

LFA 427

Furnaces	<ul style="list-style-type: none"> -120°C to 400°C (metal, connection to liquid nitrogen cooling possible) 25°C to 1300°C (Kanthal) or to 1575°C (SiC furnace) or 2000°C/2800°C (graphite furnaces)
Heating rates	0.01 K/min to 50 K/min (furnace-dependent)
Isothermal stability	0.02 K/min
Laser system	<ul style="list-style-type: none"> Nd:Glass; wavelength 1054 nm Variable energy up to 25 J/pulse and pulse width between 0.1 ms and 1.5 ms Patented pulse mapping for finite pulse correction (patent no.: US7038209B2; US20040079886; DE1024241)
Sensors	<ul style="list-style-type: none"> MCT (-120°C to 500°C, recommended), LN₂-cooled, optional LN₂ refill system including 35 liter dewar InSb (RT to 2800°C), optional LN₂ refill system including 35 liter dewar
Measuring range	<ul style="list-style-type: none"> Thermal diffusivity: 0.01 mm²/s to 1000 mm²/s Thermal conductivity: 0.1 W/(m·K) to 2000 W/(m·K)
Accuracy	<ul style="list-style-type: none"> Thermal diffusivity: ± 3% (over the entire temperature range, for most materials) Specific heat capacity: ± 5% (for most materials)
Measurement atmospheres	Inert, oxidizing or vacuum (<2x 10 ⁻⁵ mbar; turbo molecular pump)
Specimen dimensions and shapes	<p>∅: 6 mm, 8 mm, 10 mm, 12.7 mm*, 20 mm; 0.1 mm to 6 mm thickness</p> <p>□: 8 mm x 8 mm, 10 mm x 10 mm; 0.1 mm to 6 mm thickness</p>
Sample holder inserts	Al ₂ O ₃ (max. 1700°C), Graphite (max. 2800°C), Pt, Sapphire, Al
Special sample holder systems	<ul style="list-style-type: none"> Types: liquid organics (incl. low viscosity materials such as water) and "liquid metals"**, fibers, laminates, slags, powders Methods: testing in-plane, mechanical pressure ("pressure sample holder")
Reference materials	Various sets and individual reference materials in different dimensions and shapes
Software including calculation and correction models	Each model can be combined with 4 different baseline corrections (incl. shifted baseline) and w/o pulse correction; model wizard, display of detector signal and model fit, data export; various special and extended models
Display of detector signal and model fit	<ul style="list-style-type: none"> Quality check of the model fit (same plot) Automatic storage of both curves for each shot
Specialty	Glove box version
Power	15 kW, max. power consumption at 2800°C

* 12.7 mm recommended; additional sample holders upon request

** In this context, the term "liquid metals" refers to sample holders that facilitate measurements at temperatures exceeding the melting point of metals.