

National Bureau of Standards
Certificate of Analysis
Standard Reference Material 1674a
Carbon Dioxide in Nitrogen
(Mobile-Source Emission Gas Standard)

This Standard Reference Material is intended for use in the calibration of instruments used for the analysis of carbon dioxide in mobile source emissions and related uses. It is not intended as a daily working standard, but rather as a primary standard to which the concentration of the daily working standards may be related.

Carbon dioxide concentration: 7.07 ± 0.07 mole percent

The concentration of carbon dioxide is relative to all other constituents of the gas.

Each cylinder of gas is individually analyzed, but the concentration appearing on this certificate applies to all samples within the lot. The concentration of all samples in the lot fell within a limit of ± 0.3 percent of the average for the lot and all samples are considered identical within the stated limits of accuracy.

The carbon dioxide in nitrogen mixtures were prepared by the Precision Gas Products Company of Rahway, New Jersey.

Chemical analyses leading to the certification of this Standard Reference Material were performed at the National Bureau of Standards by W. D. Dorko, S. Meeks, and D. G. Friend.

The overall direction and coordination of the technical measurements leading to certification were performed under the chairmanship of E. E. Hughes and 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
October 1, 1975

J. Paul Cali, Chief
Office of Standard Reference Materials

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Analysis

Carbon dioxide in this Standard Reference Material was determined by comparison with a secondary standard that had previously been intercompared with a set of gravimetric primary standards. The imprecision of intercomparison is less than 0.3 percent of the concentration of carbon dioxide. The method of intercomparison was gas chromatography using thermal conductivity determination of carbon dioxide. The gravimetric standards against which the secondary standard was analyzed were prepared at such concentrations and in such numbers that non-linearity of the thermal conductivity detection was minimized. The limits of inaccuracy represent the uncertainty in the concentration of carbon dioxide in the gravimetric primary standards and the imprecision of the intercomparison involved in the various measurements.

Stability

The stability of these mixtures is considered to be excellent. No loss of carbon dioxide has been observed in either the standards or the Standard Reference Material. Periodic reanalyses of representative samples from this batch will be performed, and if any change in concentration is observed the purchasers of other samples from this batch will be notified.

The Standard Reference Material should be stored at room temperature and should not be allowed to experience either high or low ambient temperatures.

Cylinder

These gases are supplied in cylinders at 1800 psi pressure with a delivered volume of 31 cubic feet at STP. The cylinders conform to the DOT 3AA-2015 specification and are equipped with CGA-580 valves.