



National Bureau of Standards

Certificate

Standard Reference Material 42g

Tin

Secondary Freezing Point Standard

231.967 °C

(International Practical Temperature Scale - 1968)

The freezing point of SRM 42g, 231.967 °C, is the value determined by comparison with SRM 741, Tin Primary Freezing Point Standard (International Practical Temperature Scale-1968). The freezing point of SRM 741 is estimated to be 231.9681 °C \pm 0.0007 °C. [The IPTS-68 assigned freezing point of pure tin is 231.9681 °C.]

The observed freezing points (with 25 percent in the solid phase) of three selected samples of SRM 42g, each of which weighed 1300 g, agreed within \pm 0.1 mK and averaged 0.5 mK lower than the average value of eleven samples of SRM 741. (For full details of the preparation and inter-comparison of the freezing points of the tin specimens, see Proceedings of the 5th Symposium on Temperature, June 1971.)

In the freezing-point experiments, the furnace surrounding the sample cell was maintained at 0.9 K below the tin point (where the total freezing time, typically about 14 hours, was dependent on the degree of super-cooling). During these experiments, the freezing points generally did not decrease by more than 0.3 mK over a period of seven hours. The standard deviation of the freezing temperatures of each sample was \pm 0.05 mK from freeze to freeze (with about 25 percent in the solid phase).

Technical measurements at NBS leading to certification were performed by G. T. Furukawa, J. L. Riddle, and W. R. Bigge of the NBS Heat Division.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by R. E. Michaclis.

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