

Determination of Solidus and Liquidus Alloys Temperatures

Using a Differential Scanning Calorimeter

The solidus temperature is defined as the temperature at which the first deviation from the base line appears (Figure 1). The deviation signals that a phase change is taking place. Thus the solidus temperature has been reached. The tangent line, drawn in by the differential scanning calorimeter (DSC), is an approximation of the solidus temperature.

The liquidus temperature is defined as the temperature at which the graph returns to the baseline. The end of the deviation signifies the end of the phase change,

i.e., the alloy has reached the liquid phase and the liquidus temperature. The tolerance on the values from the chart is $\pm 3^{\circ}\text{C}$.

The appearance of the DSC output is severely affected by the scan rate. Scan rate is the speed at which the temperature is increased during the scan. A slower scan yields a "tighter" curve (i.e., it is more accurate because the sample has time to reach equilibrium).

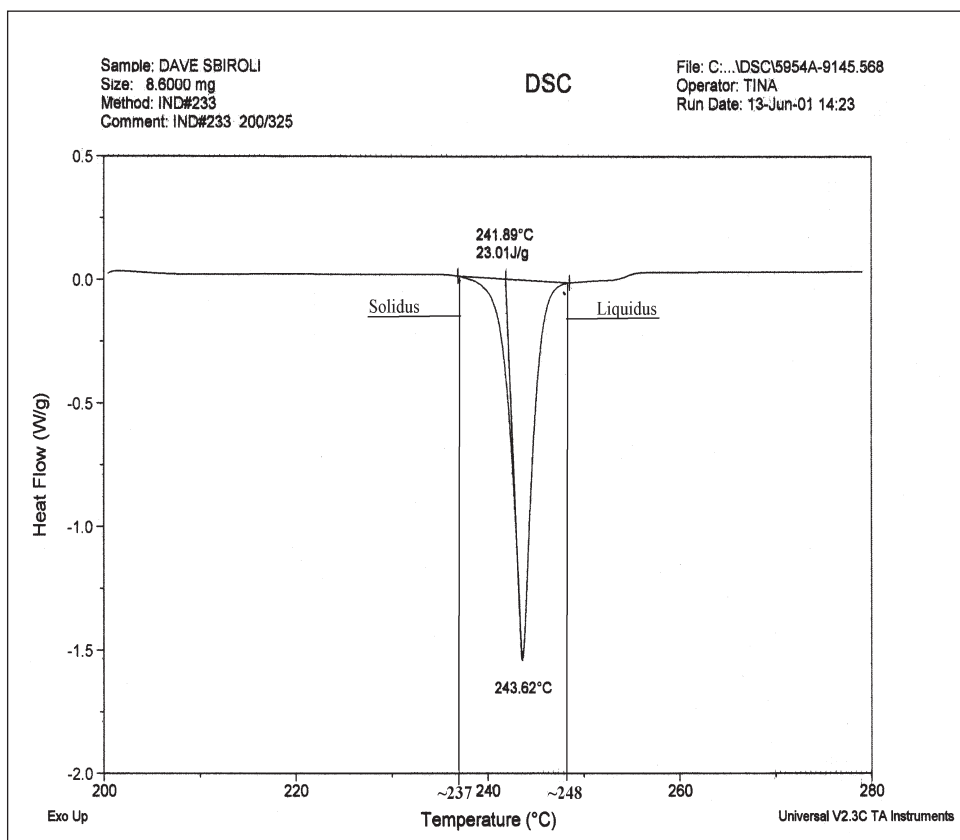


Figure 1

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Form No. 97831 (A4) R2

www.indium.com

askus@indium.com

ASIA: Singapore, Cheongju, Malaysia: +65 6268 8678

CHINA: Suzhou, Shenzhen: +86 (0)512 628 34900

EUROPE: Milton Keynes, Torino: +44 (0) 1908 580400

USA: Utica, Clinton, Chicago, Rome: +1 315 853 4900



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