

SOUNDNESS TEST

Standards EN 196-3, EN 459-2, BS 6463

LE CHATELIER THERMOSTATIC WATER BATH

Ref: 111-100257

Thermostatic water bath, with precise PID temperature control by means of a precision digital module, specifically developed for the automatic perform of the test cycle, according to EN 196-3.

The test procedure starts in filling up two Le-Chatelier moulds with fresh-mixed cement paste, closing the cement surface with two glass plates and fastening the arrangement with a suitable clamp. Then the moulds are introduced into the thermostatic bath for performing the thermal cycle.

The water contained in the bath Le Chatelier is warmed up following a continuous heating ramp of temperature from 20 °C to the boiling, in 30 minutes, and maintaining a smooth boiling, during 3 hours.

The sensitivity of this equipment allows to maintain a gentle boil with very low decrease of the water level in the bath.

Once the boiling time, the samples are taken, even moulded, and measured the separation between the tips ends of the mould. This separation is compared with the measured separation between the tips once the sample allowed to cool to 20 degrees.

Features

Equipment specifically developed for the determination of the cement expansion (stability test volume) with fully automatic development of the test cycle, according to EN 196-3.

The bath has a stainless steel tank and lid with handles, and a double wall insulated with rockwool, inside wall made of stainless steel with drainage faucet located in behind lower part. Inside it has a stainless steel perforated sheet tray with handles to lift the tray out of the bath bottom and protect the heating resistor of 4500W.

The measuring and regulating system consists on a electronic module in the right side of the bath which incorporates 3 digits (two integers and one decimal) digital thermostat with 0,1° C resolution, combined with a Pt100 probe to measure temperature of the water in the bath. The thermostat range is 0 to 100°C.

The adjustment of the orders introduced by the user and the reading of the real temperature is controlled by means of one internal PID. The digital indication is double (continue for the order and instantaneous for the real temperature).

The thermostat is fully programmable by the user, by means of the keyboard, and so it permits to adapt the user to the specific working conditions for each test.



111-100257

AP MODULE

Electronic Control Module (AP) programmable touch screen keypad (alphanumeric and function), LCD temperature display, time, length of the test cycle which is, alarms detected, and so on.

This module can be replaced by AP the user without requiring Ibertest Technical Service without adjustments.

This equipment has AUTOTUNING function for PID automatic adjustment and calculation.

From our facility this equipment is supplied with 2 preset programs:

First program: (Complete method).

24 hours in 20°C and afterwards, increase to boiling in 30 minutes keeping the boiling during 3 hours.

Second program: (Brief method).

Quick stabilization to 20° C and afterwards increment of the boiling temperature in 30 minutes keeping the boiling (see note 1) during 3 hours.



AP Electronic Module

Specifications for Le CHATELIER THERMOSTATIC WATER BATH

Inner dimensions of the tank	445 x 250 x 140 mm (length x width x depth)
Water volumen	approx. 14 liters
Electric supply	Single-phase 230 V + G, 50-60 Hz
Number of Le Chatelier moulds	For best results, we recommend testing up to 9 moulds simultaneously.
Power consumption ¹	4500 W
Dimensions	710 x 450 x 280 (h) mm
Net weight approx. (empty)	15 kg
Temperature visualitation	4 digits (3 integers and 1 decimal)
Resolution	± 0,1 °C
Screen	LCD graphic screen with retro – illumination with 2 lines capacity and 16 characters per line
Data acquisition	Touch-screen keyboard with function and alpha numerical keys.
Control	32-bit microprocessor with built-in real-time clock. Closed loop control with internal PID, Autotuning function for calculation and automatic PID tuning
Closed loop time frequency	100 Hz (100 times/second)
Language	Spanish, English and French (others under request)
Real time information	Temperature setpoint. Real temperature. Elapsed time. Time remaining to complete the test. Selected program: full cycle / short cycle. Stretch of the cycle in which ,in every moment.
Warnings reports	Disconnected probe. Probe shorted. Resistance damaged or water lack. Temperature of filling water excessively low.

(1) The high power consumption of this device requires an electrical installation that can withstand current up to 21 A

Accesories and spare parts

LE CHATELIER MOULD, AS PER EN 196-3

Manufactured in chrome-plated brass.

Ref. 210-100001

BASE AND COVER PLATE

Glass-made. For the Le Chatelier moulds.

Ref. 111-100002

ADDITIONAL MASS FOR COVER PLATE

Brass made. Set the mass of the cover plate to 75 g.

Ref. 111-100003

CLAMP FOR LE CHATELIER MOULD.

For easy handling of the mould when filled

Ref. 111-100001

VERIFICATION MASS, for checking resilience of the Le Chatelier moulds, of 300 ± 1 g as per EN 196-3.

Ref. 210-102364

