

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 122g

Cast Iron Car Wheel

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

This material is in chip form sized between 0.8 mm and 1.4 mm sieve openings (20 and 14 mesh). It is intended for use in chemical methods of analysis.

This standard contains an appreciable amount of graphitic carbon and should be mixed *gently* before use.

<u>Element</u>	<u>Percent, by weight</u>
Total carbon	3.4 ₃
Graphitic carbon	2.76
Manganese	0.54 ₀
Phosphorus	.31 ₅
Sulfur	.07 ₄
Silicon	.51 ₇
Copper	.03 ₀
Nickel	.08 ₀
Chromium	.05 ₀
Vanadium	.03 ₈
Molybdenum	(.003) ^a
Titanium	.03 ₄
Aluminum	(.003)

^aValues in parenthesis are *not certified*, but are given as additional information on the composition.

CERTIFICATION: The value listed for a certified element is the *present best estimate* of the "true" value based on the results of the cooperating analysts. The value listed is not expected to deviate from the "true" value by more than ± 1 in the last significant figure reported; for a subscript figure, the deviation is not expected to be more than ± 5 .

The overall coordination of the technical measurements leading to certification were 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 R. E. Michaelis.

Washington, DC 20234
April 2, 1979

George A. Uriano, Acting Chief
Office of Standard Reference Materials

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PLANNING, PREPARATION, TESTING, ANALYSIS: The material for this SRM was prepared at the American Cast Iron Pipe Company, Birmingham, Alabama.

Homogeneity testing was performed at the American Cast Iron Pipe Company by chemical and spectrochemical analyses (R. N. Smith and W. R. Kennedy). Tests were made on samples taken before and following casting of the hollow cylinders that ultimately were chipped. The results showed no practical difference in composition for any element.

Following chipping of the material, critical homogeneity testing was performed for carbon at NBS (B. I. Diamondstone). The accepted lot of material exhibited a maximum variability of ± 0.05 wt % of total carbon, based on 34 duplicate determinations.

Cooperative analyses were performed in the analytical laboratories of the American Cast Iron Pipe Company, Birmingham, Ala.-R. N. Smith, J. B. Hobby, L. J. Moore, and B. P. Thomas; Army Materials and Mechanics Research Center, Watertown, Mass.-F. P. Valente; Bethlehem Steel Corporation, Bethlehem, Pa.-D. Flinchbaugh and J. L. Fernandez; Inland Steel Company, Indiana Harbor Works, East Chicago, Ind.-J. E. Joyce; National Bureau of Standards, Center for Analytical Chemistry, Washington, D.C.-B. I. Diamondstone, and R. K. Bell, ASTM Assistant Research Associate; Rexnord Inc., Milwaukee, Wisc.-D. C. Marshall; and Weirton Steel, Division of National Steel Corporation, Weirton, W. Va.-R. L. Zickefoose.

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