

U.S. Department of Commerce
Elliot L. Richardson,
Secretary

National Bureau of Standards
Ernest Ambler, Acting Director

National Bureau of Standards
Certificate of Analysis
Standard Reference Material 1663
Sulfur Dioxide in Nitrogen
(Stationary Source Emission Gas Standard)

This Standard Reference Material is intended for use in the calibration of instruments used for the analysis of sulfur dioxide emitted from stationary sources. It is not intended as a working standard, but rather as a primary standard to which the concentration of other standards may be related.

Sulfur Dioxide concentration: 1497 ± 14 ppm

The concentration is on a molar basis and is relative to all other constituents of the mixture.

Each cylinder of gas was individually analyzed, but the concentration appearing on this certificate applies to all samples within the lot. The concentration of each sample 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.

Stability

Samples of sulfur dioxide in nitrogen in similar containers have been periodically analyzed over a period of eighteen months and no change in concentration of any sample has been observed.

The concentration on the certificate is valid for one year from the date of shipment from NBS. Periodic re-analyses of representative samples from this lot will be performed at NBS, and if significant changes are observed within one year the purchasers of samples from the lot will be notified.

Revalidation of the concentration of sulfur dioxide in cylinders which have been in the possession of the purchasers for more than one year can be made by the National Bureau of Standards on a cost-reimbursement basis if the cylinder pressure exceeds 6.9MPa (1000 psi).

These mixtures were prepared by the Rare and Specialty Gases Division of AIRCO, Riverton, N.J.

Chemical analysis leading to certification of this Standard Reference Material was performed at the National Bureau of Standards by E. R. Deardorff 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
June 29, 1976

J. Paul Cali, Chief
Office of Standard Reference Materials

(over)

Analysis

The sulfur dioxide content of this Standard Reference Material was determined by analysis using the hydrogen peroxide method. This method is considered to be inherently accurate. This has been confirmed by analysis of samples prepared volumetrically using the hydrogen peroxide method and by comparison of sulfur dioxide determined gravimetrically in samples previously analyzed by the peroxide method. No evidence of a systematic error in the peroxide method has been observed.

Error

The limit on the concentration is the estimated upper limit of the error of the average for the lot based on analysis of twenty-eight samples. The error includes the imprecision of analysis, the inaccuracy in measurement of the volume of the analyzed sample, and the inaccuracy of standardization of the reagent solution. The imprecision of analysis represented by the standard deviation of the average is 0.33% relative. The error in volume measurements is 0.2% relative and the inaccuracy of standardization of this reagent is 0.28% relative.

Precaution

This cylinder should not be reused or refilled. If the user is unable to dispose of the cylinder it may be returned, prepaid, to the National Bureau of Standards for disposal.

Cylinder

These gases are supplied in cylinders with a delivered volume of 0.85 m³ (30 cubic feet) at STP. The cylinders conform to the DOT specification and are equipped with CGA 350 valves.