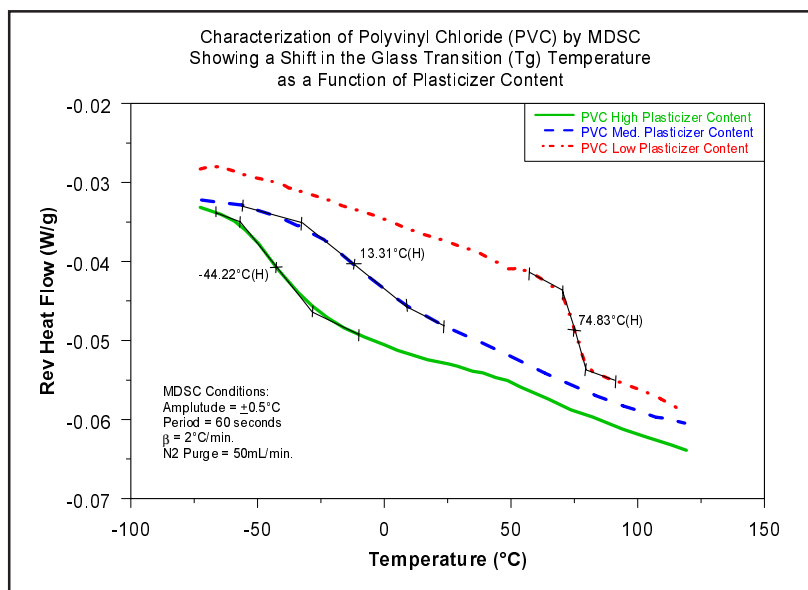


THERMAL SOLUTIONS

Characterization of Polyvinyl Chloride (PVC) by MDSC[®]



DSC measures the temperature and heat flow associated with transitions in materials as a function of temperature or time in a controlled atmosphere. MDSC is an enhancement to conventional DSC whereby the total heat flow is separated into reversing (heat capacity) and non-reversing (kinetic) components. The reversing signal contains heat capacity events such as the glass transition and melting. The non-reversing signal contains kinetic events such as crystallization, cure, and decomposition. Baseline effects are separated out into the non-reversing signal thereby improving detection of the T_g in the reversing heat flow signal.

This thermal curve shows the results of MDSC experiments run on three individual samples of PVC with differing amounts of plasticizer content (from low to high plasticizer). While the total heat flow signal is difficult to interpret, the reversing heat flow signal clearly resolves differences in the sample T_g as a function of plasticizer loading. The glass transition (T_g) shifts to lower temperatures as the amount of plasticizer content in the sample is increased. This example demonstrates the sensitivity of MDSC for determining the glass transition temperature of polymeric materials with differing amounts of additives.

For additional details, see Thermal Solutions TS-40 for DMA information on these samples.

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