S. Department of Commerce
Philip M. Klutznick
Secretary
tional Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate of Analysis

Standard Reference Materials

1234, 1235, and 1236

Zirconium Metal

These SRM's are intended for use primarily in optical emission and x-ray spectrometric methods of analysis.

SRM Number[1]	1234	1235	1236
Designation	Zirconium A	Zirconium B	Zirconium C
Element[2]		Micrograms Per Gram (ppm)	
Hafnium[3]	46 ± 3	95 ± 5	198 ± 6

[1]Sample size is 32 mm (1-1/4 in.) square and 19 mm (3/4 in.) thick.

[2]Elements that are not certified are listed in parentheses on the reverse side of this Certificate.

[3]Certified value is based on results obtained by isotope dilution-spark source mass spectrometry, and neutron activation analysis. The estimated uncertainty is based on judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability.

The material for these SRM's was supplied by the Teledyne Wah Chang Corporation, Albany, Oregon. It was triple arc-melted, forged, and rolled into 19 mm (3/4 in.) plate.

Homogeneity testing using optical emission spectrochemical procedures was performed at the National Bureau of Standards.

Analysts, National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C.: G. J. Lutz, J. A. Norris, P. J. Paulsen, and L. J. Powell.

The technical and support aspects concerning the preparation, certification, and issuance of these Standard Reference Materials were coordinated through the Office of Standard Reference Materials by R. Alvarez and R. E. Michaelis.

Washington, D.C. 20234
November 28, 1980

George A. Uriano, Chief
Office of Standard Reference Materials

(over)

Additional elements are present in these SRM's as indicated below. These are *not certified* but are given as additional information on the composition. A number of these elements may be certified at a later date as a result of collaborative testing.

SRM	1234	1235	1236
	Micrograms Per Gram (ppm)		
Al	(25)	(105)	(350)
B	(< 0.2)	(2)	(7)
C	(80)	(170)	(280)
Co	(5)	(20)	(50)
Cr	(55)	(60)	(250)
Cu	(<10)	(80)	(250)
Fe	(240)	(850)	(1700)
Mn	(10)	(25)	(45)
Mo	(2)	(40)	(100)
Nb	(55)	(200)	(600)
Ni	(20)	(65)	(140)
P	(7)	(44)	(19)
Pb	(5)	(15)	(25)
Si	(40)	(95)	(205)
Sn	(15)	(25)	(60)
Ta	(85)	(280)	(700)
Ti	(20)	(90)	(185)
V	(5)	(10)	(20)
W	(25)	(50)	(140)
O	(850)	(1470)	(1720)
H	(11)	(14)	(10)
N	(14)	(32)	(69)