

QUICKLINE™ -10 THERMAL CONDUCTIVITY METER



- Economical and easy to use
- Ambient temperature operation
- ASTM E1530 Guarded Heat Flow Meter Method
- Manual or computerized operation

This low cost, single temperature test instrument is used for quick determination of thermal conductivity of solid materials. Because of its simple operation, small sample size, and short cycle time, the QuickLine™-10 is ideally suited for quality control and screening of materials. Metals, ceramics, polymers, composites, glass, and rubber can be tested accurately. Thin samples like paper products and plastic films can also be tested. A manual and a computerized model is available.

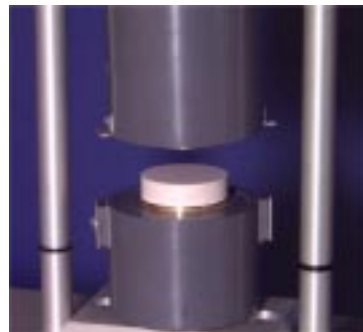
QUICKLINE™ -10 TEST METHOD

A test sample is held under a compressive load between two polished metal surfaces. The upper surface is temperature controlled. The lower surface is part of a calibrated heat flux transducer, which is attached to a liquid cooled heat sink. An axial temperature gradient is established through the stack as heat flows from the upper surface through the test sample to the heat sink.

After reaching thermal equilibrium, the temperature difference across the sample is measured along with the output from the heat flux transducer. These values and the sample thickness are then used to calculate thermal conductivity. The temperature drop through the sample is determined from temperature sensors in the metal surfaces on either side of the sample. The QuickLine™-10 is factory calibrated using samples of known thermal resistance spanning the range of the instrument. Calibration reference sets are available. The contact resistance is kept small by applying a reproducible, pneumatic load to the test stack.

The QuickLine™-10 test method is in accordance with specification **ASTM E1530** for measuring thermal conductivity. The manual unit is supplied with a utility software program for convenient data analysis using a PC. The user simply enters data from the QuickLine™-10 digital display via the computer keyboard and the thermal conductivity is automatically computed. If the measured thermal resistance value falls outside the range of the instrument, the program suggests testing a different sample thickness for obtaining more accurate test results. If a PC is not available, data analysis can also be carried out manually following instructions from the user's manual.

The new internally computerized QuickLine™-10(C) has the best of both worlds, the rapid testing of a manual device and the ease of operation of a fully computerized system, without the need for an external PC. Once a sample is loaded and a few keystrokes are performed, the thermal conductivity value is automatically measured and displayed in a predetermined length of time.



Samples are easy to load. Clamping pressures are adjustable with front panel regulator and pressure gage.



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The QuickLine™-10(C) has been programmed with 8 reference materials covering an approximate thermal conductivity range of 1.0-220 W/mK. Two additional references may be added for user-specific materials. Sample thickness ranges of approximately 2.5" are programmed into the on-board computer based on the customer's typical sample size. Three test duration times (30, 45, or 60 minutes) are available.

Once the QuickLine™-10(C) has been properly installed and all heaters and electronics have been turned on, the first step is to calibrate the unit. This is only necessary when the instrument is shut off and turned back on, when a different test duration time is wanted, or when a material with a vastly different conductivity than the calibrated range is to be tested. By selecting the references that have a conductivity value closest to the material to be tested, adjusting the reference thickness to the proper value and selecting the test duration time, the system will automatically calibrate itself.

Loading an actual sample and adjusting to the sample thickness is all that is necessary to perform an actual test at this point with no additional interaction with the operator necessary until the test is complete. At the end of the test duration time, the calculated thermal conductivity and sample mean temperature will be displayed and will remain on the display until the next test is started.

Ease of use, versatility, reproducibility and accuracy are all traits of the new internally computerized QuickLine™-10(C), making it particularly ideal for those who perform continuous and repetitive tests on batches of the same material.

The instrument is completely self contained and requires no additional instrumentation for the measurement. When city water is used for cooling, the mean sample temperature may vary slightly as the water temperature changes with the seasons. If this variation is undesirable, an optional chiller providing coolant at a fixed temperature can be connected to the unit instead. The QuickLine™-10 is a simple, fast, accurate, and reasonably priced laboratory instrument.

For thermal conductivity testing over a wide temperature range, contact Anter Corporation and inquire about Unitherm™ Model 2022.

QUICKLINE™ -10 SPECIFICATIONS

Model Designation:	QuickLine™-10[X]-[Y]-[Z]
Test Method	ASTM E1530 Guarded Heat Flow Meter Method
Sample Temperature	Near ambient
Computerized Model	Change model designation to 10(C)
Thermal Conductivity Range	0.1 to 100 W/mK (Up to 20 W/mK for manual model)
Thermal Resistance Range	0.0002 to 0.1 m ² K/W
Sample Size Options [X]	
(1)	1" round, (25mm) (manual version only)
(2)	1" square, (25mm) (manual version only)
(3)	2" round, (50mm)
Sample Thickness	Maximum 1.25" (32mm) (2.5" (64mm) for computerized model) depending on thermal resistance. Thin films down to 0.0004" (0.1mm)
Environment	Ambient air
Accuracy	±3% to 8% depending on sample size and conductivity
Reproducibility	±2%
Cycle Time	Approx. 30 minutes per sample
Utilities	City water (0.1gpm)* Compressed air (40-80 psi)
Dimensions	12" (31cm) W x 14" (36cm) D x 24" (61cm) H
Weight	30 lbs (14 kg)
Power Options [Y]	
[A]	115VAC-60Hz-1kVA
[B]	230VAC-50Hz-1kVA
[C]	100VAC-50/60Hz-1kVA
Chiller Options [Z]	
[0]	Not provided
[1]	Provided

*City water not required when optional chiller is provided.

Anter has a complete line of Dilatometers, as well as Thermal Expansion and Thermal Diffusivity instruments and testing services. Unitherm™ is a trademark of Anter Corporation. Specifications and appearance of instruments are subject to change without notice.

Instruments for the New Millennium™