

Heat-Box

Equipment for Measuring Concretes Heat of Hydration

When planning concrete castings, the Heat of Hydration is an important parameter.

The adiabatic development of the Heat of Hydration is easy to determine by means of a Heat-Box.

The Heat-Box is installed in a robust box and is suitable for use at the construction site as well as in a laboratory.

The Heat-Box is shaped as a cube with the dimension 60 cm. Inside the cube are insulation material and space for a 150 mm concrete cylinder. The weight of the Heat-Box is app. 25 kgs without concrete.

A data logger and software, for calculation and presentation of results, are also included.



Operation

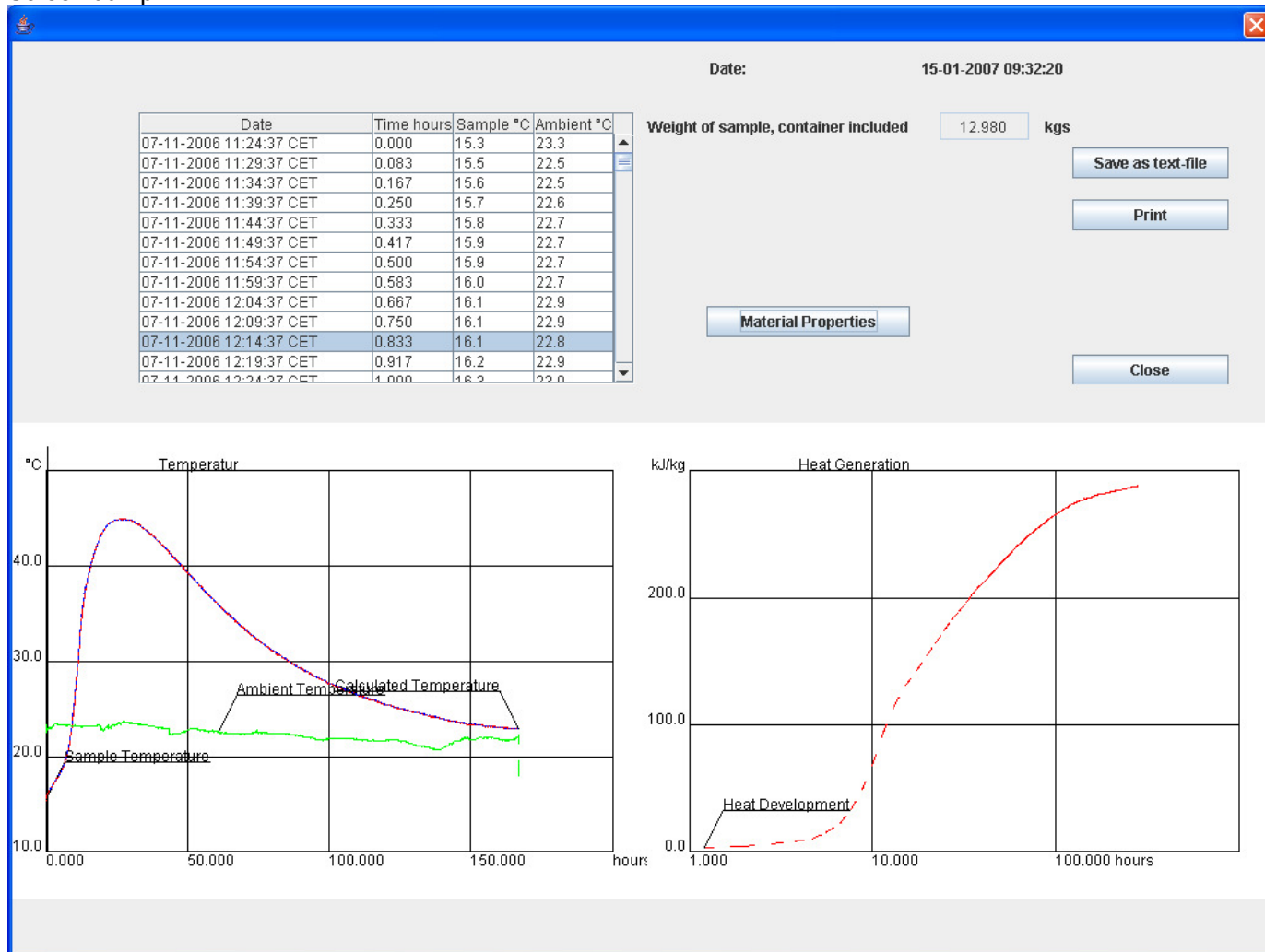
The Heat-Box is a semi-adiabatic calorimeter. When fresh concrete is placed in the equipment, the development of the temperature is registered together with the ambient temperature.

When the measuring is finished the software is calculating the corresponding adiabatic development of the Heat of Hydration. A screen-dump from the software is shown on the back of this brochure. In the right side of the screen-dump is shown the heat development which results in a calculated temperature progress which is matching the observed history of temperature. The calculations are based on 3D Thermal Analysis which takes into account the heat capacity and thermal conductivity of the Heat-Box.

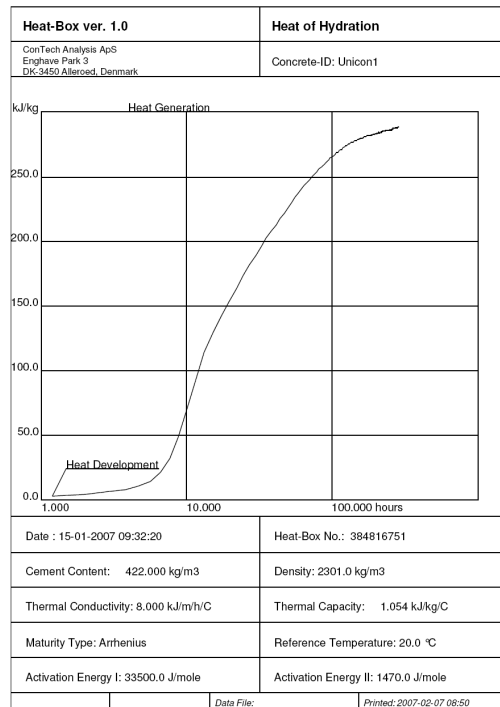
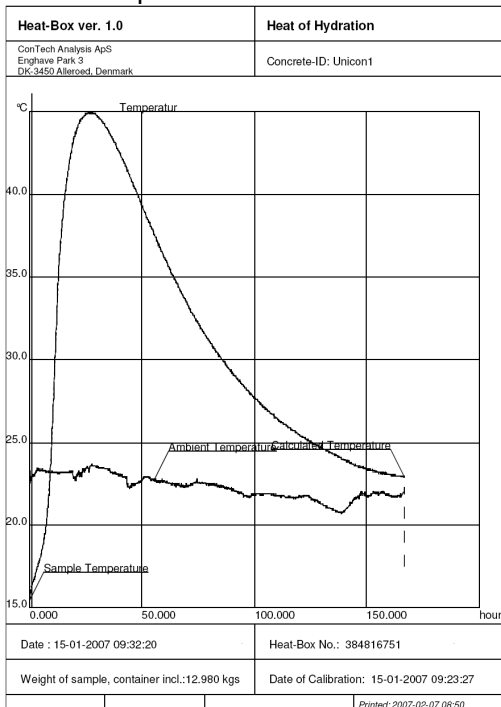
Documentation

The Development of the Heat of Hydration can be expressed as a function of Arrhenius- or Nurse-Saul maturity. The function is saved as a text-file which directly can be used as input for simulations in relation to planning of construction methods. The Heat of Hydration and the basic records of measured temperatures are also available as printed output.

Screen dump:



Printed output:



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