National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 2677a

Beryllium and Arsenic on Filter Media

This Standard Reference Material (SRM) is intended primarily for the determination of beryllium and arsenic in industrial atmospheres. SRM 2677a consists of two sets of five membrane filters of a mixed cellulose ester type. Each set contains one each of the filters identified below. The blank filters are provided for use in assessing the analytical blank. The filters are 37 mm in diameter and have a pore size of 0.8 μm. Certified values for the beryllium and arsenic for the three levels and for the blank are given below in Table 1.

Table 1

Filter ID	Metal content, μg/Filter	
	Beryllium	Arsenic
Level I	0.129 ± 0.003	0.269 ± 0.006
Level II	0.643 ± 0.015	2.69 ± 0.065
Level III	2.58 ± 0.06	26.92 ± 0.65
Level IV	0.050 ± 0.001	0.101 ± 0.002
Blank	≤0.0005	≤0.0005

The certified values are based on gravimetric measurements made during the production of four stock solutions used to impregnate the filters and on measurements of the amount of stock solution deposited on the filters. The listed ± uncertainties are expressed as two standard deviations for a single filter, and include the uncertainties of the stock solutions used in the preparation of the filters.

The filters are identified as Level I, II, III, IV, and Blank and are packaged separately in plastic petri dishes. The identification of the filter is printed on the outside of each petri dish. Each petri dish contains duplicate membrane filters of the designated level.

Note: In all instances, an entire filter must be dissolved for each set of measurements as the metals may not be uniformly distributed on the filter.

Each filter, containing the metals was prepared by depositing 50 μL aliquots of an appropriate composite solution of As and Be onto the filter, followed by drying. The composite solutions were prepared gravimetrically by mixing together appropriate amounts of a standard beryllium solution (prepared from the high-purity Be metal) and a standard arsenic solution (prepared from SRM 83d, As_2O_3). In the preparation of the arsenic standard, As^{+3} was oxidized to As^{+5} with bromine and should be present on the filters as the arsenate. The blank filters were prepared by adding 50 μL aliquots of the dilute mixed acid (HNO_3 and H_2SO_4) solution to each filter.

SRM 2677a was prepared in the Inorganic Analytical Research Division. Preparation and certification were performed by T. A. Butler, T. C. Rains, T. A. Rush, and L. J. Yu.

The statistical assessment of the certification data was performed by R. C. Paule of the National Measurement Laboratory.

The technical and support aspects involved in the certification and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by T. E. Gills.

Gaithersburg, MD 20899
May 1, 1990

William P. Reed, Acting Chief
Standard Reference Materials Program