

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1136

High-Sulfur Steel

This material is available in solid form primarily for application in optical emission and x-ray spectrometric methods of analysis. A companion material, SRM 129c, is available in chip form primarily for use in checking chemical methods of analysis.

<u>Element</u>	<u>Percent by Weight</u>
Carbon	0.11 ₃
Manganese75 ₅
Phosphorus066
Sulfur22 ₀
Silicon018
Copper014
Nickel27
Chromium014
Vanadium012
Molybdenum002

SIZE AND METALLURGICAL CONDITION: Annealed disks, 32 mm (1 1/4 in) in diameter and 19 mm (3/4 in) thick.

CERTIFICATION: The value listed for an element is the present best estimate of the "true" value based on the results of the analytical program. 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 . Based on the results of homogeneity testing, maximum variations within and among samples are estimated to be less than the uncertainty figures given above.

Washington, D. C. 20234
August 31, 1973

J. P. Cali, Chief
Office of Standard Reference Materials

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The overall direction and coordination of the technical measurements leading to certification were performed under the direction of O. Menis and J. I. Shultz.

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.

PLANNING, PREPARATION, TESTING, ANALYSIS: For many metal SRM's, it is desirable to make the material available in the form of chips primarily for chemical methods of analysis, and solids primarily for optical emission and x-ray spectrochemical methods of analysis. Prior to the preparation of SRM 129c (chip form) plans were also made to provide this material as SRM 1136 (solid form).

The material for this standard was vacuum melted and cast at the Carpenter Technology Corporation, Reading, Pa. Selected sections were rolled to rounds approximately 130 mm (5 1/4 in) in diameter. At NBS these were lathe cut to a diameter of about 85 mm (3 1/4 in) to provide chips for SRM 129c. The remaining cores were processed at Carpenter Technology Corporation to the final solid size by rolling, annealing, and centerless grinding.

Homogeneity testing was performed at NBS by S. A. Wicks and was found to be satisfactory.

Analyses of this SRM 1136 (solid form) and SRM 129c (chip form) were performed simultaneously by S. A. Wicks and R. K. Bell of the Analytical Chemistry Division, Institute for Materials Research, National Bureau of Standards. The certified results appearing on this certificate were adjusted in accordance with the average values derived from the cooperative program on SRM 129c. In addition to NBS, the cooperators on 129c included Mary Lou Harmon, Jones and Laughlin Steel Corporation, Pittsburgh, Pa.; R. G. Cover, The Timken Company, Canton, O.; and R. Knauer, A. E. Paulus and C. J. Yoder, Armco Steel Corporation, Baltimore, Md.