National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 460

Beryllium-Copper Alloy

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

This Standard Reference Material (SRM) is in the form of chips sized between 0.50 and 1.18 mm sieve openings (35 and 16 mesh). It is intended primarily for use in chemical methods of analysis.

Element	Certified Value[1] Percent by weight	Estimated Uncertainty[2]
Beryllium[a,b,c,d]	1.86	± 0.02
Cobalt[a,c,d]	0.217	± 0.004
Nickel[a,c,d]	0.031	± 0.002
Iron[a,c,d]	0.098	± 0.003
Silicon[a,c,d,e]	0.077	± 0.002
Aluminum[a,c,d]	0.048	± 0.003
Tin[a,c,d]	0.006	± 0.001
Zinc[a,c,d]	0.004	± 0.001
Chromium[a,c,d]	0.005	± 0.001
Lead[a,c,d]	0.258	± 0.004
Magnesium[a,c]	0.005	-----

[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.

METHODS/TECHNIQUES

a. Inductively Coupled Plasma Optical Emission Spectrometry
b. Volumetry
c. DC Plasma Spectrometry
d. Atomic Absorption Spectrometry
e. Spectrophotometry

The overall coordination of the technical measurements leading to certification were performed under the direction of J.I. Shultz, Research Associate, ASTM/NIST Research Associate Program.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material (SRM) were coordinated through the Standard Reference Materials Program by P.A. Lundberg.

Gaithersburg, MD 20899
September 30, 1992

(over)

William P. Reed, Chief
Standard Reference Materials Program

PLANNING, PREPARATION, TESTING, ANALYSIS:

Homogeneity testing was performed by J.A. Norris and L.J. Wood of the NIST Inorganic Analytical Research Division and D.G. Friend of the SRM Program.

Cooperative analyses for certification were performed in the following laboratories:

-Armco Research and Technology, Armco, Inc., Middletown, OH; H.P. Vail.

-Brush Wellman, Inc., Elmore, OH; J.A. Horner.

-Colonial Metals Co., Columbia, PA; J.C. Morrow.

-NGK Insulators, Ltd., Handa City, Japan; K. Nojiri.

-NGK Metals Corp., Reading, PA; M.W. Teti.

-Teledyne Wah Chang, Albany, OR; J. Schlewitz.

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

Element	Percent by weight
Antimony	(<0.005)
Manganese	(<0.003)
Silver	(<0.002)
Sulfur	(<0.001)
Titanium	(<0.003)
Zirconium	(<0.002)
Copper	(97.5)