



National Institute of Standards & Technology

Certificate

Standard Reference Material 743

Mercury

Triple Point on the

-38.8344 °C

International Temperature Scale of 1990

This Standard Reference Material is intended primarily for use in calibrating temperature measuring devices. The temperature given above is the value assigned to the triple point of pure mercury as one of the defining fixed points of the ITS-90.

SRM 743 is high purity mercury with a total of other elements estimated to be less than 20 parts per billion (ng/g) by emission spectrographic analysis. This mercury was obtained from Cominco American, Inc., Spokane, Washington. SRM 743 is packaged in argon-filled soft-glass ampoules and weighs about 680 g (50 ml).

The calculated effect of pressure on the freezing point of mercury is $+5.4 \text{ mK} \cdot \text{atm}^{-1}$. Although temperature measurements are more precise and convenient with sealed, gas-free mercury cells, for those who prefer to employ cells open to the ambient pressure, the freezing point at 1 atm pressure is estimated to be $-38.8290 \text{ }^\circ\text{C}$. *Since the fixed-point temperature is below ambient temperature, precautions should be taken to avoid condensation of moisture on the mercury sample.*

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

This certificate is a revision of the certificate dated April 22, 1976. The changes consist primarily of the conversion of temperatures on the IPTS-68 to those on the ITS-90 by B.W. Mangum of the Chemical Process Metrology Division.

The technical and support aspects involved in the revision, update and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by J. C. Colbert. The original coordination of certification efforts was performed by R. E. Michaelis and R. K. Kirby.

Gaithersburg, MD 20899
July 9, 1990
(Revision of certificate
dated 4-22-76)

William P. Reed, Acting Chief
Standard Reference Materials Program

(over)

SUPPLEMENTARY INFORMATION

For further information on metal freezing points, see McLaren, E. H., *The Freezing Point of High-Purity Metals and Precision Temperature Standards, Temperature, its Measurements and Control in Science and Industry, Vol.3, Part 1*, Rheinhold Publishing Corp., New York, N. Y. (1962).