LANGAVANT-TYPE CALORIMETER

SEMI ADIABATIC AND COMPUTERISED

To determine cement hydration heat by semiadiabatic calorimetry, in J/g

According to EN 196-9 standard

The calorimeter, in its basic version, consists of:

2 calorimetric bottles (optional up to 7 calorimetric bottles), one of them is the reference bottle which contains a mortar specimen tempered at least 12 months before, so considered inert.

2 Pt-100 3 wire probes: one for the reference bottle and the other for the test one. Max temperature 250ºC, with 3m silicone wire 50 mortar tins.

1 Electronic module: 4 measuring channels for Pt-100 probes(allowing the connection up to 3 test calorimetric bottles and 1 reference bottle, according to stated in the standard) with RS-232 port for PC connection.
If there's a need to connect more than 4 bottles, it's possible to supply 2 modules, obtaining this way 8 measuring channels.

Temp measuring precision: better than +0,3º C.

1 Data acquisition system, formed by on PC, software WINTEST.LANG under WINDOWS, TFT screen and printer.

1 instrumented table: for placing the module/s, PC/s, TFT screen and the printer.

GENERAL DESCRIPTION

Calorimetric bottle

The calorimetric bottle is formed by a high vacuum Dewar flask, made of silvered Pyrex glass. This cylindrical flask with hemispherical bottom is 95 mm internal diameter, 280 mm high and 120 mm external diameter, closed by an insulating stopper housed in a rigid container used as a support.

At the bottom of the flask a rubber disk 85 mm in diameter and 225 mm thick supports the specimen and distributes the load over the glass wall.

The flask housing has a wide base to ensure good stability and is very rigid (duralumin 3 mm thick). There is a 5 mm clearance (air) between the housing and the flask, which sits on a 4-5 cm thick base made of a low thermal conductivity material.

The upper edge is in contact with a crown-shaped buffer attached to the housing and also made of low thermal conductivity material, which holds the flask in place and gives the stopper a support surface to ensure the flask-stopper assembly is airtight.

A rubber seal is placed between the edge of the flask and the buffer.

NOTE: *All the calorimetric bottles are calibrated by the "Laboratoire Régional des Ponts et Chaussées" (France) and a label attached to each bottle indicates the coefficients of heat loss and heat capacity of the empty bottle.*

Mortar tin

The mortar tin is a cylindrical container with a lid, with a volume of 850 cm3 and holds the tempered mortar which will form the specimen.

This disposable container is steamtight at pressure of 0.3 bars. It is made of tin and is 80 mm diameter, 165 mm high and 0.3 mm thick.

In the middle of the tin lid, a tube is located to insert the measurement element (thermopar, Pt 100 probe, or thermometer). It is approximately 100 to 120 mm long, in order toreach the central inner part of the specimen.

Electronic module: 4 channels for Pt-100 temperature probes (min - 200º C, max +850º C).

Rs232 for PC connection

Main features

- 16 bits A/D converter
- Linearity: +/-0,1% F.E.
- Temperature deviation: +/-0,01%/ºC at F.E.
- Protocol MODBUS RTU/ASCII
- Sampling speed: from 0,5 to 2 readings /sec, depending on the number of simultaneous channels
- Isolation 2000 Vac(3 ways).
- Exiting current: 0,350 mA.
- Compliance with: EN standards. Electromagnetic (CEE/336/89).Immunity EN 1000-6-2. Emissivity EN 61000-6-4
- Data transfer speed: max 38,4 Kbps.
- Maximum distance: 1,2 Km.

The module is supplied with an appropriate box including power supply.

Data acquisition system

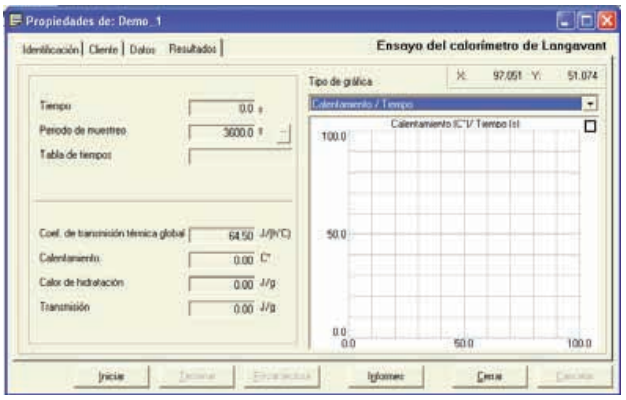
PC, flat TFT 17" screen, keyboard, mouse, WINDOWS XP O.S., user license and color printer.
Data Acquisition software WINTEST.LANG, for the hydration heat determination by meansof semi adiabatic method.
1 instrumented table: for placing the module/s, PC/s, TFT screen and the printer.
According to UNE 80-118 and AFNOR P 15-436

WINTEST.LANG SOFTWARE

Fully developed by IBERTEST for the Langavant test.

WINTEST.LANG designed to work with up to eight channels at the same time. Allowing a continuous reading of the reference heat and the amount of heat transmitted by the samples placed in the test.

It calculates the hydration heat of each sample showing the test results graphics according to standard.



Main Features

- Tree structured software with easy test configuration. Allows the viewing of current or saved tests simultaneously.
- Simultaneous formula management, up to 7 test bottles and one reference bottle.
- Real time graphics, to show the variation of the temperature with time referred to the reference bottle.
- Help menu. Consisting of a complete manual for each application

- Temperature Reading periods adjustable by the user or defined by the standard.
- User friendly even with people not used to work with PC.
- Auto save: test data are stored automatically in the hard drive to be recovered for further analysis.
- Test files could be exported to a Excel file (csv)

IBERTEST Internacional S.A.
European Union Manufacturer
Ramon y Cajal 35
Daganzo de Arriba, Madrid, Spain
Ph: (+34) 91 884 53 85
Fax: (+34) 91 884 50 02
sales@ibertestint.com
www.ibertestint.com