

# National Bureau of Standards

## Certificate

### Standard Reference Material 932

### Quartz Cuvette for Spectrophotometry

R. Mavrodineanu and J. W. Lazar

This Standard Reference Material consists of a single, accurately calibrated cuvette that is issued for use in the production of accurate spectrophotometric data on liquids. The design and nominal dimensions of the all-quartz cuvette are shown in Figure 1. The pathlength of the cuvette is defined by the distances between the two optically transparent windows measured at several heights within the cuvette. Cuvettes issued as Standard Reference Material 932 have a nominal pathlength of 10 mm. The pathlength and parallelism are certified, at the time of measurements, with an uncertainty of  $\pm 0.0005$  mm as determined by measurements (at 20 °C) taken at the positions indicated below.

Cuvette number \_\_\_\_\_ is issued with this certificate. For this cuvette the following measurements were obtained:

Height	Pathlength
mm	mm

Date of Certification:

The overall direction and coordination of the technical measurements leading to certification were performed under the chairmanship of O. Menis and J. A. Simpson.

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 T. W. Mears.

Washington, D.C. 20234  
December 2, 1980  
(Revision of certificates  
dated 11-5-73, 6-16-77, and 8-2-78)

George A. Uriano, Chief  
Office of Standard Reference Materials

(over)

The original cuvettes were designed and produced at the National Bureau of Standards (NBS) using special techniques and non-fluorescent optical-quality fused quartz as described in NBS SP 260-32[1]. The transparent windows are attached to the body of the cuvette by direct fusion, and the unit was stress-relieved by annealing. The radiation pathlength measurements of the cuvette were performed using electronic feeler-gauge type instruments capable of a resolution of 5 parts in  $10^6$ . To preserve the integrity of the certified values, the cuvette must be handled with great care and should be held only by the frosted-quartz side windows. When not in use, it should be stored in the container provided for this purpose. Extended exposure to laboratory atmosphere and dusty surroundings is to be avoided. Improper handling of the cuvette and the use of solutions that can corrode or erode the quartz could degrade the certified pathlength values. In cases where verification of the pathlength is desirable, the cuvette should be returned to NBS for examination and, if needed, recalibration. Prior to shipment the NBS Office of Standard Reference Materials should be contacted regarding the conditions and cost of the verification and/or recertification.

The development and production of SRM 932 is a result of the combined efforts of the Center for Analytical Chemistry, the Center for Mechanical Engineering and Process Technology, and the Instrument Shops Division. The radiation pathlength measurements of all of these cuvettes have been performed, at NBS, by E. G. Erber of the Mechanical Processes Division.

Reference:

- [1] Mavrodineanu, R., and Lazar, J. W., Standard Reference Materials; Standard Quartz Cuvettes for High Accuracy Spectrophotometry, Nat. Bur. Stand. (U.S.), Spec. Publ. 260-32 (December 1973). Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, 55 cents.

