TLS-100

ASTM D5334, ASTM D5930, & IEEE 442-1981

Portable Thermal Conductivity Meter for Measurement of Soil, Rock, Concrete, and Polymers.

THERMTEST PORTABLE

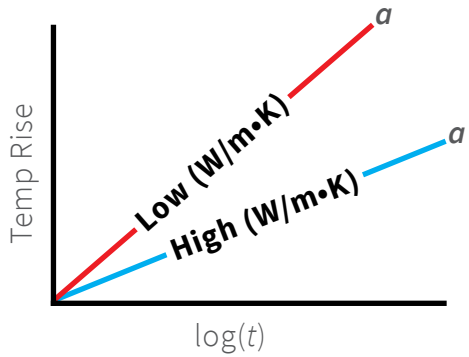
FEATURED **TRANSIENT LINE SOURCE** CAPABILITIES

The TLS-100 is a portable meter used to measure thermal conductivity and thermal resistivity of a variety of samples, including soil, rocks, concrete, polymers, and viscous liquids. Tests can be performed with the push of a button and results are displayed instantly.

The Transient Line Source (TLS) meter follows ASTM D5334. The sensor needle consists of a thin heating wire and temperature sensor sealed in a 100 or 50 mm steel tube. The sensor is completely inserted into the sample to be tested. Heat is delivered to the sample using a constant current source (***q***) and the temperature rise is recorded over a defined period of time. The slope (***a***) from plot of temperature rise versus logarithm of time is used in the calculation of thermal conductivity (***k***). The higher the thermal conductivity of a sample, the lower the slope. For samples of low thermal conductivity, the slope will be higher.

$$k = \frac{q}{4\pi a}$$

k = thermal conductivity (W/m•K)
q = heating power (W/m)
a = slope



- **Follows international standards: ASTM D5334, ASTM D5930, & IEEE 442-1981**
- **Portable, Economical, and Accurate**
- **Easy to use**
- **Standard 100 mm sensor for soft materials**
- **Optional 50 mm sensor for hard materials**

TLS 100 SPECIFICATIONS

Materials	Soil, Rock, Concrete, & Polymers
Measurement Capabilities	Bulk Properties
Thermal Conductivity	0.1 to 5 W/m•K
Thermal Resistivity	0.2 to 10 m•K/W
Measurement Time	3 min. (100 mm) / 5 min. (50 mm)
Reproducibility	Typically better than 2%
Accuracy	Typically better than 5%
Temperature Range	-40 to 100°C
Smallest Sample (100 mm)	50 mm (diameter or square) x 100 mm
Smallest Sample (50 mm)	50 mm (diameter or square) x 50 mm
Largest Sample Size	Unlimited
Standards	ASTM D5334, ASTM D5930, & IEEE 442-1981

PORTABLE. **ECONOMICAL.** ACCURATE.

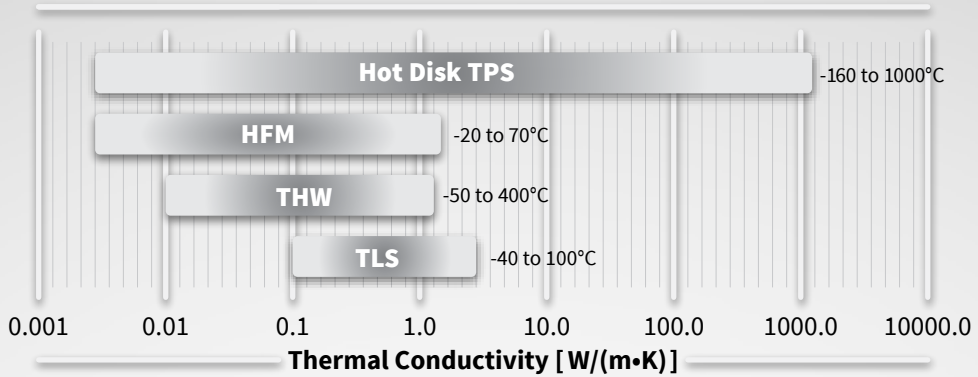
STANDARD 100 MM SENSOR

Each TLS-100 comes equipped with the standard 100 mm sensor for testing of soil, soft materials, viscous liquids and easy to drill materials. The needle 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 Micro-SD card or USB connection.

Soil thermal **Dryout Curves** can be prepared by measuring the thermal conductivity of a sample at different moisture contents, as the sample dries from saturation. The typical drying approach involves heating the soil at an elevated temperature. The sample is removed, weighed, and measured for thermal conductivity at different time intervals, until it is fully dried.

OPTIONAL 50 MM SENSOR

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.



Thermtest has been advancing the measurement of thermal conductivity, thermal diffusivity, and specific heat for more than a decade. With more than 1500 satisfied customers, 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. Our proud commitment to being a leader in thermal conductivity has fueled our success through rigorous development and key partnerships, creating a lineup of industry leading testing solutions for the laboratory, field, and production-line.

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