



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 139b

Chromium-Nickel-Molybdenum Steel

AISI 8640

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

This Standard Reference Material (SRM) is in the form of chips sized between 0.50 and 1.18 mm sieve openings (35 and 16 mesh). It is intended for use primarily in chemical methods of analysis.

Element	Certified Value ¹ wt % *	Estimated ² Uncertainty
Carbon	0.403	0.003
Manganese	0.778	0.006
Phosphorus	0.013	0.001
Sulfur	0.019	0.001
Silicon	0.242	0.006
Copper	0.097	0.002
Nickel	0.510	0.003
Chromium	0.488	0.002
Vanadium	0.004	0.001
Molybdenum	0.182	0.002
Nitrogen	0.007	0.001

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 for 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 analysis of most constituents.)

* wt % = mg/kg $\times 10^{-4}$

NOTE: This SRM is the second lot of material, the first of which was certified in 1959 as SRM 139a. Based on the data obtained simultaneously by the three cooperators for SRMs 139a and 139b, no significant differences between the two lots were observed.

Gaithersburg, MD 20899
June 22, 1993
(Revision of certificate dated 5-17-78)

Thomas E. Gills, Acting Chief
Standard Reference Materials Program

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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.

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 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.

PLANNING, PREPARATION, TESTING, ANALYSIS: The material for this standard was provided by the Bethlehem Steel Corp., Bethlehem, PA. Cooperative analyses for certification were performed in the following laboratories:

Bethlehem Steel Corp., Sparrows Point Plant, Sparrows Plant, MD, F.G. Fick.

Department of the Army, Army Materials and Mechanics Research Center, Watertown, MA, F.P. Valente and G.J. Bluteau.

Joslyn Stainless Steels, Fort Wayne, IN, C.A. Spellman.