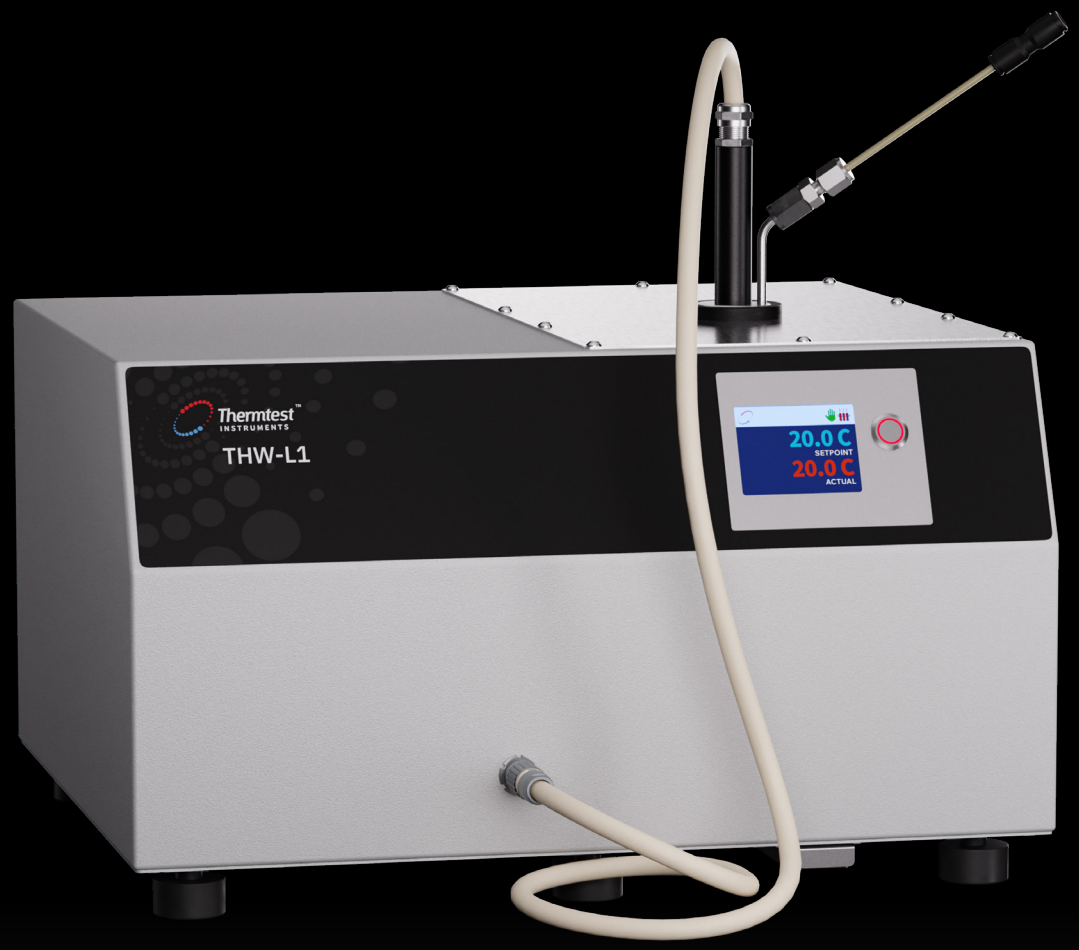
THW-L1 | Focused

Focused instrument for thermal conductivity, thermal diffusivity, and specific heat instrument of liquids and PCMs.

ASTM D7896.



Thermtest™ INSTRUMENTS

Thermtest.com

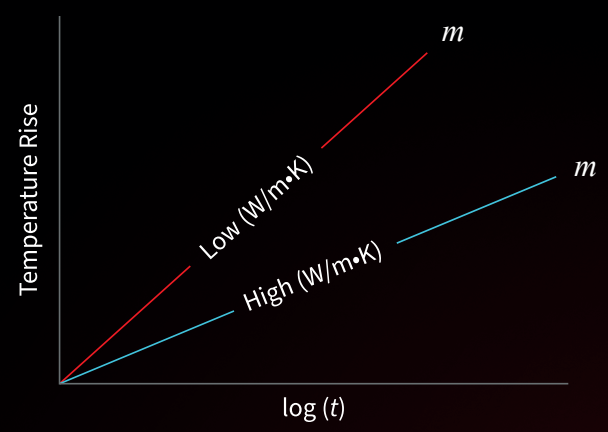
FEATURES

The THW-L1 utilizes a non-stationary measurement approach and rapid test times to limit convective effects for samples with a wide range of viscosities. The THW sensor consists of a thin heating wire (40 mm in length) that is fully inserted into the sample to be tested. The sensor wire is heated using a constant current source (q) and the temperature rise is recorded by monitoring the change in electrical resistance of the wire.

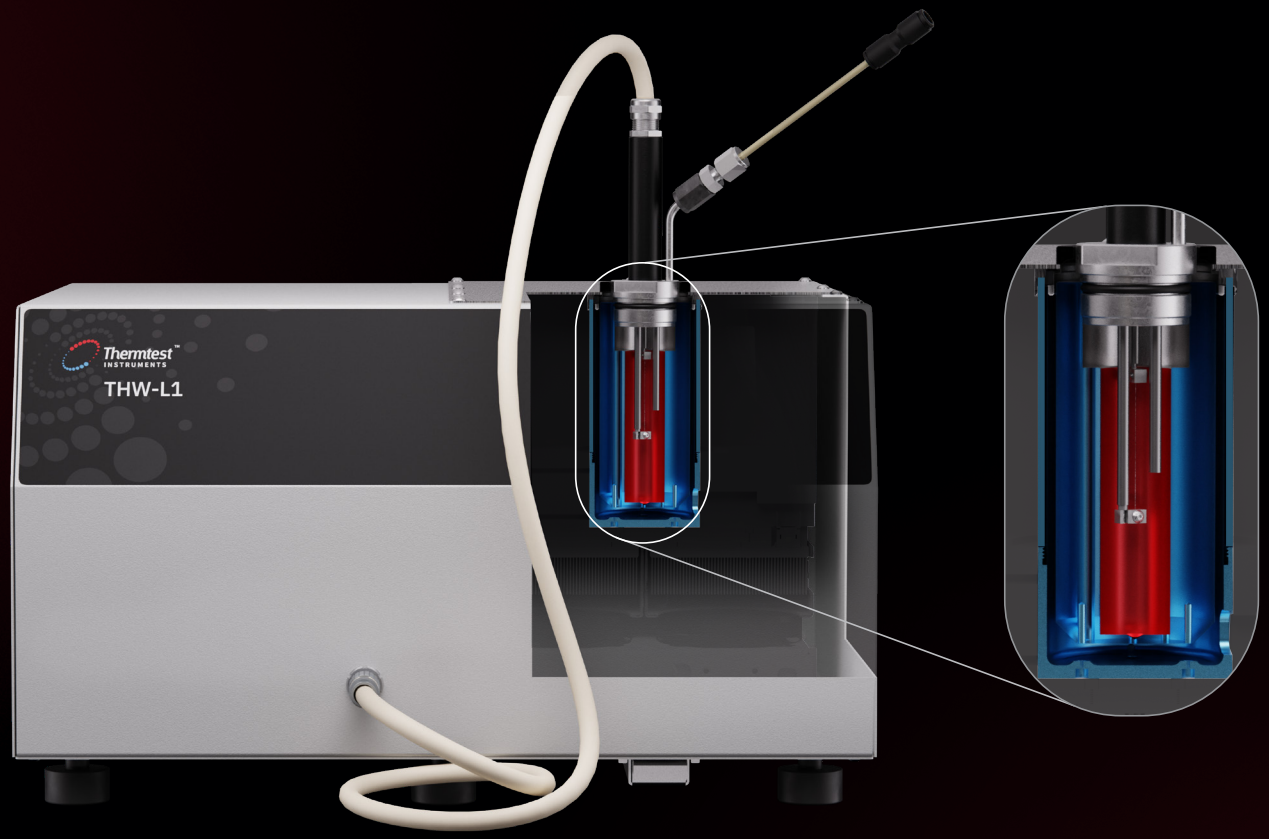
The slope (m) from the plot of temperature rise versus logarithm of time is used in the calculation of thermal conductivity (λ). Liquid samples with a high thermal conductivity will have a lower slope. Liquid samples with a low thermal conductivity will have a higher slope.

$$\lambda = \frac{q}{4\pi m}$$

λ = thermal conductivity (W/m·K)
q = heating power (W/m)
m = slope



INTEGRATED TEMPERATURE PLATFORM



The patented temperature platform (TP) integrated into the THW-L1 enables accurate temperature control of a wide range of temperatures without the need to move the THW sensor between two or more temperature devices. Designed with opposing hot and cold controls to ensure fast, accurate temperature management for optimal performance.

Models:

- THW-L1: 10 to 200 °C
- THW-L1S: -40 to 200 °C
- THW-L1E: -160 | -40 | 0 to 300 °C

SPECIFICATIONS

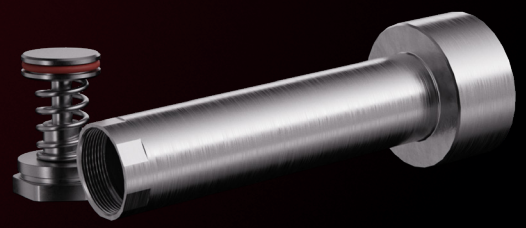
Models	THW-L1	THW-L1S	THW-L1E
Materials	Liquids and PCMs	Liquids and PCMs	Liquids and PCMs
Thermal conductivity (W/m•K)	0.01 to 2	0.01 to 2	0.01 to 2
Additional properites	Thermal diffusivity and specific heat	Thermal diffusivity and specific heat	Thermal diffusivity and specific heat
Viscosity range (cP)	0.001 to 10,000,000	0.001 to 10,000,000	0.001 to 10,000,000
Sample size (mL)	20	20	20
Test time (seconds)	1	1	1
Accuracy (Thermal conductivity)*	2%	2%	2%
Repeatability (Thermal conductivity)*	1%	1%	1%
Temperature range (°C)	10 to 200	-40 to 200	-160 | -40 | 0 to 300
Pressure (bar)	Up to 20	Up to 20	Up to 35
External cooling apparatus required	No	Yes	Yes
Standard	ASTM D7896-19	ASTM D7896-19	ASTM D7896-19

*All performance data is verified with ASTM Type II Water (IAPWS)

SAMPLE CELLS

Paste and PCM Cell

Special phase change materials (PCMs) with easy load access. Unique spring design allows sample expansion and contraction while ensuring sample is in constant contact with THW wire during measurement.

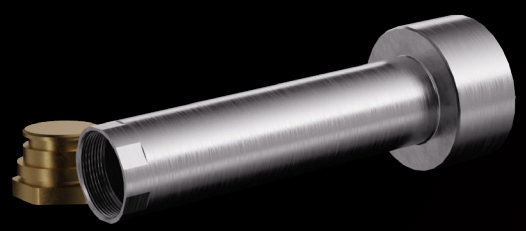


Observation Cell

THW-L1 observation sample cell is used for liquids, powder, and paste testing. The cell has convenient glass ports for observing what is happening with your sample. Typical applications are phase separation, boiling, or particle settling to name a few.

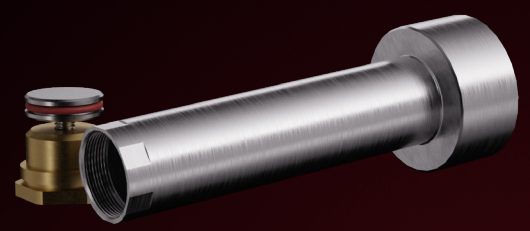
Ambient Density Powder Cell

The THW-L1 ambient density power cell is suitable for basic powder sample testing and ambient pressure.



Variable Density Powder Cell

THW-L1 test cell with screw-type compression system for varying the density of powder samples. Can also be used to ensure powders stay in contact with THW wire.



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