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Testing by the Guarded Hot Plate Method

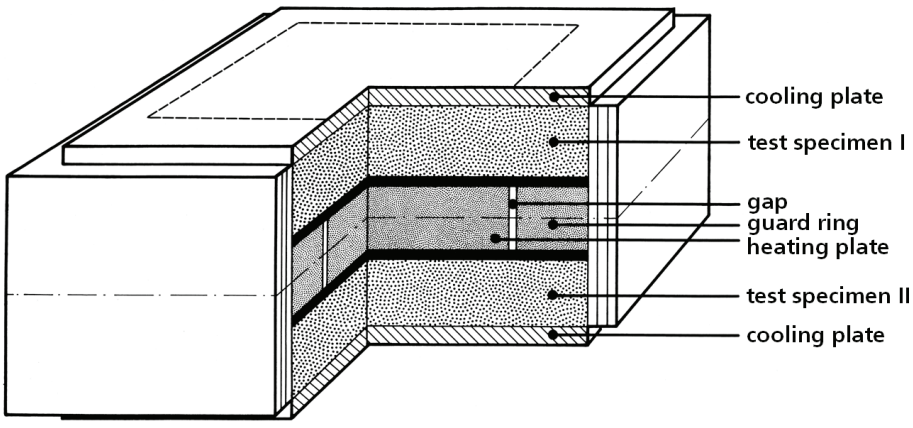
Thermal conductivity λ
Thermal resistance R and
Thermal transmittance U

The measuring tools allow the determination of the thermal conductivity and the thermal resistance of homogenous plates and inhomogeneous test specimens, for plane and plate-shaped samples. Examples: porous, fibrous or granular materials, components laminated in vertical and horizontal direction to the heat flow, profile plates, glazing elements, sections of building bricks, loose-fill products.

Testing

The test specimens are installed between heating and cooling plates. A constant heat flux flows through the test specimens in the stationary temperature state. The thermal conductivity is determined by the heat flow, the mean temperature difference between the sample surfaces and the dimensions of the samples.

Tests can be conducted at mean temperatures between -160 °C and +250 °C, and, if required, in vacuum or under protective gas atmosphere. Normally the specimens are arranged horizontally, in our pivoted apparatuses measuring in vertical position is also possible.



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Test facility

Measurements can be conducted according to the following guidelines:

DIN EN 12664	Determination of the thermal resistance of dry and wet products with mid-grade and low thermal resistance
DIN EN 12667	Determination of the thermal resistance of products with a high and mid-grade thermal resistance
DIN EN 674	Glass in building - Determination of the thermal transmittance (U-value)
DIN 52612	Determination of the thermal conductivity

The guarded hot plate apparatuses according to the single and double hot-plate method have measuring surfaces of 500 mm x 500 mm, 150 mm x 150 mm, 120 mm x 120 mm or 100 mm x 100 mm.

Dimensions of the test specimens:

1 or 2 samples, each 500 mm x 500 mm to 900 mm x 900 mm,
thickness of samples from 10 mm to 300 mm

2 samples, each 240 mm x 240 mm,
thickness of samples from 5 mm to 42 mm

1 or 2 samples, each 150 mm x 150 mm to 300 x 300 mm,
thickness of samples from 5 mm to 70 mm

2 samples, each 100 mm x 100 mm to 300 x 300 mm,
thickness of samples from 10 mm to 40 mm

The thermal conductivity of the samples should be lower than 2 W/(m·K). The samples are dried to mass stability or are conditioned in the climate chamber before testing depending on the kind of the material.

Competences

The test laboratory is recognized by the Deutsches Institut für Bautechnik (DIBt) as a testing facility under applicable building regulations LBO/BRL No. BWU-10 and as a Notified Body No. 1004 to the terms of the Regulation of Construction Products (EU-BauPVO). It has been granted flexible accreditation under DIN EN ISO/IEC 17025 by the Deutsche Akkreditierungsstelle GmbH (DAkkS) under accreditation No. D-PL-11140-11-04.