

## Draft guidance note

# How the manufacturer can achieve and maintain the declared thermal resistance and thermal conductivity.

## Reference

TC88 product standards EN 13162 through EN 13171 and EN 13172 evaluation of conformity.

## Initial CE marking for each product/product group per production unit (line)

### Number of measurements

For each product group at least 10 measurements shall be used for the calculation of  $\lambda_{90/90}$  and/or  $R_{90/90}$ . Four of these may be the ITT measurements performed by the notified laboratory. However, the manufacturer can also choose only to use measurements from the FPC. All the measurements from the FPC shall be included. All the measurements used to calculate  $\lambda_{90/90}$  may not be older than 12 months. For new products the ten thermal conductivity test results shall be carried out spread over a minimum period of ten days.

NOTE 1 Product group is used here as an expression for one product or a product group as defined in EN 13172 clause 3 and 4.

NOTE 2 One measurement is the same as one test result for thermal conductivity.

### How to perform the calculation of the declared values

Calculation of  $\lambda_{90/90}$  is described in annex A of EN 13162 through 13171 (and in addition annex C for EN 13164, EN 13165, EN 13166 and EN 13169).

The lower limit for lambda  $\lambda_D$  is found by rounding up  $\lambda_{90/90}$  to the nearest 0,001 W/(m\*K). The results of the four ITT measurements from the notified laboratory shall be equal to or smaller than  $\lambda_D$ .

Examples of calculation including rounding rules can be found in annex D of EN 13162, EN 13171 and annex C of EN 13170.

NOTE The declared value shall fulfil two requirements, that is be better than or equal to the  $\lambda_{90/90}$  and all four ITT measurements made by a notified laboratory shall be better than or equal to the declared value.

## Continuous surveillance of the declared values for each production unit (line)

Thermal conductivity measurements shall be carried out at regular intervals. At least once every 3 months the declared values shall be recalculated based upon the measurements of the latest 12 consecutive months. All the measurements from the FPC shall be included. For the first year the ITT measurement performed by the notified laboratory may be included. Measurements (test results) more than 12 months old shall be taken out from the 90/90 calculation.

Only if less than 10 measurements are available from the FPC and the ITT during the latest 12 months, the time span may be extended until 10 measurements are included in the calculation.

The time span may be extended to a maximum of 3 years, but never longer than that in order to include the 10 latest measurements in the 90/90 calculation.

It is required that the running recalculated  $\lambda_{90/90}$  shall be better than or equal to the originally declared values. If the product fails in meeting this corrective actions shall be taken.

If the recalculated values improve so much that a better declaration may be possible, this new and better declaration may only be used if all the four original ITT measurements performed by the notified laboratory are at least as good as the new proposed declaration. If this is not the case, a new ITT shall be performed by a notified laboratory, confirming the new and better declaration before the declaration and labelling can be changed to the better value.

### **Requirements to the manufacturer's test equipment**

Tests shall be performed in accordance with EN 12667 or EN 12939 for thick products following the requirements of the product standards clause 4.2.1 and 5.3.2 as well as EN 13172 clause 5.3.2.

EN 12667 and 12939 refers back to ISO 8301 and 8302 for HFM and GHP equipment and EN 1946 standards for evaluation of equipment. All technical requirements to the equipment including maintenance and calibration shall be fulfilled, but a certification/accreditation of the manufacturer's laboratory is not required. That is a technical documentation for the equipment shall be available. Part of the calibration shall be to ensure consistency with the test results of the notified body (see note <sup>a</sup> of table 1 in EN 13172)

NOTE For notified laboratories the accreditation requirements in EN 1946 are recommended in all EEA countries. Also a calibration against the European calibration level is requested by NB-SG19.

2001-09-26 rev 2001-11-13/Erik Rasmussen