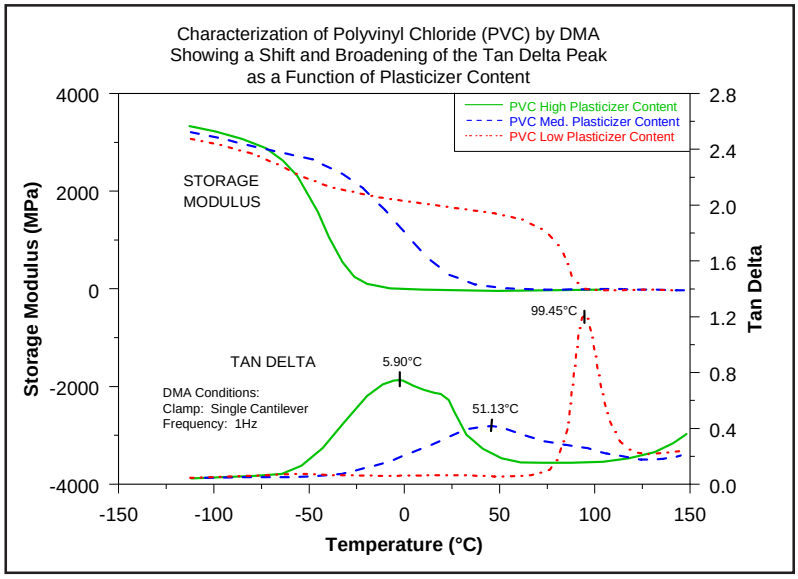
TA Instruments

Thermal Analysis & Rheology

THERMAL SOLUTIONS
Characterization of Polyvinyl Chloride (PVC) by DMA



DMA measures the modulus (stiffness) and damping (energy dissipation) properties of materials as they 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.

Plasticizers are generally low molecular weight organic additives which are used to soften rigid polymers. This overlay shows the results of DMA experiments run on three individual samples of PVC with differing amounts of plasticizer content (from low to high plasticizer). As shown in the tan delta curve, the addition of plasticizer has the effect of lowering the glass transition (Tg) temperature and broadening the tan delta peak. A similar trend is shown in the modulus curve. In addition, the effect of plasticizer on the glassy modulus can be seen. Higher levels of plasticizer result in a higher modulus below the Tg. This example clearly shows the utility of DMA to evaluate the effect of additives on polymer mechanical properties.

For additional details, see Thermal Solutions TS-41 for MDSC® information on these samples.

For more information or to place an order, contact:
TA Instruments, Inc., 109 Lukens Drive, New Castle, DE 19720, Telephone: (302) 427-4000, Fax: (302) 427-4001
TA Instruments S.A.R.L., Paris, France, Telephone: 33-01-30489460, Fax: 33-01-30489451
TA Instruments N.V./S.A., Gent, Belgium, Telephone: 32-9-220-79-89, Fax: 32-9-220-83-21
TA Instruments GmbH, Alzenau, Germany, Telephone: 49-6023-30044, Fax: 49-6023-30823
TA Instruments, Ltd., Leatherhead, England, Telephone: 44-1-372-360363, Fax: 44-1-372-360135
TA Instruments Japan K.K., Tokyo, Japan, Telephone: 813-3450-0981, Fax: 813-3450-1322

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

TA Instruments
Thermal Analysis & Rheology
A Subsidiary of Waters Corporation