

National Bureau of Standards

Certificate of Analysis

Standard Reference Material 1099

Electrolytic Iron

(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 1099 is intended for use in the determination of gases in metals by vacuum or inert gas fusion and neutron activation methods of analyses. The oxygen content of this standard was determined by vacuum fusion at NBS.

<u>Element</u>	<u>PPM by Weight</u>
Oxygen	61 ± 3^a
Nitrogen	(13) ^b
Hydrogen	(<5)

^aThe standard deviation of a single determination based on 126 measurements on selected rod material.

^bValues in parentheses are not certified.

The overall direction and coordination of the technical measurements at NBS leading to certification were performed under the direction of O. Menis and J.T. Sterling.

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 7-28-70)

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.L. Weber, Jr. Only that material meeting a critical evaluation was processed to the final shapes and sizes.

Analyses for oxygen were performed in the Analytical Chemistry Division of the National Bureau of Standards by J.T. Sterling.

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.

CONDITIONS FOR ANALYSIS AT NBS:

Method	Vacuum fusion
Furnace temperature	1675 °C
Furnace pressure	$<10^{-5}$ torr
Collection time	4 min
Bath material	High-purity nickel
Carbon monoxide determination	Infrared absorption