

HFM-25 Heat Flow Meter

Thermal Conductivity Meter for small samples of insulation and construction materials.

ASTM C518, ISO 8301, JIS A1412,
EN 12667, and EN 12664

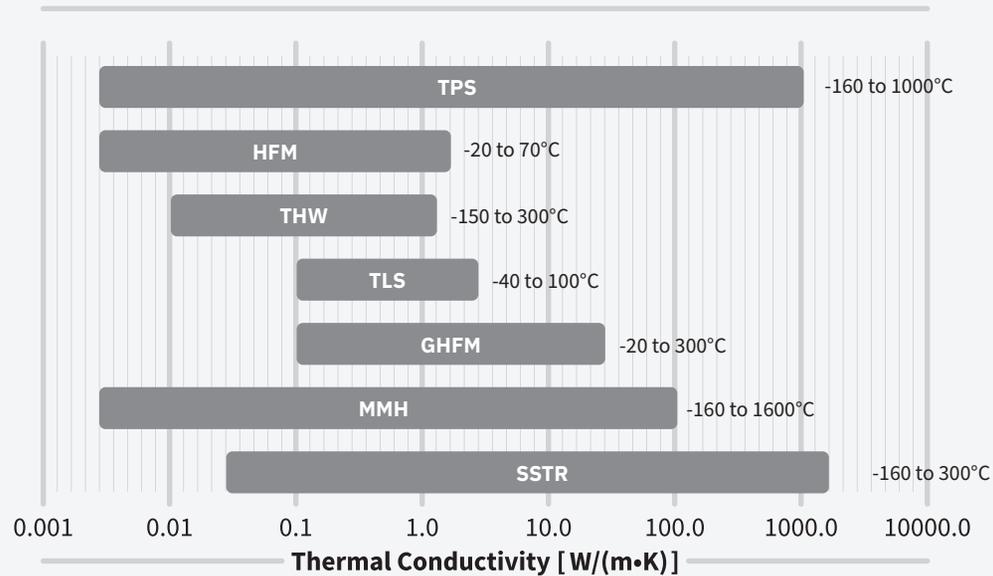


NIST 1450d
Fibrous Glass
Board



Aerogel
Blanket





THERMAL CONDUCTIVITY:

- HFM-100** (Heat Flow Meter)
- THW-L1** (Transient Hot Wire)
- GHFM-01** (Guarded Heat Flow Meter)
- MMH-1600** (Monotonic Heating)
- SSTR-F** (Steady State Thermoreflectance)



- TLS-100** (Transient Line Source)
- THW-L2** (Transient Hot Wire)
- TPS-EFF** (Transient Plane Source)
- GHFM-02** (Guarded Heat Flow Meter)
- MP-2** (Measurement Platform)
- HFM-25** (Heat Flow Meter)

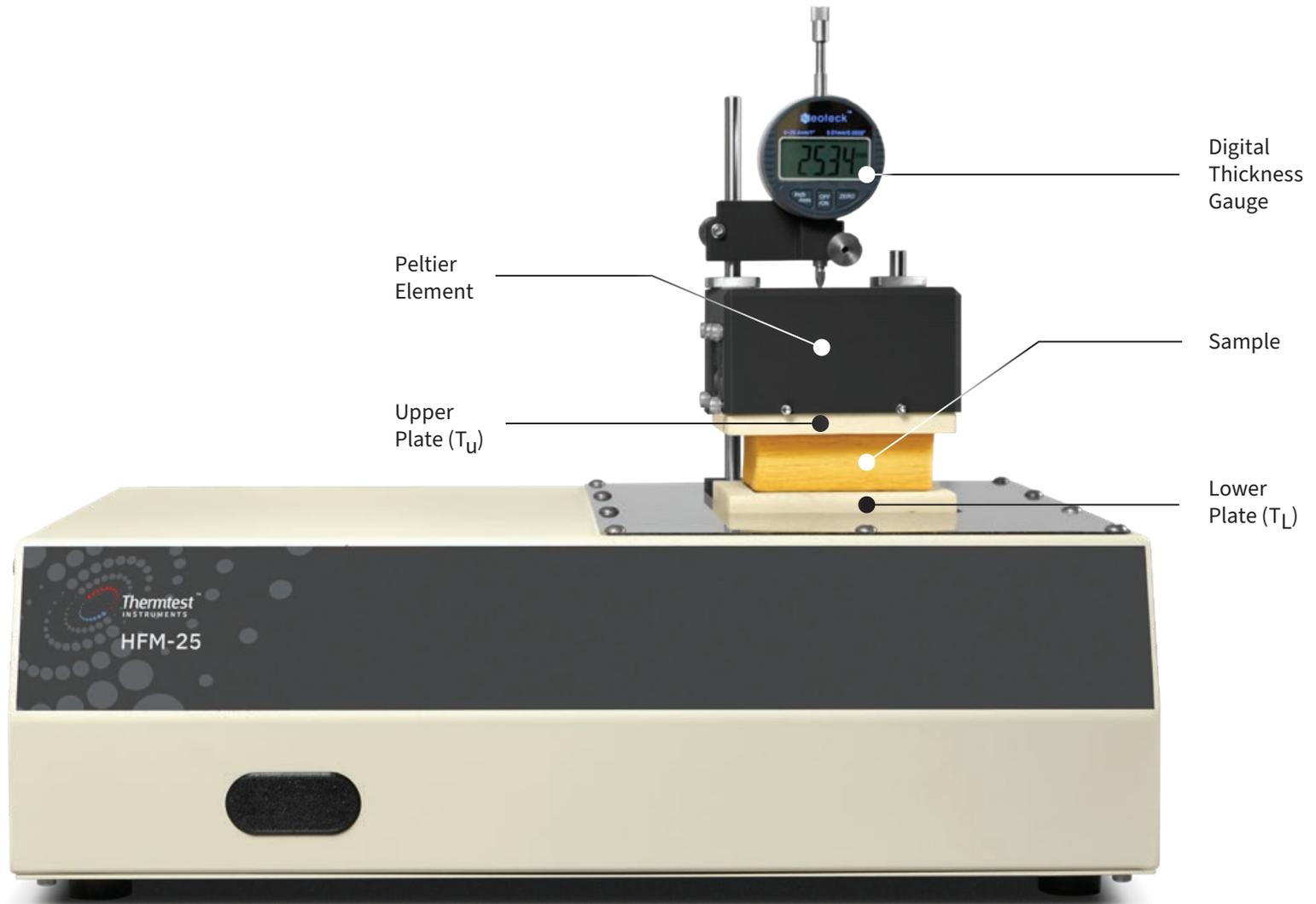
Thermtest has been advancing the measurement of thermal conductivity, thermal diffusivity, and specific heat since 2005. With more than 2000 satisfied customers worldwide, our unique combination of advanced thermal conductivity instrumentation for the laboratory, portable meters for the field, and accessories enables us to provide ideal solutions to fit any material testing application and budget.



25 Series **Heat Flow Meter**

The Heat Flow Meter (HFM) 25 for the measurement of thermal resistance and thermal conductivity of small samples of insulation and construction materials. Offering the testing power of a full-size heat flow meter, optimized for small insulation samples and budget.

HFM-25 Features



Featured Heat Flow Meter Capabilities

The economic HFM-25 was designed to meet the growing need for steady-state testing of small samples of insulation for true thermal resistance and thermal conductivity.

Designed with simplicity in mind, a sample is positioned between the two heating - cooling plates. Plate contact is controlled manually, with variable pressure applied with use of standard weights. Thickness is conveniently reported with included digital gauge. Testing on compressible samples is possible with included shims.

Ambient room temperature is automatically detected, users can choose from 5, 10, 15 and 20C delta ranges. One heat flux sensor is integrated into each plate, and is used to monitor heat flux (Q/A), generated due to the difference in temperature (DeltaT) between the top and bottom plate at regular intervals, until steady-state heat flux is observed. The composite heat flux is then used to measure thermal resistance (R) and calculate thermal conductivity (symbol) according to Fourier's Law.

$$\lambda = \frac{Q}{A} \frac{L}{\Delta T}$$

UNITS
W/m•K or BTU/(hr•ft•°F)

$$R = \frac{1}{\lambda} L$$

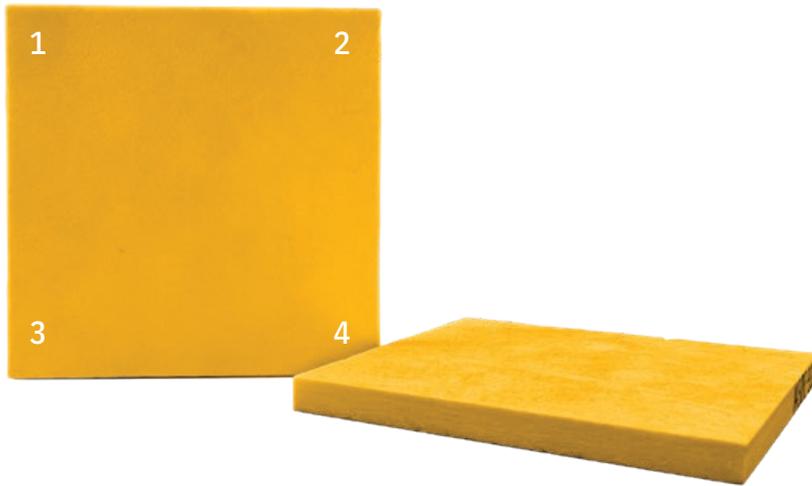
UNITS
m²•K/W or hr•ft²•°F/BTU

- **Insulation samples as small as 40 x 40 x 2 mm and thickness up to 25.4 mm**
- **Large samples can also be loaded for multiple location testing**
- **Follows international standards: *ASTM C518, ISO 8301, JIS A1412, EN 12667, and EN 12664**

Thermal Conductivity	0.01 to 0.3 W/m•K
Directions	Through-Thickness
Accuracy	3%
Reproducibility	1%
Temperature	Delta 5°C, 10°C, 15°C and 20°C at ambient temperature
Type of Sensors	Flux Sensors (x2) with surface thermocouples
Minimum Sample Size	50 x 50 x 2 mm
Maximum Sample Thickness	25.4 mm
Maximum Sample (LxW)	Unlimited
Standard	*ASTM C518, ISO 8301, JIS A1412, EN 12667, and EN 12664

* applies for materials below 0.1 W/mK

HFM-25 Applications



Location Testing for Homogeneity

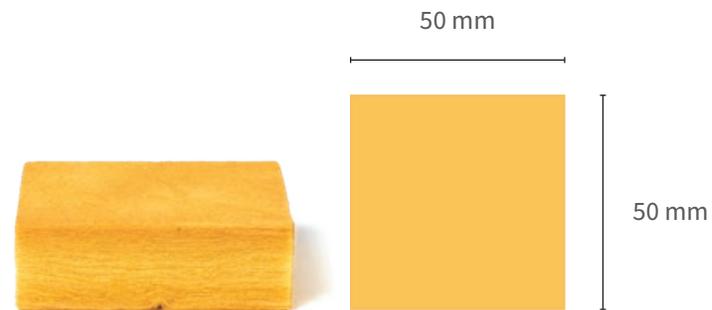
The homogeneity of NIST 1450d high-density fibrous glass board was measured with the HFM-25. Designed to test small samples or locations of 25 mm x 25 mm. The open concept sample clamping allows testing of large samples.

The four corners of the board were measured to analyze the homogeneity of sample. The % RSD from location to location was less than 1%, confirming the homogeneity.



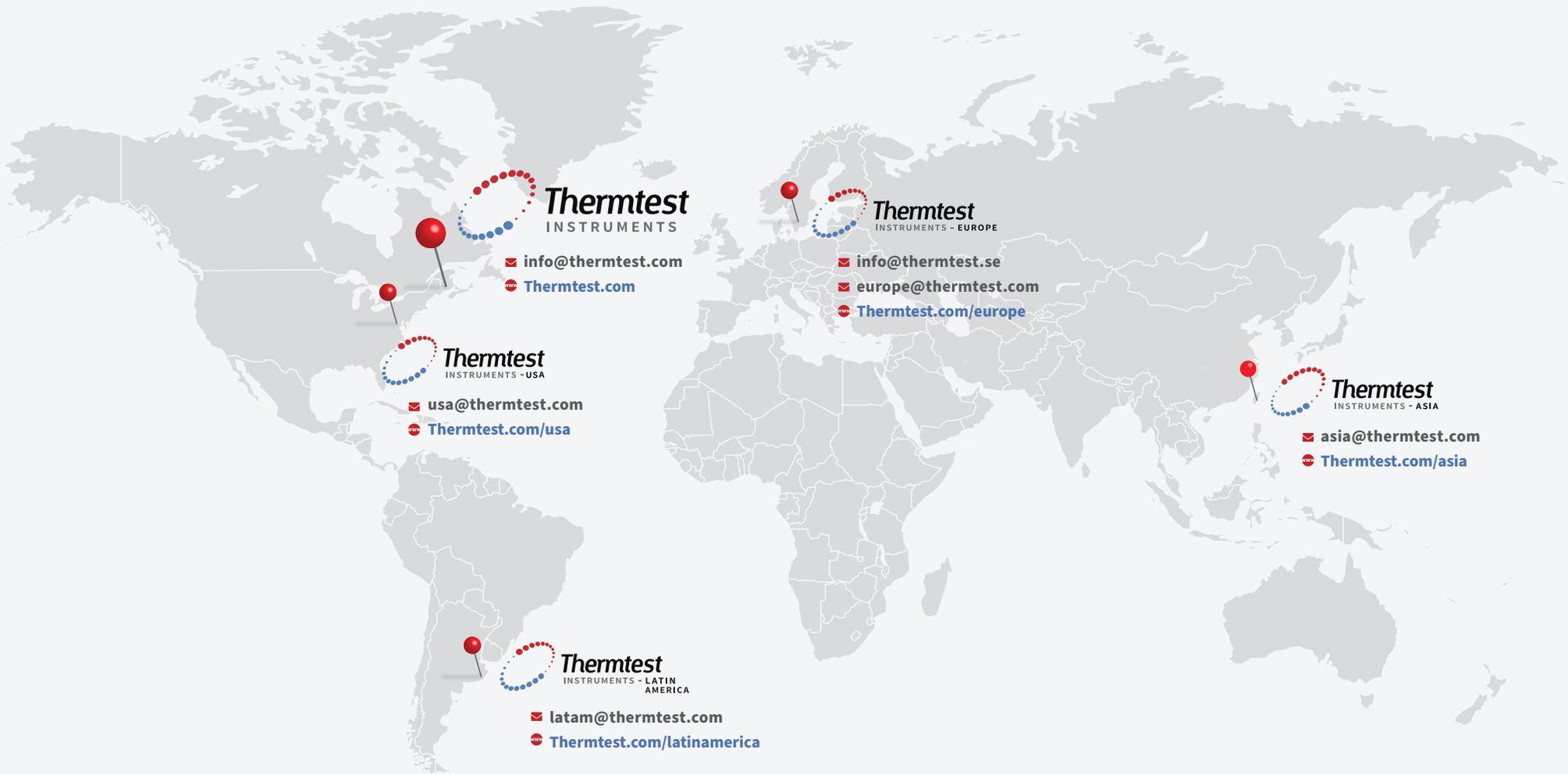
Aerogel Blanket

Aerogel blanket sample (50 x 50 x 9.58 mm) was selected to test by the HFM-25. Thermal conductivity of 0.014 W/m•K was measured at 23°C, which is within 3% of the manufacturer's specification (measured by GHP - ASTM C177).



NIST SRM 1450d

A sample of NIST SRM 1450d was measured for thermal conductivity for accuracy. The certified thermal conductivity for the NIST piece at 25°C is 0.0329 W/m•K. The measured thermal conductivity was 0.0330 W/m•K, which is within 1% of the certified value.



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