U. S. Department of Commerce
Philip M. Klutznick
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1276

Cupro-Nickel (CDA 715)

(In cooperation with the American Society for Testing and Materials)

SRM 1276 is in the form of wrought disks 32 mm (1 1/4 in.) in diameter and 19 mm (3/4 in.) thick. It is intended for use in optical emission and x-ray methods of analysis.

Constituent	Cu	Ni	Fe	Zn	Pb	Mn	Sb	Sn	P	Cd	Se	Mg	Co
Certified Value[1] % by weight	67.8	30.5	0.56	0.038	0.004	1.01	0.0004	0.023	0.006	0.0002	0.0005	0.12	0.045
Estimated[2] Uncertainty	0.3	0.2	0.03	0.006	0.001	0.05	0.0001	0.004	0.002	0.0001	0.0001	0.02	0.007
Method[3] / Labs	Electro-deposition	Gravimetric	Volumetric	Atomic Absorption	Atomic Absorption	Atomic Absorption			Spectrc-photometric	Atomic Absorption	Atomic Absorption	Atomic Absorption	Atomic Absorption
A	67.75	30.50	[a] 0.57	0.033	0.003	[a] 1.03	[a] 0.0005	[a] 0.022	0.005	0.0002	0.0006	0.11	0.043
B	67.79	30.45	.58	.035	.004	0.99	[b] .0003	[b] .020	[b] .005	.0002	.0004	.12	.041
C	67.75	30.41	.54	[c] .040 .036	[c] .0035 .0037	[a] 1.03	[d] .0005	[c] .027	.0046	[d] .0003	[a] .0006	.14	---
D	67.74	30.50	[a] .56	.045	.004	1.01	---	---	.008	<.001	---	.12	.052
E	67.73	30.47	.56	---	[e] .0034	[f] 1.01	---	---	---	---	---	.13	---

[1]The certified value listed for a constituent is the present best estimate of the "true" value based on the results of the cooperative program for certification.

[2]The estimated uncertainty listed for a constituent is based on judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability. (No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.)

[3]A detailed description of many of the methods of analysis employed in the certification program for this SRM may be found in Part 12, Chemical Analysis of Metals and Metal Bearing Ores, Annual Book of ASTM Standards.

[a]Spectrophotometric
[b]Atomic absorption
[c]Optical emission spectrometry
[d]Spark source mass spectrometric
[e]Isotope dilution mass spectrometric
[f]Peroxydisulfate - arsenite titration

Washington, D.C. 20234
March 10, 1980

George A. Uriano, Chief
Office of Standard Reference Materials

(over)

Elements other than those certified may be present in this material as indicated below. These are *not certified,* but are given as additional information on the composition.

Element	Percent, by Weight
Ag	(0.004)
As	(≤0.001)
B	(0.0001)
Bi	(≤0.0001)
Cr	(0.0002)
S	(0.008)
Si	(0.001)
Te	(0.0002)
Ti	(0.0002)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was provided to NBS by Revere Copper and Brass, Inc., New Bedford, Massachusetts.

Homogeneity testing was performed at NBS by J. A. Norris, Inorganic Analytical Research Division, and by R. K. Bell, ASTM-NBS Assistant Research Associate. The material variability was within the method imprecision.

Cooperative analyses for certification were performed in the following laboratories:

Anaconda Brass Division, Anaconda Industries, Research and Technical Center, Waterbury, Conn., J. D. McCrackan.

General Dynamics, Electric Boat Division, Groton, Conn., E. H. Frank.

Huntington Alloys, Inc., Research and Development, Huntington, W.Va., J. M. Arritt, A. H. Roberts, E. B. Sharps, M. Kirk, R. A. Greenwell, and D. E. Howells.

Ledoux and Company, Teaneck, N.J., S. Kallmann.

National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C., J. W. Gramlich, L. P. Dunstan, L. J. Moore, T. C. Rains, M. B. Blackburn, Tsai S. M. Lee, Visiting Scientist, Instituto de Pesquisas Tecnologicas, São Paulo, Brazil, and R. K. Bell, ASTM-NBS Assistant Research Associate.

The overall coordination of the technical measurements leading to certification was performed under the direction of J. I. Shultz, Research Associate, ASTM-NBS Research Associate Program.

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 R. E. Michaelis and R. Alvarez.