

A NUMERICAL METHOD TO CONSTRUCT THE SAMPLE BASE LINE IN DSC CURVES

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An equation is derived for the heat capacity of the system, which corresponds to the sample background. Thereby, it is assumed that during the thermal event the system is a two-component mixture out of the initial substance and the final product. According to this model, the variation in heat capacity of the system is due both to the increase in the partial concentration of the product at the expense of the initial substance and to the physical change in the specific heats of the two components, resulting from the temperature increase. The final result of the derivation is an integral equation which can be solved by means of a numerical technique. The algorithm used is presented in detail. The model is general, and can be applied to diverse exothermic or endothermic processes. The melting of a semi-crystalline polymer and the cure process of a thermoset are given as demonstrative examples. The method improves the reliability and the reproducibility of the data. For details, see Reference 1.

REFERENCE

- 1 U. Bandara, A systematic solution to the problem of sample background correction in DSC curves, *Journal of Thermal Analysis*, Vol. 31 (1986) pp. 1036-1071.