MP-V | Versatile

Absolute thermal conductivity, thermal diffusivity, specific heat and thermal effusivity of solids, liquids, pastes and powders.

ISO 22007-2, ISO 22007-7, GB/T 32064, ASTM D7896, ASTM D5334, IEEE 442, ASTM D5930.

Thermtest™
INSTRUMENTS

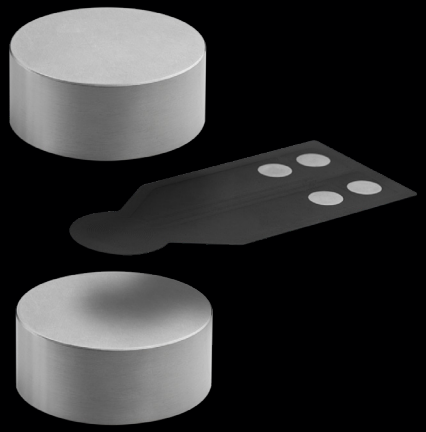
Thermtest.com

ABSOLUTE METHODS

The mid-range MP-V includes two primary test methods for thermal conductivity, thermal diffusivity, specific heat and thermal effusivity. Conforming to international standards, the transient plane source (TPS) and transient hot wire (THW) are designed specifically for their primary applications. As MP-V methods are absolute, the thermophysical results are calculated from the raw-data, with no need for contact agents or calibration.

Transient Plane Source (TPS)

ISO 22007-2, ISO 22007-7 / GB/T 32064



Solids

Pastes

Powders

The TPS (double spiral) sensor is placed between two pieces of the same sample. As the sample acts as a semi-infinite body, thermophysical properties are measured over a range of optional test times (2 to 160 seconds), which are auto-determined by the iTPS algorithm. The range of available sensor diameters allows sample size flexibility. Additional testing modules available include anisotropic, thin-films and specific heat.

Transient Hot Wire (THW)

ASTM D7896

Liquids

The THW sensor is inserted into the liquid sample cell. The small diameter sensor wire and short test time are designed to reduce effects of convection. The THW method is well-published for testing liquids with accurate and reliable results.

OPTIONAL ABSOLUTE METHODS

Modified Transient Plane Source (MTPS)
ISO 22007-7

Solids Pastes Powders

The MTPS sensor follows the same principles of operation as TPS. The sensor is configured for asymmetric (single-sided) testing, ideal when only one piece of sample is available. Included testing modules are bulk, anisotropic, slab and 1-D for full characterization of diverse materials.

Transient Line Source (TLS)
ASTM D5334, IEEE 442, ASTM D5930

Soils Polymers

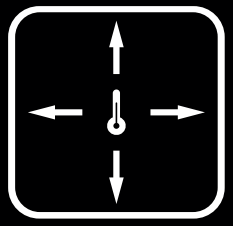
The TLS sensor consists of a thin heating wire and temperature sensor sealed in a steel tube. The sensor is completely inserted into the sample to be tested.

Transient Hot Wire (THW)
ASTM D7896

Liquids PCMs

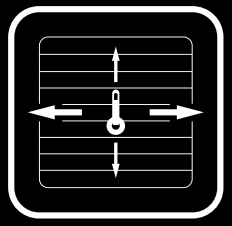
The THW-L sensor is specifically designed for use with temperature and pressure for testing liquids past their boiling points. The test cell can be back pressured (up to 20 bar) to keep liquid in stable state.

TPS MODULES



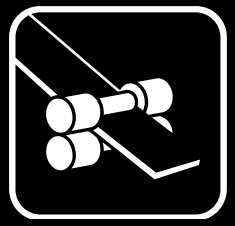
Standard

Bulk thermal conductivity, thermal diffusivity, specific heat and thermal effusivity. Symmetric and asymmetric.



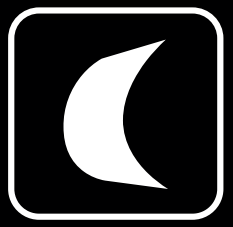
Anisotropic

Anisotropic In-plane and out-of-plane thermal conductivity and thermal diffusivity. Symmetric and asymmetric.



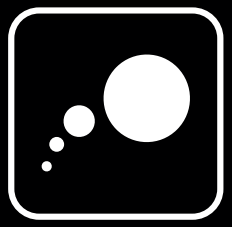
Slab

Isolated in-plane for thermal conductivity, thermal diffusivity and volumetric specific of sheets. Symmetric only.



Thin-film

Thermal conductivity of thin-films and coatings according to ISO 22007-2.



Specific Heat

High accuracy direct measurement of specific heat. Various cell dimensions available for improved accuracy of heterogenous materials.

1-Dimensional*

Isolated out-of-plane for thermal conductivity, thermal diffusivity for elongated shapes, rods and bars. Asymmetric only.

* Modified Transient Plane Source (MTPS) only

SPECIFICATIONS

Method	TPS	THW	MTPS	TLS	THW-L
Materials	Solids, pastes and powders	Liquids	Solids, pastes and powders	Soil and polymers	Liquids and PCMs
Thermal conductivity (W/m·K)	0.01 to 100 / 500	0.01 to 2	0.03 to 100 / 500	0.1 to 8	0.01 to 2
Thermal diffusivity (mm^2/s)	0.01 to 50 / 300	Up to 0.5	0.01 to 50 / 300	N/A	Up to 0.5
Specific heat (J/kg-K)	Up to 5	Up to 5	Up to 5	N/A	Up to 5
Thermal effusivity ($W\sqrt{s}/m^2K$))	20 to 20000 / 40000	N/A	20 to 20000 / 40000	N/A	N/A
Temperature (°C)*	Room temperature or -75 to 300	Room temperature or -50 to 100	-50 to 200	-40 to 100	0 to 100
Accuracy	5%	2%	5%	5%	2%
Repeatability	1 to 2%	1%	2%	2%	1%
Smallest dimension**	10mm x 10mm to unlimited	20 ml	25mm x 25mm to unlimited	50mm to unlimited	20 ml
Sample thickness (mm)**	0.05 to unlimited	N/A	0.1 to unlimited	100 to unlimited	N/A
Standard	ISO 22007-2:2022, ISO 22007-7:2023, GB/T 32064-2015	ASTM D7896-19	ISO 22007-7:2023	ASTM D5334-22a, ASTM D5930-17, IEEE 442-2017	ASTM D7896-19

*For temperature, external control required.

**Based on testing module used.

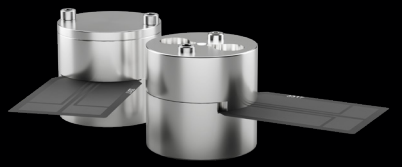
ACCESSORIES

Dry Bath

The optional dry bath allows for automated measurements of thermal conductivity with temperature (-10 to 90 °C or 0 to 100 °C).

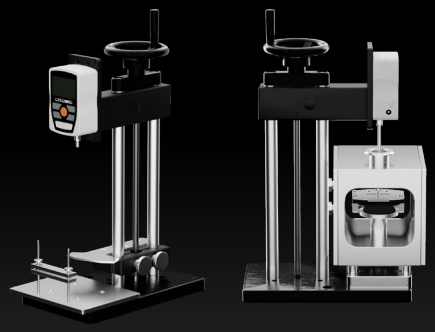
Fan Furnace

- Affordable, versatile, expandable
- Size up to: 75 x 75 x 50 mm
- Up to 300 °C



Testing Cells

- Powder Cell
- Liquid Cell
- Paste Cell
- Polymer Melt Cell



Compression Stand

- For compressible materials
- Force gauge: 10 to 100 N
- Distance gauge
- Room temperature or -40 to 200 °C

TESTIMONIALS

Gelest
A MITSUBISHI CHEMICAL Group Company

TRANSIENT PLANE SOURCE (TPS)

Nano Materials, TIMs, TMM

Thermtest demonstrates a good knowledge and understanding of thermal conductivity testing methods. We selected their TPS for testing of filled elastomers due to its accuracy, ease of use and excellent correlation to steady-state testing methods typical in our industry (ASTM D5470 and ASTM E1530). We have found the quality of the data to be excellent. Staff at Thermtest is always available to answer any questions.

Michael Watson
Senior Scientist

RTI INTERNATIONAL

TRANSIENT PLANE SOURCE (TPS)

Composites, Nano Materials, TIMs, TMM

The MP is easy to use with software that is straightforward. We are very happy that we now have this capability at our disposal.

Daniel Mogollon
Chemist

TESTIMONIALS

idemitsu

TRANSIENT HOT WIRE (THW)

Nano Liquids, Heat Transfer Liquids

THW Method has been accurate for the measurement of our liquids.

Zade von Seeger
Chemist

UNB
EST. 1785
UNIVERSITY OF NEW BRUNSWICK

MODIFIED TRANSIENT PLANE SOURCE (MTPS)

Polymers, composites, Nano Materials, Metals, TIMs, TMM

Thermtest MTPS Sensor is unique in the thermal conductivity measurement space. It is uniquely able to measure bulk and anisotropic absolute thermal conductivity, thermal diffusivity and specific heat of our composites.

Dr. Felipe Chibante
Associate Professor

MEASUREMENT PLATFORM SERIES

Intelligent Thermal Conductivity

MP-1 | Advanced

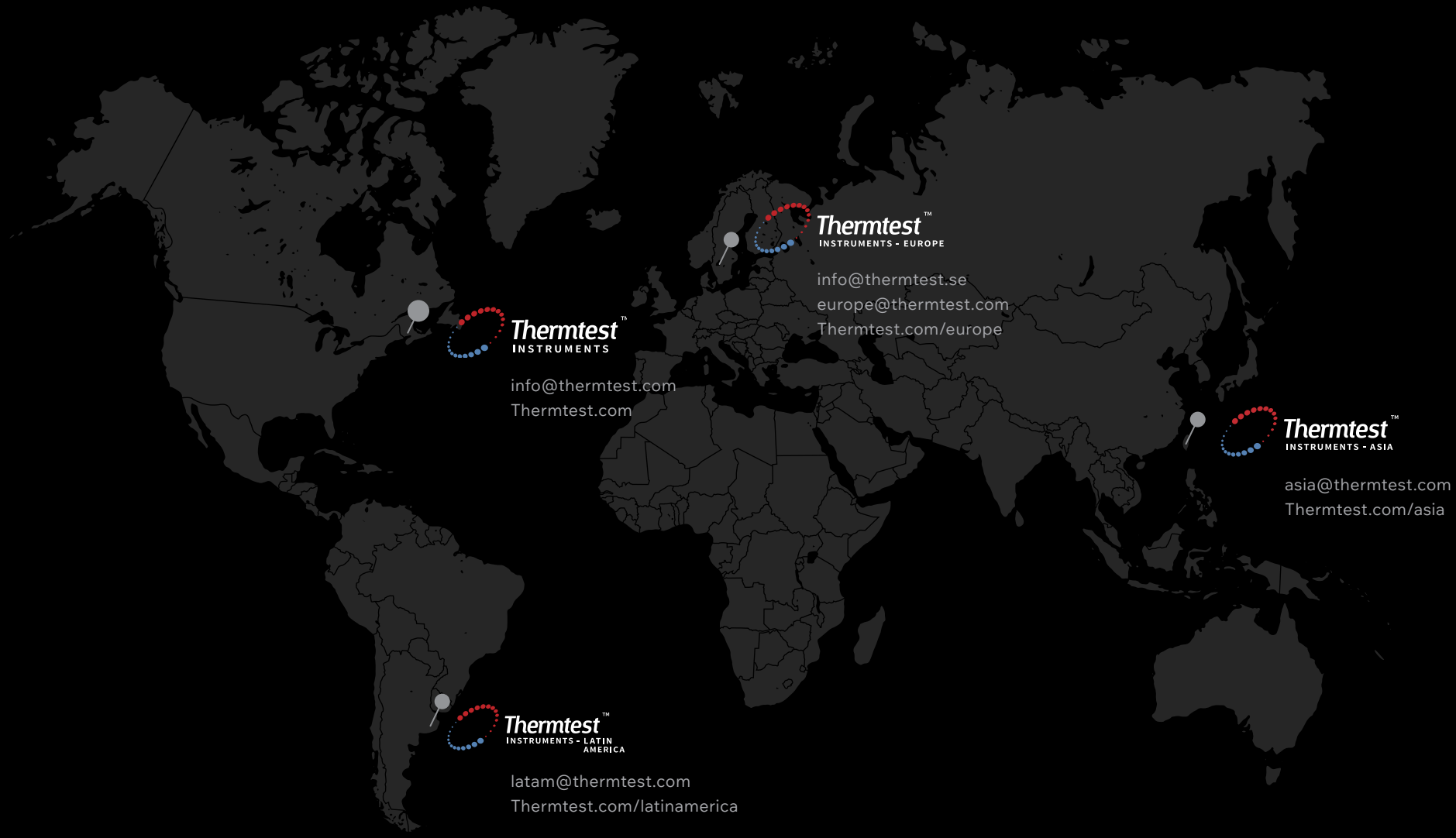
Thermal Conductivity (W/m•K)	0.005 to 2000
Temperature (°C)	-160 to 1000
Versatility	
Expandability (methods + modules)	
Price ($)	

MP-V | Versatile

Thermal Conductivity (W/m•K)	0.01 to 500
Temperature (°C)	-75 to 300
Versatility	
Expandability (methods + modules)	
Price ($)	

MP-2 | Portable

Thermal Conductivity (W/m•K)	0.03 to 5
Temperature (°C)	10 to 40
Versatility	
Expandability (methods + modules)	
Price ($)	



Headquarters

Thermtest Inc.
Fredericton, NB Canada
+1 (506) 458-5350
info@thermtest.com | Thermtest.com