

National Bureau of Standards Certificate of Analysis

Standard Reference Material 874

CUPRO-NICKEL, 10% (CDA 706) "HIGH PURITY"

(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 similar material, SRM 875, Cupro-Nickel, 10% (CDA 706) "Doped", also is available having a somewhat different composition, especially for the trace elements of importance.

Constituent	Cu	Ni	Fe	Zn	Pb	Mn	Sb	Sn	P	Bi	Cd	Se
Certified Value, % by wt. ¹	88.49	10.18	1.22	0.002	<0.0005	0.0020	<0.001	0.007	0.002	<0.0002	<0.0002	0.00015
Estimated Uncertainty ²	0.04	0.03	0.03	0.001	---	0.0005	---	0.001	0.001	---	---	0.00005
Method		Gravimetric	Photometric	Atomic Absorption	Atomic Absorption	Atomic Absorption			Photometric	Atomic Absorption	Atomic Absorption	
Lab												
1	^a 88.45	^b 10.12	^c 1.23	0.002	<0.001	0.0025	^d 0.0003	^d 0.007	0.0019	<0.0001	<0.0001	^d 0.00012
2	---	---	---	---	---	^e .0015	^e <.001	^e .006	---	^e <.001	^e <.001	---
3	^a 88.48	10.15	1.24	.003	<.001	.002	---	---	.003	---	<.001	---
4	^a 88.53	10.19	1.20	.0013	<.0003	.0018	^f <.0002	^g .008	.0021	<.0001	<.0002	^h .0002
5	ⁱ 88.48	^a 10.20	^c 1.27	.0027	.0003	.0023	^d .0007	^j .008	---	.0001	---	^k .00012
6	^a 88.50	10.18	^c 1.22	---	---	---	---	---	---	---	---	---

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 judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability for samples 0.5g or more. (No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.)

^aElectrolytic method

^bDimethylglyoxime-electrolytic method

^cNH₄OH-SnCl₂-K₂Cr₂O₇ titration

^dAtomic absorption

^eSpectrographic

^fRhodamine B. spectrophotometric method

^gPyrocatechol violet spectrophotometric method

^hSpectrophotometric

ⁱCopper extracted as xanthate-iodometric titration

^jPhenylfluorone spectrophotometric method

^kDiaminobenzidine spectrophotometric method

Washington, D.C. 20234
 January 19, 1978

J. Paul Cali, 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.

<u>Element</u>	<u>Concentration % by Weight</u>	<u>Element</u>	<u>Concentration % by Weight</u>
O	(0.06)	Si	(0.0006)
C	(.0023)	As	(<.0006)
H	(.0016)	Mg	(.0002)
S	(.0011)	Ti	(.0001)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was provided by the International Nickel Co., Inc., Sterling Forest, Suffern, New York.

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:

Anaconda Company, Waterbury, Conn., J. D. McCracken and R. C. Burnham.

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

International Nickel Co., Inc., Sterling Forest, Suffern, New York, C. M. Davis.

National Bureau of Standards, Washington, D.C., R. K. Bell, ASTM Assistant Research Associate.

Phelps Dodge Refining Corp., El Paso, Texas, A. L. Cardinal and J. D. Fraire.

Revere Copper and Brass, Inc., Rome, New York, S. Glessner.

The overall coordination of the technical measurements leading to certification were 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.