

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 homogeneous plates and inhomogeneous test specimens, if the samples are plane and plate-shaped. 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.

Testing

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

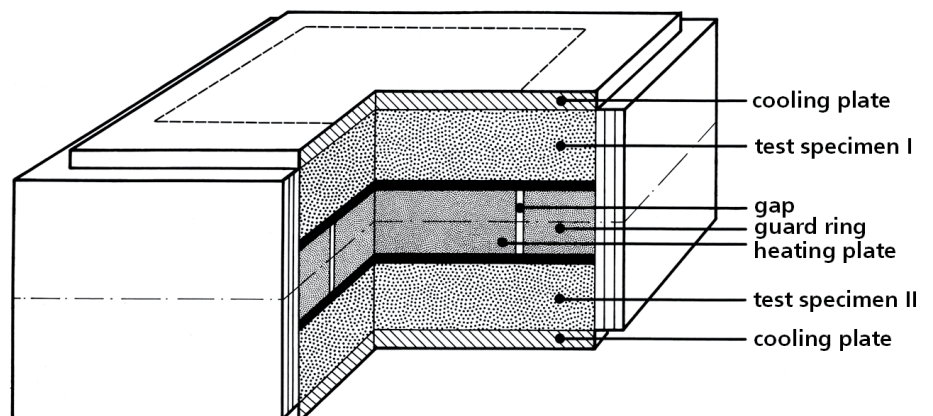
Tests can be conducted at various mean temperatures and in vertical and horizontal position. Normal mean temperatures in the building trade range between 0 °C and 50 °C, but different boundary conditions for specific investigations are also possible.

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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 standard guarded hot plate apparatus according to the single and double hot-plate method have a measuring surface of 500 mm x 500 mm. Another apparatus with a measuring surface of 120 mm x 120 mm is also available.

Standard measurements allow the following dimensions of the test specimens:

| | |
|----------------|------------------------------------------------------------------------------------------------------|
| Standard tools | 2 samples, each 500 mm x 500 mm and 8 samples, each 650 mm x 150 mm |
| or | 2 samples, each 800 mm x 800 mm (e. g. glazing elements) thickness of samples from 5 mm to 115 mm |
| or | 2 samples, each 240 mm x 240 mm thickness of samples from 5 mm to 42 mm |

The thermal conductivity of the samples should be lower than 2 W/(mK). The samples are dried to mass stability before testing.