

# National Bureau of Standards Certificate of Analysis

## Standard Reference Material 1702

Carbon Dioxide and Oxygen in Nitrogen

(Nominal Concentrations)

(Carbon Dioxide 5%, Oxygen 20%)

(Blood Gas Standard)

This Standard Reference Material (SRM) is intended primarily for the calibration of instruments used for the analysis of blood gases. It is not intended as a working standard, but rather as a primary standard to which the concentration of daily working standards may be related.

Carbon Dioxide Concentration:  $\pm$  mole percent

Oxygen Concentration:  $\pm$  mole percent

Sample Number:

The concentration of carbon dioxide is relative to all other constituents of the gas; the concentration of oxygen is relative to all other constituents of the gas. The uncertainties include the inaccuracy of the gravimetric primary standards and the imprecision of the intercomparisons with the gravimetric standards.

The content of each cylinder is individually analyzed and the concentrations appearing above are the measured values for the contents of the cylinder identified by the sample number on this certificate.

The development and evaluation of the gravimetric primary standards used to certify this SRM were performed at the National Bureau of Standards by R. Myers and R.V. Kelly.

The overall direction and coordination of the technical measurements leading to certification were performed under the chairmanship of W.D. Dorko and H.L. Rook of the NBS Gas and Particulate Science Division.

The technical and support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Office of Standard Reference Materials by R. Alvarez.

### Preparation

The cylinder identified in this certificate is one of a group or "lot" of cylinders. A lot contains a minimum of 26 cylinders and is prepared commercially according to rigid specifications so that it is homogeneous and stable. Each cylinder in the lot is individually analyzed at NBS for the certified components.

### Analysis

The concentrations of carbon dioxide and oxygen in this SRM were determined by comparison with sets of gravimetric primary standards. The intercomparisons were performed using a gas chromatograph equipped with a thermal conductivity detector.

### Stability

This SRM is contained in a disposable steel cylinder. The stability is considered good and no decrease in concentration has been observed in similar samples contained in this type cylinder. However, the values appearing on this certificate are considered valid for only 2 years from date of purchase. Periodic reanalyses of representative samples from this lot will be performed at NBS, and if significant changes are observed within the 2 year period, purchasers of the SRM will be notified.

### Cylinder

This SRM is supplied in medical type cylinders at a pressure of 13.1 MPa (1900 psi) with a deliverable volume of 0.56 m<sup>3</sup> (20 cubic feet) at STP. The cylinders conform to DOT specifications and are equipped with CGA-860 valves. The cylinders become the property of the purchaser.