

National Bureau of Standards Certificate of Analysis Standard Reference Material 2676 Metals on Filter Media (Pb, Zn, Cd, Mn)

This Standard Reference Material is intended primarily for use as an analytical standard for the determination of cadmium, lead, manganese, and zinc in the industrial atmosphere. The SRM consists of a set of membrane filters on which have been deposited the indicated quantities of salts of the particular metals.

Filter	Metal Content, $\mu\text{g}/\text{filter}$			
	Cd	Pb	Mn	Zn
A 1	$0.50 \pm .04$	6.8 ± 1.1	$1.93 \pm .29$	$1.02 \pm .06$
A 2	$2.48 \pm .14$	$29. \pm 2.6$	10.3 ± 1.5	$5.10 \pm .26$
A 3	$10.1 \pm .4$	$102. \pm 6$	20.6 ± 1.0	10.1 ± 1.1

The filters were prepared by depositing on them known and carefully reproduced volumes of solutions of pure salts, using the technique described in NBS report NBSIR 73-256.

The certified values are based upon determination of the metal content by atomic absorption spectrometry and by polarographic measurement. In these analyses, entire filters were mineralized by digestion in acid prior to measurement. The certified values are the means of those found by the two techniques while the uncertainties represent the 95 percent tolerance limits based on measurement error and variability between samples.*

The filters are identified by the numbers A1, A2, A3 printed on their edge. The metal content of the inked identification is negligible so it need not be removed. An entire filter must be used for each measurement since the metals are not uniformly distributed.

The filters were prepared by R. Mavrodineanu and J. R. Baldwin. Atomic absorption analyses were made by them and also by T. C. Rains. E. J. Maienthal performed the polarographic analyses.

The overall direction and coordination of the technical measurements leading to certification were under the chairmanship of J. K. Taylor.

The technical and support aspects involved in certification and issuance of this Standard Reference Material was coordinated through the Office of Standard Reference Materials by W. P. Reed.

* See page 14, The Role of Standard Reference Materials in Measurement System, NBS Monograph 148, 1975. The concept of tolerance limit is also discussed in Chapter 2, Experimental Statistics, NBS Handbook 91, 1966.

In brief, if measurements were made on all the units, almost all (at least 95 percent) of these measured values would be expected to fall within the indicated tolerance limits with a confidence coefficient of 95 percent (or probability = .95).