

OUR CONTRACT TESTING BUSINESS SPECTRUM

Measuring Methods for Your Material

NETZSCH

Proven Excellence.

Method	Recordable Information	Temperature range	Gases	Sample size	Related to Standard (excerpt)
Thermogravimetry (TGA)	Mass changes, decomposition, thermal stability	RT to 2400°C	Inert, oxidizing, reducing, static, dynamic, vacuum	Crucible volume: up to 10 ml	ASTM E914, E1131, E1868 / DIN 51006 / ISO 7111, 11358
Differential Scanning Calorimetry (DSC)	Phase transition temperatures and enthalpies, specific heat capacity	-150 to 1650°C	Inert, oxidizing, static, dynamic	Crucible volume: up to 190 µl	ASTM C351, D3417, D3418, D3895, D4565, E793, E794 / DIN 51004, 51007, 53765, 65467 / DIN EN 728 / ISO 10837, 11357, 11409
High-Pressure DSC (up to 15 MPa, 150 bar)	Phase transition temperatures and enthalpies, specific heat capacity	-50 to 600°C	Inert, reducing, oxidizing, other gases on request	Crucible volume: up to 190 µl	ASTM D5483, D6186, E1782, E1858, E2009
Photo-DSC	Analysis of photo-initiated reactions, influence of UV stabilizers, UV-light curing	-100 to 200°C	Inert, oxidizing, dynamic	Crucible volume: up to 85 µl	
Differential Thermal Analysis (DTA)	Phase transition temperatures	-150 to 2400°C	Inert, oxidizing, reducing, static, dynamic	Crucible volume: up to 900 µl	ASTM C351, D3417, D3418, D3895, D4565, E793, E794 / DIN 51004, 51007 / ISO 10837
Simultaneous Thermal Analysis (STA)	Phase transition temperatures and enthalpies, specific heat capacity, mass changes, thermal stability	-150 to 2400°C	Inert, reducing, oxidizing, static, dynamic, vacuum	DSC pan: 190 µl DTA crucible: 900 µl	ASTM E914, E1131, E1868 / DIN 51006 / ISO 7111, 11358
Evolved Gas Analysis (EGA)	Characterization of gases emitted by means of MS, GC-MS or FT-IR, coupled to a TGA or STA	RT to 2000°C		On request	
Dilatometry (DIL) and Thermomechanical Analysis (TMA)	Dimensional changes, coefficient of expansion, density changes	-180 to 2800°C	Inert, oxidizing, reducing, vacuum	DIL: 25 mm, Ø 6 mm* TMA: 10 mm, Ø 6 mm*	ASTM E228, E831, E1545, E1824 / DIN 51045 / ISO 11359

OUR CONTRACT TESTING BUSINESS SPECTRUM

Measuring Methods for Your Material

NETZSCH

Proven Excellence.

Method	Recordable Information	Temperature range	Gases	Sample size	Related to Standard (excerpt)
Dynamic Mechanical Analysis (DMA)	Visco-elastic behavior	-170 to 800°C	Inert, oxidizing	On request	ASTM D4092, D4065, D4473, D5023, D5024, D5026, D5418, E1640, E1867 / DIN EN 53440 / DIN EN ISO 6721
Heat Flow Meter (HFM) and Guarded Hot Plate (GHP)	Thermal conductivity of insulating materials	-160 to 600°C	GHP: inert, oxidizing or vacuum	HFM standard size: 305 mm x 305 mm* GHP: 300 mm x 300 mm	ASTM C177, C518 / DIN EN 12667, 12939, 13163 / ISO 8301, 8302
Laser/Light Flash Methods (LFA)	Thermal diffusivity and thermal conductivity	-100 to 2000°C	Inert, oxidizing, static and dynamic	Standard size: Ø 12.7 mm*	ASTM E1461 / DIN EN 821
Dielectric Analysis (DEA)	Curing behavior of reactive polymers	RT to 400°C		On request	ASTM E2038, E2039
Seebeck Coefficient (SBA)	Seebeck coefficient, electrical conductivity	-125 to 1100°C	Inert, oxidizing, reducing	Max. Ø 25.4 mm	
Rotational Rheometry	Shear viscosity, yield stress, thixotropy, viscoelastic properties, curing, tribology	-40 to 450°C	Ambient, inert	On request	DIN 51810 / ASTM D6373 / AASHTO T315 / EN 13302 / FGSV 720 and many more
Capillary Rheometry	Shear and extensional viscosity, die swell, melt strength, pvt	5 to 500°C	Ambient, inert	On request	ASTM D3835, D5099 / ISO 17744, 11443
Accelerating Rate Calorimetry (ARC/MMC)	Temperature and pressure in combination with heat-wait-search (HWS), thermal runaway, worst-case scenario testing	RT to 500°C	Nitrogen/air static up to 150 bar	up to 130 mL	ASTM E1981
Kinetics (model-free and model-based methods)	Comprehensive package for kinetic evaluation, prediction and process optimization. Available for different methods incl. DSC, TGA, STA, DIL, ARC, etc.	Depending on process	Depending on process	Depending on method	