Technical Specifications

NETZSCH

HFM 446 *Lambda* Series	
Standards	ASTM C518, ASTM C1784*, ISO 8301, JIS A1412, DIN EN 12667, DIN EN 12664*
Type	Stand-alone, with integrated printer
Air-tight system	Sample compartment with possibility to introduce purge gas
Motorized plate	Yes
Thermal conductivity range	▪ *Small*: 0.007 to 2 W/(m·K)** ▪ *Medium*: 0.002 to 2 W/(m·K)** ▪ *Large*: 0.001 to 0.5 W/(m·K) Lambda small and medium: 2.0 W/(m·K) achievable with optional instrumentation kit, recommended for hard materials and those with higher thermal conductivity Performance data: ▪ Accuracy: ± 1% to 2% ▪ Repeatability: 0.5% ▪ Reproducibility: ± 0.5% → All performance data is verified with NIST SRM 1450 D (thickness 2.5 cm)
Plate temperature range	-20°C to 90°C, optional for the HFM 446 *Medium*: -30° to 90°C
Transducer metering	▪ *Small*: 102 mm x 102 mm ▪ *Medium*: 102 mm x 102 mm ▪ *Large*: 254 mm x 254 mm
Chiller system	External; constant temperature setpoint over plate temperature range
Plate temperature control	Peltier system
Plate motion	Operator-actuated plate opening for fast sample change, quick return to setpoint
Plate thermocouples	Three thermocouples on each plate, type K (two extra thermocouples with instrumentation kit)
Thermocouple resolution	± 0.01°C
Number of setpoints	Up to 10
Specimen size	▪ *Small*: 203 mm x 203 mm ▪ M*edium*: 305 mm x 305 mm ▪ *Large*: 611 mm x 611 mm
Specimen thickness (max.)	▪ *Small*: 51 mm ▪ *Medium*: 105 mm ▪ *Large*: 200 mm
Variable load/ contact force	▪ *Small*: 0 to 854 N (21 kPa on 203 x 203 mm^2) ▪ *Medium*: 0 to 1930 N (21 kPa on 305 x 305 mm^2) ▪ *Large*: 0 to 1900 N (5 kPA on 611 x 611 mm^2) Precise load control and possibility to vary density of compressible materials; contact pressure calculated by software based on load sensor signal
Thickness determination	▪ Four-corner thickness determination via inclinometer ▪ Compliance to non-parallel specimen surfaces
Software features	▪ *SmartMode* (incl. *AutoCalibration*, report generation, data export, wizards, user methods, predefined instrument parameters, user-defined parameters, C_p determination, etc. ▪ Storage and restoration of calibration and measurement files ▪ Plot of plate/mean temperatures and thermal conductivity values ▪ Monitoring of heat flux transducer signal

* not HFM 446 *Large*
** *Please note: In the very low thermal conductivity range, precision of Lambda (λ) values can be restricted.*