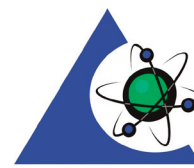




Commercial Testing Lab

Proteus® Protect
Meeting the Requirements
of 21 CFR Part 11



PJLA
Testing
Accreditation #74626

Our Expertise

The NETZSCH Thermal Analysis Applications Laboratory in Burlington, MA is a proficient partner for nearly all thermal analysis issues. Our involvement in your projects begins with painstaking sample preparation and continues through meticulous examination and interpretation of the measurement results. Our diverse methods and over 30 different state-of-the-art measuring stations will provide ready solutions for all your special questions. Customers of our laboratory services stem from a wide range of large companies in industries such as chemical, automotive, electronics, air/space travel, racing, and polymer and ceramics

Our Business Spectrum

Within the realm of thermal analysis and the measurement of thermophysical properties, we offer you a comprehensive line of the most diverse analysis techniques for the characterization of materials (solids, powders, and liquids). Measurements can be carried out on samples of the most varied of geometries and configurations. Consult with the experts in our applications labs to choose the best-suited measuring method for your specific needs. You will be working with scientists (physicists, chemists, materials scientists) well-versed in the latest methods, instrumentation and analysis techniques. Confidentiality is of course guaranteed.

Our Product Line

- DSC** Differential Scanning Calorimetry
- HP DSC** High-Pressure DSC
- TGA** Thermogravimetric Analysis
- DTA** Differential Thermal Analysis
- STA** Simultaneous Thermal Analysis (TGA and DSC)
- QMS** Quadrupole Mass Spectrometry
- GC-MS** Gas Chromatography-Mass Spectrometry
- FT-IR** Fourier-Transform Infrared Spectroscopy
- DIL** Dilatometry
- TMA** Thermomechanical Analysis
- DMA** Dynamic Mechanical Analysis
- Rheology** Rotational and Capillary
- DEA** Dielectric Analysis
- LFA** Laser/Light Flash Diffusivity
- TCA** Guarded Heat Flow Meter
- GHP** Guarded Hot Plate
- HFM** Heat Flow Meter
- SBA** Seebeck Analysis
- ARC®** Accelerating Rate Calorimetry
- IBC** Isothermal Battery Calorimetry
- MMC** Multiple Mode Calorimetry
- LOI** Lowest Oxygen Index

ARC® is a registered trademark of NETZSCH

Techniques Available in Burlington Laboratory

*Accredited to ISO/IEC 17025:2017

Method (ASTM where applicable)	Measurements	Temperature Range
DSC *ASTM E1269, E793, E794, D3895	Transformation temperatures and energetics, specific heat capacity, oxidative-induction time	-180°C to 1650°C
HP DSC ASTM E1782	Transformation temperatures and energetics, determination of vapor pressure and evaporation heat, pressure up to 150 bar	-150°C to 600°C
TGA *ASTM E1131	Mass change, decomposition temperatures, thermal stability	RT to 1600°C
STA (TGA-DSC, TGA-DTA)	Transformation temperatures and energetics, mass change, decomposition temperatures	-150°C to 1600°C
TGA/STA w/ evolved gas analysis by MS/FT-IR/GC-MS (capillary coupling)	Transformation temperatures and energetics, mass change, decomposition temperatures, characterization of gases emitted	RT to 1550°C
DIL *ASTM E228	Thermal expansion, CTE, phase transition temperatures, sintering process	-180°C to 1650°C
TMA *ASTM E831, E1545	Thermal expansion, CTE, phase transition temperatures, sintering process, softening, visco-elastic properties	-150°C to 1550°C
DMA *ASTM D5023	Visco-elastic properties, elastic modulus, loss modulus (including high force DMA)	-170°C to 600°C
Rotational Rheology *ASTM D2196	Viscosity curves, flow curves, yield stress, visco-elastic modulus, creep & recovery, thermal stability	-40 to 350°C
Capillary Rheology *ASTM D3835	Melt viscosity, Cogswell extensional viscosity, Mooney wall slip assessment, flow instability, die swell ratio, material degradation/ thermal stability, specific volume of polymer melts, ultra-high shear rates viscosity measurements of fluids	RT to 500°C
DEA ASTM E2039	Curing behavior of reactive polymers, dielectric loss factor, ion viscosity, ion conductivity	RT to 200°C
LFA *ASTM E1461	Specific heat, thermal diffusivity, calculated thermal conductivity, thermal resistance	-125°C to 2000°C
TCA *ASTM E1530	Thermal conductivity, thermal resistance	-50°C to 200°C
GHP *ASTM C177	Thermal conductivity, thermal resistance (R-value)	-165°C to 600°C
HFM *ASTM C518	Thermal conductivity, thermal resistance (R-value)	-20°C to 80°C
SBA	Seebeck coefficient and electrical conductivity for thermoelectric materials	RT to 1100°C
ARC® ASTM E1981	Thermal and pressure hazard evaluation, exotherm onset, Self-Accelerating Decomposition Temperature (SADT), Time-to-Maximum Rate (TMR), Emergency Relief Design (ERS) Data	RT to 500°C
MMC	Scanning, isothermal and adiabatic calorimetry on gram-sized samples, pressure measurement	RT to 500°C
IBC	Isothermal battery calorimetry, heat management, efficiency, performance and in-situ cycling	-30°C to 60°C
ARC®/MMC Battery Calorimetry	Isothermal and adiabatic testing, thermal runaway, safety, heat management and in-situ cycling	RT to 500°C
LOI ASTM D2863	Limited oxygen index, flammability of plastics, burning time, burning distance	Ambient

Laboratory Service Summary

- Request a quote through our website contract testing link.
- We handle projects of all sizes from one sample to many samples.
- Includes a complete written report describing the instrument, measurement conditions, results, plots, interpretation where applicable and raw data in electronic format.

Contact

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