

ABSTRACT

A method for calibration of fire resistance test furnaces has been developed.

The main objectives of the calibration test are to ensure that

- uniformity of heating over the exposed surface of the test specimen, and
- a stipulated level of heating exposure are obtained.

Measuring elements consisting of two steel plates 290 mm by 290 mm with ceramic fibre board insulation inbetween are mounted in a supporting concrete wall. The temperature of the plates are measured yielding indications of the furnace heating impact and the ambient conditions, respectively.

A calibration test is intended to be performed on a calibration specimen assembly consisting of five such measuring elements. The temperature (and pressure) conditions are controlled in accordance with ISO 834.

The performance of the furnace is obtained by comparing the temperature histories of the measuring elements with a temperature reference curve which represents the calculated temperature of a measuring element exposed to "ideal ISO 834 conditions".

In order to develop and get experience of the measuring element a series of furnace tests has been performed in a small furnace.

Calibration tests according to the proposed method have then been performed both on an oil-fired vertical furnace at the Swedish National Testing Institute and on a gas-fired vertical furnace at DANTEST in Denmark.

The report describes the proposed calibration method and the calibration equipment. Results of the tests performed are reported.