

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 1172

#### Stainless Steel

#### Cr 17-Ni 11-Nb 0.6 (AISI 348)

This material is available in solid form primarily for application in optical emission and x-ray spectrometric methods of analysis. A companion material, SRM 123c, is available in chip form primarily for use in checking chemical methods of analysis.

<u>Element</u>	<u>Percent by Weight</u>
Carbon . . . . .	0.056
Manganese . . . . .	1.7 <sub>6</sub>
Phosphorus . . . . .	0.025
Sulfur . . . . .	.01 <sub>4</sub>
Silicon . . . . .	.59
Copper . . . . .	.10 <sub>5</sub>
Nickel . . . . .	11.3 <sub>5</sub>
Chromium . . . . .	17.4 <sub>0</sub>
Molybdenum . . . . .	0.22
Niobium . . . . .	.65
Tantalum . . . . .	< .001
Cobalt . . . . .	.12

SIZE AND METALLURGICAL CONDITION: Samples are disks 31 mm (1 1/4 in) in diameter and 19 mm (3/4 in) thick, and are issued in the annealed condition.

ANALYTICAL 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  $\pm 1$  in the last significant figure reported; for a subscript figure the deviation is not expected to be more than  $\pm 5$ . Based on the results of homogeneity testing, maximum variations within and among samples are estimated to be less than the accuracy values given above.

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.

Washington, D. C. 20234  
July 7, 1971

J. Paul Cali, Chief  
Office of Standard Reference Materials

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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 the renewal of SRM 123c (chip form) plans were also made to provide this material as SRM 1172 (solid form).

The material for this standard was prepared at Duquesne Works, U.S. Steel Corporation, Pittsburgh, Pennsylvania. A selected slab section was cropped at the top and bottom; also the center longitudinal 1/3 of the remaining section was cut out and discarded. The remaining slab sections were rolled to rounds approximately 127 mm (5 in) in diameter and annealed. At NBS these were lathe cut to a diameter of about 89 mm (3 1/2 in) to provide chips for the chemical SRM. The cores remaining were processed to the final size by hot rolling, annealing, and centerless grinding by the Carpenter Technology Corporation, Reading, Pennsylvania.

Homogeneity testing was performed at NBS by J. McKay and S. D. Rasberry, and was found to be satisfactory.

Analyses for this provisional certificate were performed in the laboratories of the Analytical Chemistry Division, National Bureau of Standards; Advanced Materials Division, Armco Steel Corporation, Baltimore, Maryland; and Research Laboratories, General Motors Corporation, Warren, Michigan.