



# National Institute of Standards & Technology

## Certificate of Analysis

### Standard Reference Material 1250

#### High-Temperature Alloy (Fe-Ni-Co)

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

This Standard Reference Material (SRM) is in the form of a disk approximately 32 mm (1 1/4 in) in diameter and 19 mm (3/4 in) thick, intended for use in optical emission and X-ray fluorescence spectrometric methods of analysis. Material from the same lot is available in the form of chips as SRM 868 for use in chemical methods of analysis.

Element	Certified Value <sup>1</sup> wt %*	Estimated Uncertainty <sup>2</sup>
Aluminum	0.99	0.03
Boron	0.0078	0.0003
Carbon	0.022	0.003
Chromium	0.077	0.003
Cobalt	16.1	0.2
Copper	0.022	0.003
Iron	40.5	0.1
Manganese	0.052	0.002
Molybdenum	0.014	0.001
Nickel	37.78	0.10
Niobium	2.99	0.05
Phosphorus	<0.003	---
Silicon	0.097	0.003
Sulfur	0.0025	0.0005
Tantalum	0.003	0.001
Titanium	1.48	0.03
Vanadium	0.077	0.003

<sup>1</sup> The certified value listed for a constituent is the *present best estimate* of the "true" value based on results of the ASTM/NIST cooperative program for certification.

<sup>2</sup> 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.

\* wt % = mg/kg x 10<sup>-4</sup>

*This Certificate of Analysis has undergone editorial revision to reflect program and organizational changes at NIST and at the Department of Commerce. No attempt was made to reevaluate the certificate values or any technical data presented on this certificate.*

Gaithersburg, MD 20899  
July 19, 1993  
(Revision of certificate dated 7-7-87)

Thomas E. Gills, Acting Chief  
Standard Reference Materials Program

(over)

The overall direction and 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 SRM were coordinated through the Standard Reference Materials Program by W.P. Reed. Revision of this certificate was coordinated through the Standard Reference Materials Program by P.A. Lundberg.

#### **PLANNING, PREPARATION, TESTING, AND ANALYSIS:**

The material for this SRM was provided and prepared by Carpenter Technology Corp., Reading, PA.

Homogeneity testing was performed at NIST, using optical emission spectrometry, by J.A. Norris and T.W. Vetter; X-ray fluorescence, by P.A. Pella; and by R.K. Bell, ASTM/NIST Research Associate Program.

Cooperative analyses for certification were performed in the following laboratories:

Allegheny Ludlum Steel Corp., Brackenridge Chemical Laboratory, Brackenridge, PA, R.M. Crain, G.L. Bergstrom, and C.M. Bottegai.

Carpenter Technology Corp., Carpenter Steel Division, Reading, PA, T.R. Dulski.

Crucible Materials Corp., Research Center, Pittsburgh, PA, G. Vassilaros and C.J. Byrnes.

Inco Alloys International, Huntington Alloys, Huntington, WV, F.A. Blair.

Vac Air Alloys Corp., Frewsburg, NY, D.C. Trostle.