U.S. Department of Commerce
Juanita M. Kreps
Secretary

National Bureau of Standards
Ernest Ambler, Director

National Bureau of Standards Certificate of Analysis

Standard Reference Material 872

Phosphor Bronze (CDA 544)

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

This material is in the form of small granules prepared by water atomization and is intended for use in chemical and instrumental methods of analysis.

A copper alloy, 8% Sn, also is available as SRM 871, Phosphor Bronze (CDA 521).

Constituent	Cu	Sn	P	Pb	Zn	Fe
Certified[1] Value,% by wt.	87.36	4.16	0.26	4.13	4.0	0.003
Estimated[2] Uncertainty	0.02	0.05	0.01	0.03	0.1	0.002
Method[3] / Labs	Electro-deposition	Volumetric	Photometric	Volumetric	Atomic Absorption	Atomic Absorption
A	87.36	4.20	0.27	4.12	4.05	0.0049
B	87.29	4.21	[a].26	[b]4.17	3.94	.0025
C	87.37	[c]4.18	- - -	- - -	3.89	.005
D	87.35	4.10	[d].25	[c]4.13	4.01	.0029
E	87.36	[e]4.16	[d].25	[b]4.13	[f]4.10	.0030

[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 judgement and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability for samples 0.5 g or more. (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.

NOTE: Laboratory D reported values of 0.014 percent nickel; <0.005 percent antimony, and 0.13 percent oxygen.

[a]Alkalimetric
[b]Electrodeposition
[c]Atomic absorption
[d]Molybdivanadophosphate photometric
[e]Hypophosphorous acid reduction - KIO_3 titration
[f]Ion-exchange - CDTA titration

Washington, D.C. 20234
August 2, 1979

George A. Uriano, Chief
Office of Standard Reference Materials

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PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was prepared by water atomization at the International Nickel Co., Inc., Sterling Forest, Suffern, New York. At NBS, the material was sieved to remove very coarse and very fine particles, and was thoroughly blended.

Homogeneity testing was performed at NBS by R. K. Bell, ASTM Assistant Research Associate. The material variability was within the method imprecision.

Cooperative analyses for certification were performed in the following laboratories:

- Amax Base Metals Research and Development, Inc., Carteret, N.J., P. R. Soriano.
- ASARCO Incorporated, Central Research Department, South Plainfield, N.J., L. W. Anderson and W. A. Millard.
- Battelle, Columbus Laboratories, Columbus, Ohio, R. E. Heffelfinger.
- Kennecott Minerals Co., Research Center, Salt Lake City, Utah, A. P. Langheinrich.
- National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C., E. R. Deardorff, T. C. Rains, 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. Alvarez and R. E. Michaelis.