National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 57a

Silicon Metal

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

This Standard Reference Material (SRM) is in the form of fine powder sized between 0.10 mm and 0.15 mm (150 and 100 mesh) and is intended for use both in checking chemical methods of analysis and in calibration with instrumental methods of analysis.

Element	Certified Value[1] wt %	Estimated[2] Uncertainty
Silicon	98.55	0.12
Iron	0.50	0.01
Carbon	0.024	0.004
Manganese	0.015	0.002
Phosphorus	0.003	0.001
Sulfur	0.003	0.002
Copper	0.004	0.001
Nickel	0.008	0.002
Chromium	0.024	0.004
Vanadium	0.013	0.003
Titanium	0.040	0.005
Zirconium	0.002	----
Aluminum	0.47	0.02
Lead	<0.001	----
Calcium	0.17	0.03
Arsenic	<0.001	----
Boron	0.001	----

[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 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.)

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
May 24, 1993
(Revision of certificate dated 12-30-80)

Thomas E. Gills, Acting Chief
Standard Reference Materials Program

(over)

The overall direction and coordination of the technical measurements leading to certification were performed by 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 SRM were coordinated through the Standard Reference Materials Program by R.E. Michaelis. Revision of this certificate was coordinated through the Standard Reference Materials Program by P.A. Lundberg.

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.

Element	Concentration wt %
Bismuth	(<0.001)
Zinc	(<0.001)
Tin	(<0.001)
Antimony	(<0.003)
Oxygen	(~0.3)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this standard was provided by Interlake, Inc., Beverly, OH through the courtesy of J.C. Cline.

The crushing, grinding, and sieving were performed by the Mining and Metals Division, Union Carbide Corporation, Marietta, OH, through the courtesy of H.H. Hall.

Following sieving and blending operations at NIST, homogeneity testing was performed by J.C. Cline, Interlake, Inc., Beverly, OH. The material variability was determined to be within the method imprecision.

Cooperative analyses for certification were performed in the following laboratories:

Dow Corning Corp., Midland, MI, G.W. Boyes, Jr.
Interlake, Inc., Beverly Plant, Beverly, OH, J.C. Cline and R.A. Pontello.
Kawecki Berylco Industries, Inc., Boyertown, PA, F.T. Coyle.
SKW Alloys, Inc., Niagara Falls, NY, J.E. Cumbo, E.W. Linton, and P.J. Butry.
SKW Canada, Quebec, Canada, R.R. Keep.
Union Carbide Corp., Metals Division, Marietta, OH, H.H. Hall, C.E. Biehl, and H.A. Arnold.