

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1217

Nickel Steel

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

This Standard Reference Material (SRM) is in the form of disks, approximately 34 mm (1 3/8 in) in diameter and 19 mm (3/4 in) thick, and is intended for use in optical emission and x-ray spectrometric methods of analysis. Material from the same lot is available in the form of chips as SRM 33e for use in checking chemical methods of analysis.

<u>Constituent</u>	<u>Certified Value¹ Percent by Weight</u>	<u>Estimated² Uncertainty</u>
Carbon	0.186	±0.004
Manganese	.525	.005
Phosphorus	.005	.001
Sulfur	.009	.001
Silicon	.262	.003
Copper	.070	.001
Nickel	3.36	.04
Chromium	0.068	.002
Aluminum	.030	.005
Molybdenum	.224	.006

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. (No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.)

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 W.P. Reed.

Gaithersburg, MD 20899
November 19, 1984

Stanley D. Rasberry, Chief
Office of Standard Reference Materials

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PLANNING, PREPARATION, TESTING, ANALYSIS

The material for this SRM was provided by the Timken Company, Canton, Ohio, through the courtesy of V.R. Chapman. Homogeneity testing was performed at NBS: optical emission analysis, J.A. Norris; chemical analysis, D.E. Brown, B.I. Diamondstone, and R.K. Bell, ASTM-NBS Research Associate Program.

Cooperative analyses for certification were performed in the following laboratories:

Amax Metals Group, Research Laboratory, Ann Arbor, Michigan, R.C. Binns.

LTV Steel, Warren, Ohio, I. Shepler.

National Bureau of Standards, Inorganic Analytical Research Division, Gaithersburg, Md., D.E. Brown, B.I. Diamondstone, and R.K. Bell, ASTM-NBS Research Associate Program.

Standard Steel Co., Burnham, Pennsylvania, J. Arp.

The Timken Co., Canton, Ohio, N.J. Stecyk.

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>
Co	(0.06)
Ti	(.001)
V	(.001)