

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 1096

#### AISI 94B17 Steel (Modified)

#### (Gasometric Standard)

This Standard Reference Material (SRM) is in the form of a rod 6.4 mm (1/4 in) in diameter and 102 mm (4 in) long. SRM 1096 is intended for use in the determination of gases in metals by vacuum or inert gas fusion and neutron activation methods of analyses.

<u>Element</u>	<u>PPM by Weight<sup>a</sup></u>
Oxygen	10.7
Nitrogen	40.4
Hydrogen	(<5) <sup>b</sup>

<sup>a</sup>The values given in this certificate are based on the analytical data given below.

<sup>b</sup>Value in parentheses is not certified.

#### Oxygen

Laboratory	Average, (PPM by wt)	Standard Deviation <sup>1</sup>	Number of Determinations
Bethlehem Steel	12.2	1.4	20
U.S. Steel	10.5	0.9	28
Armco Steel	9.4	1.2	28
Average <sup>2</sup>	10.7	---	---
NBS <sup>3</sup>	10.5		

#### Nitrogen

Bethlehem Steel	39.5	0.5	10
U.S. Steel	42.0		
Armco Steel	39.7	1.9	29
Average <sup>2</sup>	40.4	---	---
NBS <sup>3</sup>	40.0		
Inland Steel <sup>3</sup>	40.6		

<sup>1</sup>Of single determination

<sup>2</sup>Unweighted arithmetic average

<sup>3</sup>For information only

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.

Gaithersburg, MD 20899  
 April 21, 1986  
 (Revision of Certificate  
 dated 6-13-72)

Stanley D. Rasberry, Chief  
 Office of Standard Reference Materials

(over)

#### PLANNING, PREPARATION, TESTING, AND ANALYSIS:

The material for this standard was vacuum melted and cast at the Carpenter Technology Corporation, Reading, Pennsylvania, under a contract with the National Bureau of Standards. The contract was made possible by a grant from the American Iron and Steel Institute.

The ingots were processed by Carpenter Technology Corporation to provide material of the highest possible homogeneity. Following acceptance of the composition based on NBS analyses, selected portions of the ingot material were extensively tested for homogeneity at NBS by D.M. Bouchette, S.D. Rasberry, and J.I. Weber, Jr. Only that material meeting a critical evaluation was processed to the final shapes and sizes.

Cooperative analyses for oxygen and nitrogen were performed in the Applied Research Laboratory, United States Steel Corporation, Monroeville, Pennsylvania, by J.F. Martin; Homer Research Laboratories, Bethlehem Steel Corporation, Bethlehem, Pennsylvania, by F.H. Ruch; and Research and Technology, Armco Steel Corporation, Middletown, Ohio, by L.C. Ikenberry.

Analyses for oxygen and nitrogen on samples from the melt were performed in the Analytical Chemistry Division of the National Bureau of Standards by J.T. Sterling; and for nitrogen only in the Analytical Laboratory of Inland Steel Company, East Orange, Indiana, by J.E. Joyce.

**CAUTION:** Oxygen determinations should be made on thoroughly and freshly cleaned samples.

#### PREPARATION FOR THE DETERMINATION OF OXYGEN:

1. Samples should be cut from the original rod to minimize heating of the sample; e.g., by a hand hacksaw.
2. All surfaces of the cut samples should be thoroughly cleaned with a fine file.
3. Samples should be washed with C.P. ether, acetone, or other suitable solvent, dried in a stream of warm clean air and then handled only with clean forceps.
4. Analyses should be made as soon as possible after cleaning the sample.