

# National Bureau of Standards Certificate of Analysis

## Standard Reference Material 2650

### Propane in Nitrogen

(Nominal Concentration 20,000 ppm)

(Mobile-Source Emission Gas Standard)

(In Cooperation with the Motor Vehicle Manufacturers Association)

This Standard Reference Material is intended for use in the calibration of instruments used for the analysis of hydrocarbon in mobile-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.

Propane concentration:  $\pm$   $\mu\text{mole/mole (ppm)}$   
Cylinder Number: Sample Number:

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

The content of each cylinder is individually analyzed and the concentration appearing above is the measured value for the cylinder and sample identified on this certificate.

The research and development leading to the certification of this Standard Reference Material were supported by the Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA), Detroit, Michigan.

The development and evaluation of the gravimetric primary standards used to certify this Standard Reference Material were performed at the National Bureau of Standards by MVMA Research Associates W. R. Miller and W. J. Thorn.

The overall direction and coordination of the technical measurements leading to certification were performed under the chairmanship of E. E. Hughes 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 Standard Reference Material were coordinated through the Office of Standard Reference Materials by T. E. Gills.

Washington, D.C. 20234  
May 30, 1980

George A. Uriano, Chief  
Office of Standard Reference Materials

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### Analysis

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

### Stability

This SRM is contained in an aluminum cylinder. The stability is considered good and no loss of concentration has been observed in similar samples contained in aluminum cylinders. However, 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.

SRM 2650