

U. S. Department of Commerce
Alexander B. Trowbridge,

Secretary
National Bureau of Standards
A. V. Astin, Director

Certificate of Analysis

Standard Reference Material 1609 Certified Gas Standard Oxygen in Nitrogen

Oxygen concentration 20.95 ± 0.02 mole percent

The molar concentration of oxygen is relative to all other components of the mixture including nitrogen, argon, carbon dioxide, and possible traces of water vapor. The carbon dioxide and argon contents are approximately that of normal air, that is 0.03 and 0.9 mole percent, respectively.

ANALYSIS.—The oxygen concentration in this Standard Reference Material was measured relative to that of a standard whose oxygen content was determined to be 20.957 ± 0.017 mole percent. The limit shown is the 95 percent confidence limit of the mean based on thirty-six determinations. The method of comparison utilized a relative method based on the paramagnetic properties of oxygen. The results are reproducible to ± 0.005 mole percent.

STABILITY.—No change in the concentration of oxygen occurred on transfer of the sample from the bulk container to the sample cylinder, nor in a sample stored in a cylinder for three months at room temperature. Furthermore, no change was observed in the oxygen content of a sample stored in a cylinder at 60°C for six weeks.

The oxygen concentration shown above is considered to be accurate for the gas as contained in an unopened cylinder for a period of five years. Periodic analyses of the gas mixture will be made and users will be notified should any significant deviation from the above value appear.

Chemical analyses leading to certification of this Standard Reference Material were performed by E. E. Hughes and W. D. Dorko.

The overall direction and coordination of the technical measurements leading to certification were performed under the chairmanship of J. K. Taylor.

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 T. W. Mears.

Washington, D. C. 20234
March 1, 1968

W. Wayne Meinke, Chief
Office of Standard Reference Materials

(Over)

USE AND STORAGE.—The sample is contained in a disposable cylinder and will not be refilled.

Each cylinder has been leak-tested at the joint between valve and cylinder. Valves are hand-tightened and were determined to be leak-free before filling. The valves are equipped to accept CGA-580 fittings. To avoid contamination of the contents all connections should be evacuated, or flushed with the sample, before use.

Cylinders should be stored at room temperature. Cylinder valves are equipped with rupture disk relief valves set to rupture at 1200 psi.

Each cylinder is filled to about 500 psi. The total volume of gas is approximately 68 liters measured under standard conditions.

DOT special permit number 5075.