



National Bureau of Standards

Certificate of Analysis

Standard Reference Material 122h

Cast Iron Car Wheel

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

This material is in chip form sized between 0.8- 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 weight¹</u>	<u>Estimated Uncertainty²</u>
Total carbon	3.52	0.05
Graphitic carbon	2.82	.02
Manganese	0.543	.005
Phosphorus	.311	.006
Sulfur	.072	.004
Silicon	.513	.006
Copper	.028	.003
Nickel	.078	.003
Chromium	.052	.005
Vanadium	.041	.005
Molybdenum	(.003) ³	—
Titanium	.034	.001

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.)

³The value in parenthesis is not certified but is given as additional information on the composition.

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 and W.P. Reed.

Washington, D.C. 20234
April 28, 1983

George A. Uriano, 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.

Following the chipping of the material, homogeneity testing was performed for carbon/sulfur at NBS (B.I. Diamondstone and D.E. Brown). The material exhibited a maximum variability of ± 0.05 percent of total carbon, based on approximately 140 determinations.

Cooperative analyses, carried out under the auspices of the ASTM/NBS Research Associate Program, were performed in the following laboratories:

American Cast Iron Pipe Co., Birmingham, Ala., R.N. Smith, J.B. Hobby, L.J. Moore, H.C. Sparks, and D.R. Denney.

Inland Steel Co., Indiana Harbor Works, East Chicago, Ind., J.E. Joyce.

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

Sharon Steel Corp., Sharon, Pa., N.J. Williams.

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