

# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 1805

#### Benzene in Nitrogen

(Nominal Concentration 0.25 ppm)

(Stationary Source Emission Gas Standard)

This Standard Reference Material is intended for use in the calibration of instruments used for the determination of benzene in stationary-source emissions. It is not intended as a working standard, but rather as a primary standard to which the concentration of the daily working standards may be related.

Benzene concentration:  $\pm$   $\mu$ mole/mole (ppm)  
Cylinder Number:                      Sample Number:

The concentration of benzene is relative to all other constituents of the gas. The uncertainty shown is the estimated upper limit of error of the benzene concentration at the 95% confidence level. This uncertainty includes the inaccuracy in the concentration of benzene in gravimetrically prepared primary standards and the imprecision of intercomparison with these primary standards. This sample is certified only for the concentration of benzene. However, representative samples from the lot have been examined for the presence of other hydrocarbons. The estimated concentration of other hydrocarbons, expressed as benzene, is  $\mu$ mole/mole (ppm).

Each cylinder was individually analyzed and the concentration appearing above applies only to the cylinder with identification number corresponding to the one on this certificate.

Stability and Precautions: See reverse side of this certificate.

The original development and evaluation of the benzene in nitrogen series of Standard Reference Materials were performed in the Gas and Particulate Science Division by W.P. Schmidt and W.F. Cuthrell.

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

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 R. Alvarez.

Washington, D.C. 20234  
December 27, 1982

(over)

George A. Uriano, Chief  
Office of Standard Reference Materials

### Certification Information

The cylinder identified on 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 benzene content.

### Analysis

The concentration of benzene in this Standard Reference Material was determined by comparison with a set of gravimetric standards and with a calibrated benzene permeation system. The intercomparisons were performed using a gas chromatograph equipped with a flame ionization detector.

### Stability and Precautions

This SRM is contained in an aluminum cylinder. The stability of the gas mixture is considered good and no decrease in concentration has been observed in similar samples contained in aluminum cylinders. However, two precautions should be observed in using this SRM for accurate analyses.

1. Cylinder control valves should be used instead of regulators to sample from the high pressure gas cylinders and these valves should be conditioned by passing at least one liter of the SRM through the valve prior to actual sampling.
2. The delivered concentration of benzene from the cylinder increases as the cylinder pressure approaches ambient pressure. Therefore the SRM should not be used below a cylinder pressure of 2.8 MPa (400 psi).

The value appearing on this certificate is 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 cylinders at a pressure of 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-350 valves.

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