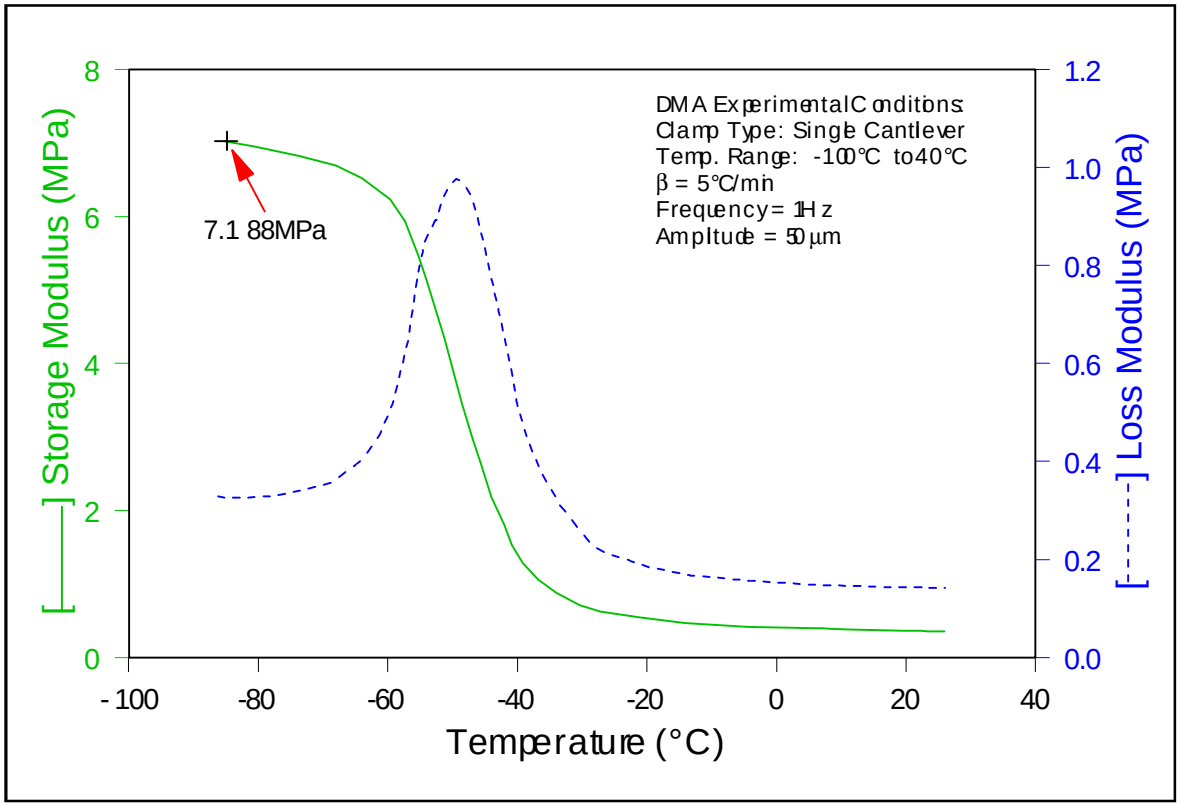
TA Instruments

Thermal Analysis & Rheology

THERMAL SOLUTIONS

Subambient Characterization of Soft Foam Materials by DMA



DMA measures the modulus (stiffness) and damping (energy dissipation) properties of materials as the materials are deformed under a periodic stress. These measurements provide quantitative and qualitative information about the performance of materials. DMA is particularly useful for evaluating polymeric materials which exhibit time, frequency, and temperature effects on mechanical properties because of their viscoelastic nature.

Traditionally, soft materials have been characterized in shear and compression modes of deformation. However, these modes are not appropriate for accurate modulus determination below the glass transition. The above scan shows glass transition data on a soft foam material at subambient temperatures using the bending mode of deformation (single cantilever). This plot demonstrates the DMA 2980's excellent strain and stress control provided by the optical encoder and the non-contact drive motor. Without superior stress and strain control at the low end, it would be impossible to characterize materials that exhibit such low stiffness (modulus @ -88°C = 7.2MPa, modulus @ 25°C = 0.098MPa). The DMA 2980 applies a very low force and precisely tracks changes in the sample modulus to obtain accurate mechanical data through the glass transition region.

Internet: http://www.tainst.com
e-mail: info@tainst.com

© 1998 TA Instruments, Inc.

TA Instruments
Thermal Analysis & Rheology
A Subsidiary of Waters Corporation