute. Fitted with setting timer the vibrating machine can stop automatically when set time is completed.

**CM 0167**

Vibrating Machine

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**Jolting Table**

**Standards:** EN 196-1

Jolting table is used for mould compacting of 40.1x40x160 mm cement specimens and consists of mould table seated on a rotating cam driven at 60 revolutions per minute. The Jolting Table is 15.0 mm drop equipped with counter which provides automatic shut off at end of preset drop numbers. Rapid mould lock and release system allows easy and quick operation.

**CM 0168**

Jolting Table

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**70.7 mm Cube Mould**

**Standards:** EN 196-1, ASTM C109, BS 4550

The 70.7 moulds have been manufactured from steel in the relevant British Standard and all internal surfaces are machined. Supplied complete with baseplate. All dimensions and specifications comply with the related standards.

**CM 0169**

70.7 mm Cube Mould

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**Three Gang Mould**

**Standards:** BS 3892-1, 4551-1, EN 196-1, 413-2, 459-2, 1744-1, 1015-10, 11, 13454-2.

The 40.1x40x160 mm Three Gang Mould is manufactured of steel with hardness over HV400 the surface is heat treated to comply with the related standards.

**CM 0170**

Three Gang Mould 40.1x40x160 mm

**CM 0171**

Feeding Hopper

**CM 0172**

Scraper double-ended

**CM 0173**

Standard Reference Sand. EN 196-1 2006, 1350 gram per Bag

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**Three Gang Cube Mould**

**Standards:** BS 1881-131, ASTM C109, EN 196-1

The 50x50x50 mm Three Gang Cube Mould is manufactured of cast iron, all internal surfaces are machined. All dimensions and specifications comply with the related standards.

**CM 0174**

Three Gang Cube Mould

This cast iron three gang mould is a diagonal arrangement 50mm mortar cube moulds with a detachable brass base plate. Wing nut clamps lock the mould to the base while stainless steel thumbscrews secure the halves tightly together. Large screed off upper surface area makes this mould a preferred choice.

**CM 0175**

Three Gang Cube Mould with simple cube release mechanism

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**Briquette Mould**

**Standards:** BS 4550

The Briquette Mould is used for casting cement briquettes for tensile strength testing. Manufactured of brass it is a two part split mould with thumb screws for quick assembling and dismantling of the mould.

**CM 0176**

Briquette Mould

The minimum cross section of the briquettes cast is 25.4 mm x 25.4 mm. Supplied complete with a steel base plate.
Humidity Curing Cabinet

**Standards:** BS 3892-1, EN 196-1 459-2

The Humidity Curing Cabinet is used for curing cement test samples.

- **Capacity:** 320 Litres
- **External Size:** 66 x 64 x 175 cm
- **Internal size:** 49 x 51 x 127 cm
- **Temp range:** +5.0°C to +60°C
- **Fluctuation:** ± 0.2ºC
- **Variation:** ± 0.5ºC
- **Recorded chart:** 7 day
- **Temperature:** 0 – 50ºC
- **Humidity:** 0 – 100% RH
- **shelves:** 10 shelves

CM 0183  Humidity Curing Cabinet
CM 0184 Recording Chart

Air Content Meter for Mortar, Masonry Cement and Lime

**Standards:** EN 459-2

The Air content meter is designed to determine the air content in cement mortar, cement paste and lime mortar.

- **Made from cast aluminium, the test pot one litre capacity and the upper part are air-tight sealed by means of two quick action spring clamps.**
- **The whole is connected to a dial gauge directly indicating the air entrainment in percentage, with range 0 - 50%.**

CM 0185 Manual Air Content Meter, 1 lt Capacity
CM 0186 Motorised Air Content Meter, 1 lt Capacity

A built-in operated air pump is also included. The push-buttons TEST and CORRECTION are arranged to perform the test in a simple and quick system.
The Cement Compression and Flexural Machine 25/250 KN is Fully Automatic and has been designed for testing the compression on the 50x50x50 mm cube moulds, 40x40x40 and the flexural on the 40.1x40 x160 mm prism moulds according to the related standards.

The machine consist of very rigid two column frame with double test chamber, automatic closed loop controlled hydraulic power pack and LCD graphic digital control and readout unit.

The digital graphic display allows real time load vs time graph. At the end of the test cycle, the results can be stored in memory (up to 250 test results) or downloaded to a PC using the software format.

On both frame the load is measured by load cell to get accurate test results. The machine is supplied with safety doors and can test samples up to 250KN.

The LCD graphics data acquisition and controls system is designed to control the machine and processing of data from load cells.

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