

2 Instruments in 1

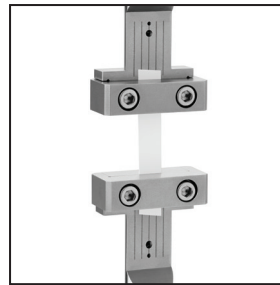
DYNAMIC BENDING, COMPRESSION, AND TENSION ON THE ARES-G2

With its unique Force Rebalance Transducer (FRT), the ARES-G2 rheometer is the only rotational rheometer capable of performing linear Dynamic Mechanical Analysis (DMA) on solids in bending, tension and compression. Axial sample deformation is applied by driving the high sensitivity FRT in controlled strain sinusoidal oscillation, unlocking all new capabilities for solids testing.

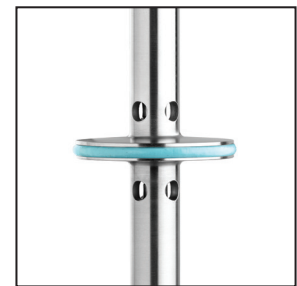
Features and Benefits

- Exclusive to the ARES-G2 rheometer
- Wide range of geometries:
 - 3-Point Bending
 - Film/Fiber Tension
 - Single and Dual Cantilever (Clamped Bending)
 - Parallel Plates Compression
- Axial Force Control tracks material stiffness and automatically adapts static load
- AutoStrain adjusts applied strain to changing sample stiffness
- Responsive FCO temperature control: -150 °C to 600 °C
- Sample visualization with FCO camera

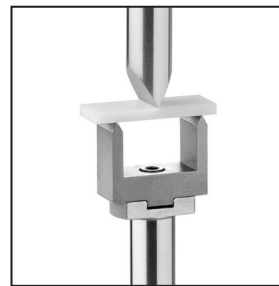
Film / Fiber Tension



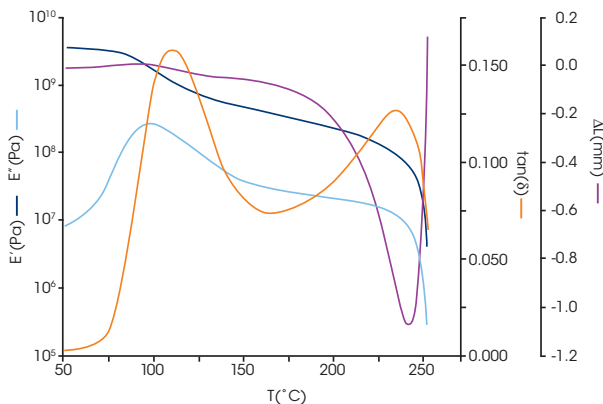
Compression



3-Point Bending



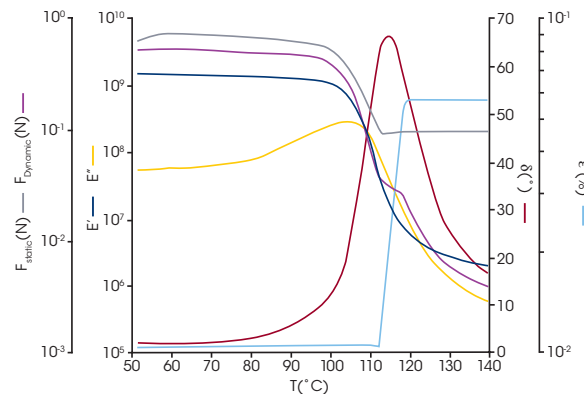
Polyester Film Tension



Polyester Film Tension

An oscillation temperature ramp was performed on a 50 μm thick PET film using the tension geometry over a temperature range of 50 to 250 °C. Two major transitions are observed: a glass transition about 109 °C, and melting at 234 °C. The material exhibits a significant shrinkage, as shown in the change of length signal ΔL , above the glass transition.

ABS 3-Point Bending



ABS 3-Point Bending

The benefits of both Axial Force Control and AutoStrain are highlighted in this oscillation temperature on an ABS bar tested in 3-point bend geometry. The Static force is always maintained larger than the oscillation force to keep continuous contact with the sample. The static force is also adjusted throughout the test to track large changes in the material's modulus drop during the glass transition, preventing sample bowing. AutoStrain is used to adjust the input strain, maintaining an optimal oscillation force under all conditions.