

Certificate of Analysis

Standard Reference Material 728

Intermediate—Purity Zinc¹

This standard of zinc metal is issued as a special research material to further both chemical and physical methods of characterization. Two other zinc metal standards are also available: SRM 682, High-Purity Zinc, and SRM 683, Zinc Metal. All three standards were prepared from the same starting material.

Element ²	Recommended Value (ppm by wt.)	Range of Values Reported ³ (ppm by wt.)	Method of Analysis ⁴
Lead	11.1	(10.8 – 11.7)	SSMS – ID, POL
Copper	5.7	(5.3 – 6.3)	SSMS – ID, POL
Iron	2.7	(2.1 – 3.5)	POL, SPPH
Cadmium	1.1 ₅	(1.1 – 1.2)	SSMS – ID, POL
Silver	1.1	(0.8 – 1.3)	SSMS – ID, NAA
Thallium	(0.2) ⁵	(0.15 – 0.17)	SSMS – ID
Tin	(0.02)	(0.013 – 0.032)	SSMS – ID

- The zinc is in the form of pellets averaging roughly 1/8 inch in diameter.
- In the course of analysis by spark-source mass spectrography, neutron activation, polarography, and flame emission spectrometry, the following elements were detected by one or more of these methods. These elements are listed below with an estimated conservative upper limit of concentration in parts per million by weight:

The following elements were not detected by neutron activation and their estimated upper limits of concentration in parts per million by weight are:

As <(0.0004)	In <(0.02)	Rh <(0.3)
Ga <(0.002)	Ir <(0.006)	W <(0.00004)
Au <(0.0007)	Mo <(0.02)	V <(0.003)

Differences in etching practice (deep vs light etch) may cause wide variations in the results obtained.

- The range of values reported is the extreme variation of the individual results reported by the methods of analysis used. The recommended value is based on considerations of the estimated systematic bias of each of the methods employed. From 5 to 15 individual determinations were made for each element certified.
- SSMS-ID – Spark-Source Mass Spectrometry – Isotopic Dilution (R. Alvarez and P. Paulsen)
 POL – Polarography (E. J. Maienthal)
 SPPH – Spectrophotometry (E. R. Deardorff)
 NAA – Neutron Activation Analysis (B. A. Thompson and D. A. Becker)
- Values in parentheses are not certified since only one method of analysis was used, but are provided for additional information on the composition.

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 October 1, 1981
 (Revision of Certificate
 dated 7/9/68)

George A. Uriano, Chief
 Office of Standard Reference Materials

This standard has been established to provide a homogeneous, well-characterized reference material for the analysis of pure zinc and analogous metals. It is especially useful where solution chemistry must be performed during the course of analysis. It should also serve a useful function for the physicist and materials engineer involved in the preparation and characterization of phosphors and other solid-state compounds, and in studies of purification processes, such as zone-refining, where a knowledge of the purity of the starting material is important.

The zinc was prepared by Cominco American, Inc. from a special lot of high-grade electrolytic zinc. Pellets were formed by melting a portion of this lot and pouring the molten metal into distilled water.

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 J. L. Hague.

CAUTION

Before use, it is recommended that possible surface contamination be removed by placing the sample in dilute high-purity nitric acid for about one minute, followed by rinsing in distilled water.