



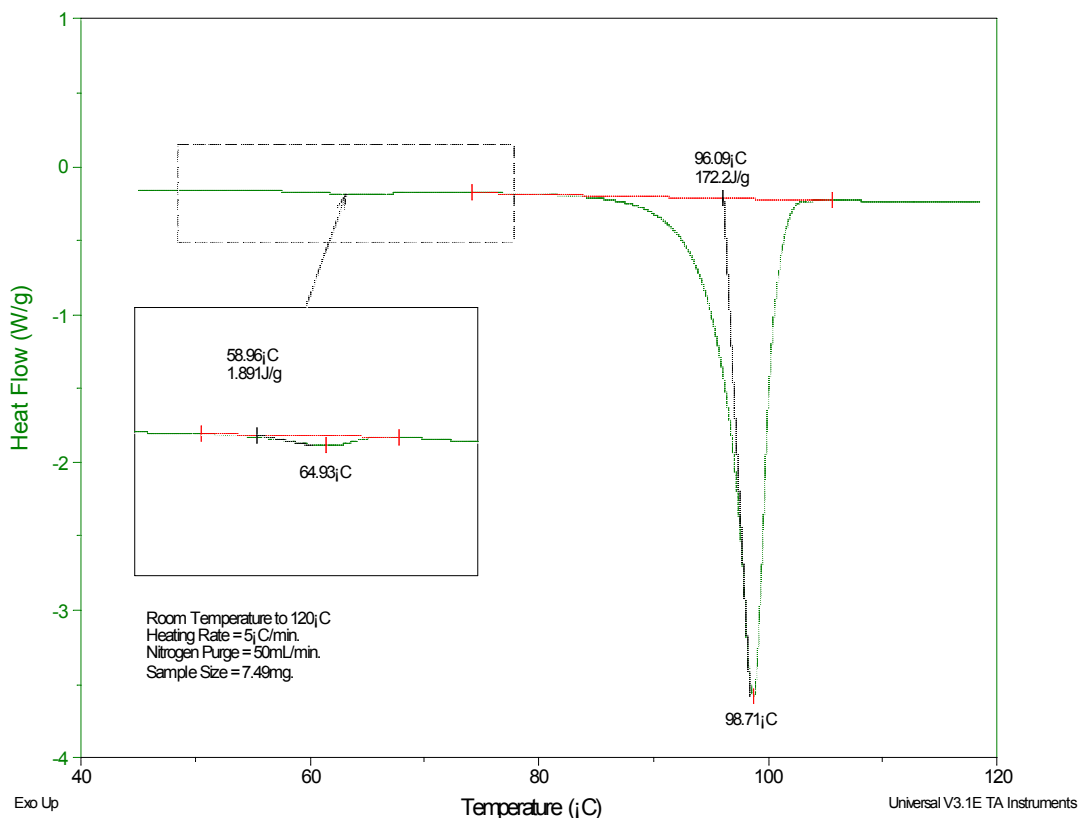
THERMAL SOLUTIONS

Identification of Different Crystalline forms of Sorbitol by DSC

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DSC measures the temperatures and heat flows associated with transitions in materials as a function of temperature or time in a controlled atmosphere. This technique provides quantitative and qualitative information about physical and chemical changes that involve endothermic or exothermic processes, or changes in heat capacity as the material is heated.



The DSC is an ideal technique for measuring the melting points of crystalline materials and can readily detect multiple crystalline forms when present. The above plot shows a DSC scan run on a crystalline form of sorbitol. This material was run from room temperature to 120 °C at a heating rate of 5 °C/min in a nitrogen purge. Sorbitol can appear in different crystalline forms depending upon the manufacturing process.

Examining the resulting melting peaks can identify the different forms of this material. This particular example shows a large melting peak at 96 °C, which indicates the gamma form of this material (this melt should occur in the region of 95 to 105 °C). The additional small melting peak at 57 °C is an indication of the presence of the alpha-form that melts at a lower temperature.

DSC is a valuable thermal analysis technique that can be used to accurately characterize the crystalline properties of pharmaceutical or foodstuff materials exhibiting both large and small melting endotherms. Another valuable aspect of the test is the simplicity and speed of the test. This experiment with sample preparation took less than thirty minutes. This application demonstrates the ability to provide a quick test for the researcher or, it can easily be set up in a Quality Control environment with an autosampler and automatic analysis software for quick and accurate results to control a process.

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KEYWORDS

differential scanning calorimetry, food and food products, melting, pharmaceuticals

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