National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 346a

Valve Steel

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

This Standard Reference Material (SRM) is in the form of chips and is intended for use in chemical methods of analysis. It is also available in solid form as SRM 1233 for use in optical emission and x-ray spectroscopy methods of analysis.

Constituent	% by wt.[1]	Estimated Uncertainty[2]
Carbon	0.502	0.004
Manganese	9.16	0.03
Phosphorus	0.031	0.003
Sulfur	0.002	0.001
Silicon	0.219	0.009
Copper	0.375	0.005
Nickel	3.43	0.02
Chromium	21.08	0.06
Vanadium	0.096	0.004
Molybdenum	0.237	0.003
Nitrogen	0.442	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.

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 original preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by W.P. Reed. Revision of the Certificate was coordinated through the Standard Reference Materials Program by P.A. Lundberg.

Gaithersburg, MD 20899
February 20, 1992
(Revision of Certificate dated 10-7-85)

William P. Reed, Chief
Standard Reference Materials Program

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM was provided by Armco Steel, Stainless Division, Baltimore, Maryland.

Homogeneity testing was performed at NIST by B.I. Diamondstone, R.C. Gauer, J.A. Norris and R.K. Bell, ASTM/NIST Research Associate Program.

Cooperative analyses for certification were performed in the following laboratories:

Analytical Associates, Inc., Detroit, Michigan; C.K. Deak.

Allegheny Ludlum Steel Corporation, Brackenridge Chemical Laboratory, Brackenridge, Pennsylvania; A.I. Fulton, C.W. Hartig, R.M. Crain, and G. Bergstrom.

Armco Inc., Research and Technology, Middletown, Ohio; C.C. Borland, O. Brezny, J.D. Holland, J.W. Leeker, G.D. Smith, R.L. Swigert, B.J. Young, N.G. Sellers, D.E. Gillum, and H.P. Vail.

Carpenter Technology Corporation, Carpenter Steel Division, Reading, Pennsylvania; T.R. Dulski.

Crucible Specialty Metals, Syracuse, New York; H.P. Mortimer, W.J. Michaels, R.J. Stone, and R. Wlodarzyk.

Crucible Research, Pittsburgh, Pennsylvania; C.J. Byrnes, W.E. Kirk, and G.L. Vassilaros.

Leco Corporation, St. Joseph, Michigan; R.B. Fricioni and D. Lawrenz.

Lukens Steel Co., Coatesville, Pennsylvania; J.H. Morris and S. Forese.

National Institute of Standards and Technology, Inorganic Analytical Research Division, Gaithersburg, Maryland; B.I. Diamondstone, T.W. Vetter, R.C. Gauer, and R.K. Bell, ASTM/NIST Research Associate Program.

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	% by wt.
Aluminum	(0.001)
Boron	(<0.001)
Cobalt	(0.05)
Lead	(<0.0001)
Niobium	(0.01)
Tin	(0.008)
Titanium	(<0.001)
Tungsten	(0.01)