

# National Bureau of Standards

## Certificate of Analysis

Standard Reference Material 1693

Sulfur Dioxide in Nitrogen

(Nominal Concentration 50 ppm)

(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. Each cylinder is individually analyzed and the concentration that appears below applies to the cylinder identified on this certificate.

Sulfur dioxide concentration:  $\pm$   $\mu\text{mole/mole (ppm)}$

Cylinder Number:

Sample Number:

The concentration of sulfur dioxide is relative to all other constituents of the gas. The uncertainty shown is the estimated upper limit of error of the sulfur dioxide concentration. This uncertainty includes the imprecision of the intercomparisons at the 95 percent confidence level and the inaccuracy in the peroxide method including the measurement of volume and the standardization of the reagent solution.

The original development and evaluation of the sulfur dioxide in nitrogen series of Standard Reference Materials was performed at the National Bureau of Standards by W. P. Schmidt and E. R. Deardorff.

The overall direction and coordination of technical measurements leading to certification were performed in the Gas and Particulate Science Division under the chairmanship of E. E. Hughes and H. L. Rook.

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. E. Gills.

Washington, D.C. 20234  
March 20, 1981

George A. Uriano, Chief  
Office of Standard Reference Materials

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### Certification Information

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

### Analysis:

The sulfur dioxide content of this Standard Reference Material was determined by comparison with a set of NBS primary standards. The intercomparisons were performed using a gas chromatograph equipped with a thermal conductivity detector and/or a non-dispersive infrared analyzer. The primary standards were analyzed by the hydrogen peroxide method which is considered to be inherently accurate in the concentration range of this SRM. This has been confirmed by the gravimetric determination of sulfur dioxide in samples previously analyzed by the peroxide method. The gravimetric method was evaluated by analyzing sulfuric acid standards prepared volumetrically. No evidence of a systematic error in the peroxide method has been observed.

### Stability:

This SRM is contained in an aluminum cylinder. Samples of sulfur dioxide in nitrogen in similar containers have been periodically analyzed over a period of two years and no change in concentration has been observed.

The value appearing on this certificate is valid for two years from the latest date stamped on this certificate. Periodic reanalyses of representative samples from this lot will be performed at NBS, and if significant changes are observed within the two-year period, purchasers of the SRM will be notified.

### Cylinder:

This SRM is supplied in cylinders at a pressure of approximately 12.4 MPa (1800 psi) with a deliverable volume of 0.88 m<sup>3</sup> (31 cubic feet) at STP. The cylinders conform to DOT specifications and are equipped with CGA/660 valves.

The cylinders become the property of the purchaser. However, they may be returned, prepaid, to the National Bureau of Standards for disposal.

SRM 1693