

National Bureau of Standards Certificate of Analysis

Standard Reference Material 882

Nickel-Copper Alloy (65Ni-31Cu-3Al)

(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.

Constituent	Ni	Cu	Al	Ti	C	Mn	S	Si	Fe
Certified ¹ Value by wt.	65.25	31.02	2.85	0.57	0.006	0.0007	0.0014	0.006	0.009
Estimated ² Uncertainty	0.05	0.04	0.05	0.02	0.002	0.0002	0.0003	0.001	0.002
Method ³	Gravimetric	Electro-deposition		Photometric		Atomic Absorption			Atomic Absorption
Labs									
A	65.28	31.01	^a 2.85	^d 0.56	^b 0.006	^c 0.0005	---	^e 0.007	^e 0.008
B	65.23	31.09	^f 2.89	^h .54	---	.0008	^g .0013	^f .005	.009
C	65.22	31.02	^f 2.81	---	---	.0005	---	---	.009
D	65.28	31.02	ⁱ 2.83	^{k,l} .57	^j .007	.0009	^j .0014	---	.011

¹The 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.

²The 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.)

³A 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.

^aElectrodeposition of Cu and Ni - NH₄OH - cupferron - NH₄OH - 8-quinolinol spectrophotometric.

^bCombustion-chromatographic.

^cSpark source mass spectrometric.

^dMercury cathode separation-chromotropic acid spectrophotometric.

^eSpectrochemical.

^fAtomic absorption.

^gCombustion-titration.

^hH₂O₂ spectrophotometric.

ⁱMercury cathode separation-cupferron-Al₂O₃ gravimetric.

^jCombustion-infrared detection.

^kMercury cathode separation-cupferron-H₂O₂ spectrophotometric.

^lSame value obtained by diantipyrylmethane spectrophotometric.

NOTE: Laboratory D also reported a value of 0.59 percent titanium by flame emission spectroscopy.

Washington, D.C. 20234
 August 3, 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:

- GTE Automatic Electric Laboratories, Inc., Northlake, Ill., S. W. Drigot.
- International Nickel Co., Inc., Sterling Forest, Suffern, N.Y., M. M. Yanak.
- Ledoux & Company, Teaneck, N.J., S. Kallmann.
- National Bureau of Standards, Inorganic Analytical Research Division, Washington, D.C., E. R. Deardorff, B. I. Diamondstone, T. C. Rains, M. B. Blackburn, and Y. Dokiya; and R. K. Bell, ASTM-NBS Assistant Research Associate.

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.

<u>Element</u>	<u>Concentration % by Weight</u>	<u>Element</u>	<u>Concentration % by Weight</u>
Pb	(0.0006)	V	(0.0001)
Sn	(.003)	Cr	(.0001)
Ag	(.0004)	Zn	(.0005)
Se	(.0002)	Co	(.007)
As	(.0001)	B	(.0001)
Mg	(.001)		

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.