National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 338

White Cast Iron

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

This Standard Reference Material (SRM) is in the form of a fine, water-atomized powder and is intended for use in calibrating instruments used in the determination of carbon and sulfur.

	Total Carbon	Sulfur
Certified Value, wt %[1*]	3.33	0.015
Estimated Uncertainty[2]	0.02	0.002
Labs		
1	3.32	0.013
2	3.49	0.014
3	3.37	0.017
4	3.33	0.016
5	3.34	0.015

*wt % = mg/kg x 10^{-4}

[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 is based on judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability of samples of 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 the 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.

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 in this certificate.

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

Gaithersburg, MD 20899
May 17, 1993
(Revision of certificate dated 6-24-82)

Thomas E. Gills, Acting Chief
Standard Reference Materials Program

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS

The material for this SRM, in the form of small castings, was furnished to NIST gratis, courtesy of R. Nelson, Thomas Foundaries, Inc., Birmingham, AL. Under contract with NIST, the castings were remelted and water-atomized to fine size granules at the Hoeganaes Corp., Riverton, NJ. Following a sieve fraction/composition study at NIST, the entire lot was sieved and those particles sized between 0.045 and 0.10 mm sieve openings (325 and 145 mesh) were accepted for use as SRM 338.

Homogeneity testing was performed by E.R. Deardorff and B.I. Diamondstone of the NIST Inorganic Analytical Research Division, and by R.K. Bell, ASTM Assistant Research Associate. The material was determined to be of exceptionally high homogeneity, with the material variability being well within the imprecision of the analytical methods.

Cooperative analyses for certification were performed in the following laboratories:

American Cast Iron Pipe Company, Birmingham, AL, R.N. Smith, L.J. Moore, and D.R. Denney.

Foster Wheeler Development Corporation, Research Center, Livingston, NJ, M. Fornoff.

Johnson Brass and Machine Foundry, Saukville, WI, D.C. Marshall.

National Institute of Standards & Technology, Inorganic Analytical Research Division, Gaithersburg, MD, B.I. Diamondstone and R.K. Bell, ASTM/NIST Research Associate Program.

U.S. Bureau of Mines, Albany Research Center, Albany, OR, A.J. Mackie, D. Bollman and R. Farrell.

SUPPLEMENTAL INFORMATION

Although not certified, additional information on the composition is given below.

Element	wt %
Mn	(0.76)
P	(0.054)
Si	(1.82)
Cu	(0.27)
Ni	(5.5)
Cr	(10.2)
V	(0.04)
Co	(0.32)