National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 2159

Low-Alloy Steel

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

This Standard Reference Material (SRM) is in the form of pins that are 4 mm in diameter, 12 mm long and weigh approximately 1g each. SRM 2159 is primarily intended for use in calibrating instruments used in the determinations of carbon and sulfur in steel.

Element	Certified Value[1] Percent by Weight	Estimated[2] Uncertainty
Carbon	0.016	0.002
Sulfur	.0023	.0003

[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 procedures, and material variability. No attempt is made to derive exact statistical measures of imprecision because several procedures were used in the determination of both constituents.

The overall coordination of the technical measurements leading to certification was performed under the direction of J.I. Shultz, Research Associate, ASTM-NIST Research Associate Program.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by W.P. Reed and P.A. Lundberg.

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this standard was prepared under a NIST contract with T. R. Linde.

Homogeneity testing was performed by J.D. Messman of the NIST, Inorganic Analytical Research Division, Gaithersburg, MD, and by J.H. Morris and E. Yates of Lukens Steel Co., Coatesville, PA.

Cooperative analyses for certification were performed in the following laboratories:

- American Cast Iron Pipe Co., Birmingham, AL., R.N. Smith and R. Huffman.
- Lukens Steel Co, Coatesville, PA J.H. Morris and E. Yates.
- National Institute of Standards & Technology, Inorganic Analytical Research Division, Gaithersburg, MD, J.D. Messman.
- Republic Engineered Steels, Inc. Canton, OH, B. Pitts and S. Stroup.
- Timken Co., Canton, OH, N.J. Stecyk.

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Gaithersburg, MD 20899

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Standard Reference Materials Program