

related test method	<b>EN ISO 9239-1: 2002 Reaction to fire tests for building products – Determination of the burning behaviour using a radiant heat source.</b>
subject	<b>Revised procedure for setting up apparatus according to §7.1.3 to take account of fluctuations in measured heat flux</b>
reference of original query	TC1 N238rev1 Helpdesk 2003-01

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**Problem**

How to overcome fluctuation of the measured heat flux on readings taken at 30 seconds (according to §7.1.3 – calibration procedure).

Any single reading taken at 30 seconds as specified, if the recording device fluctuations are greater than the permitted tolerance, ( $\pm 0.2$ ), may be outside the required limits but the actual heat flux may be correct. The operator is required, without reason, to wait a further 10 minutes before re-measuring the heat flux output.

Any solution to this problem requires the text of §7.1.3 be modified.

**Recommendation**

The Standard requires measurement of the radiant flux level at the 410 mm point....after 30 s. There are two possible interpretations of the statement "*after 30 s*":

- Read one single value exactly at 30 s [without any time tolerance]
- Take an average value over a 30 s period

It is proposed that laboratories take an average value over a 30 s period, with a measuring interval of at least 5 seconds. The acceptable average measured value shall be  $5,1 \pm 0,2$  kW/m<sup>2</sup>.

**Reason**

1. Waiting for about 30 seconds allows stabilisation of the heat flux meter.



2. When measuring one single value exactly after 30s it is very likely that, due to measurement fluctuations, this value might be outside the tolerance of  $5,1 \pm 0,2 \text{ kW/m}^2$ . Or, on the other hand when measuring one single value exactly after 30s and it fits to the required value of  $5,1 \pm 0,2 \text{ kW/m}^2$  there is no guarantee that before and after this time the heat flux was as required by the standard.
3. Therefore, an average value taken over a 30 second period will give more confidence that the required gas/air flow is adjusted correctly and will also reduce the possibility that, due to measurement fluctuations, the check has to be repeated after 10 minutes.

### **Procedure**

When setting up according to EN ISO 9239-1 §7.1.3 laboratories shall follow the following revised text:

- Clause 7.1.3 Measure the heat flux level at the 410 mm point with the total heat flux meter. Insert the heat flux meter in the opening so that its' detecting surface is between 2 mm to 3 mm above and parallel to the plane of the dummy specimen. *Allow the reading to stabilize over a 30s period. Read its output over a subsequent 30s period, with a measuring interval of not more than 5s. If the averaged level is  $(5,1 \pm 0,2 \text{ kW/m}^2)$  start the flux profile determination. If it is not, make the necessary adjustments to the gas/air flows to the panel, waiting at least 10 min before a new average reading of the heat flux is taken".*