



Advanced Test Equipment Corp.
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TLS-100 | Portable

Thermal conductivity meter for soil, rock, concrete, and polymers. ASTM D5334, IEEE 442.



FEATURES



The TLS-100 is a portable meter used to measure thermal conductivity and thermal resistivity of a variety of samples, including soil, rock, concrete and polymers. Tests are performed with the push of a button and results are displayed instantly. The TLS-100 features sensors that are auto-recognized with corresponding testing parameters automatically loaded.

The TLS-100 follows ASTM D5334 and IEEE 442. The sensor consists of a thin heating wire and temperature sensor sealed in a 150, 100 or 50 mm steel tube. The sensor is completely inserted into the sample to be tested.



SENSORS

Transient Line Source (TLS-100 mm) Sensor



Soil



Solids



Pastes



Powders

Each TLS-100 comes equipped with the standard 100 mm sensor. The sensor is fully inserted into an isothermal sample and a measurement is made with the push of a button.

After 180 seconds, results are displayed for thermal conductivity and thermal resistivity. Saved results can also be exported to a computer via convenient utility software and USB connection.

Transient Line Source (TLS-50 mm) Sensor



Rock



Concrete



Polymers

The 50 mm sensor was designed for testing hard samples like rock and concrete. Drilling the required 4 mm diameter x 50 mm hole in rigid samples is easy with the provided masonry drill bit.

When testing hard samples, a thermal contact grease is used to enhance contact between the sensor and sample.

Transient Line Source (TLS-150 mm) Sensor



Soil



Solids



Pastes



Powders

The optional 150 mm sensor is used for in-lab and in-field testing of soil and soft materials according to IEEE 442. The needle is fully inserted into an isothermal sample and measurement is made with the push of a button.

After 180 seconds, results are displayed for thermal conductivity and thermal resistivity.

SPECIFICATIONS

Method	TLS-100 (included)	TLS-50	TLS-150
Materials	Soil, solids, pastes, and powders	Rock, concrete, and polymers	Soil, solids, pastes, and powders
Thermal conductivity (W/m·K)	0.1 to 5	0.3 to 5	0.1 to 3
Thermal resistivity (mK/W)	0.2 to 10	0.2 to 3.3	0.3 to 10
Volumetric specific heat (MJ/m ³ K)	N/A	N/A	N/A
Smallest sample size (mm)	100 length, 50 diameter	50 length, 50 diameter	150 length, 50 diameter
Largest sample size (mm)	Unlimited	Unlimited	Unlimited
Test time (minutes)	3	3	3
Accuracy (Thermal conductivity)	5%	5%	5%
Repeatability (Thermal conductivity)	2%	2%	2%
Temperature range (°C)	-40 to 100	-40 to 100	-40 to 100
Standard	ASTM D5334-22a, IEEE 442-1981	N/A	ASTM D5334-14, IEEE 442-2017



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