National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 1808

Tetrachloroethylene in Nitrogen

(Nominal Concentration - 0.25 μmol/mol)

(Stationary-Source Emission Gas Standard)

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

This SRM is supplied in an aluminum cylinder at a nominal pressure of 12.4 MPa (1800 psi) with a deliverable volume of 0.72 m^3 (25 ft^3) at normal temperature and pressure. The cylinder conforms to DOT specifications and is equipped with a CGA-350 valve. The cylinder becomes the property of the purchaser.

Tetrachloroethylene concentration: ± μmol/mol

Cylinder number: Sample number:

The uncertainty shown is the estimated upper limit of error of each hydrocarbon concentration at the 95% confidence interval. This uncertainty includes the estimated inaccuracy of the NIST primary gravimetric standards, the imprecision of the intercomparisons of the batch standards, and the imprecision of the comparison of the SRM with the batch standards.

This SRM is certified only for the concentration of tetrachloroethylene; however, representative samples from the "lot" have been examined for the presence of other hydrocarbons. The estimated concentration of other hydrocarbons, is _____ μmol/mol, expressed as tetrachloroethylene.

CAUTION: Care must be taken to avoid contamination of the sample during the use of the cylinder with any gas handling system.

The original development and evaluation of this Standard Reference Material was performed at NIST by W.C. Cuthrell, W.L. Zielinski, and H.L. Rook.

The overall direction and coordination of the technical measurements leading to the certification were performed in the NIST Organic Analytical Research Division by W.D. Dorko, F.R. Guenther, and W.E. May.

The technical and support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by T.E. Gills.

Gaithersburg, MD 20899
June 8, 1993
(Revision of certificate dated 6-13-83)

Thomas E. Gills, Acting Chief
Standard Reference Materials Program

(over)

Expiration of Certification: The certified value on this certificate is valid for 4 years from the date of shipment from the National Institute of Standards and Technology (NIST). A validation sticker is supplied with each gas cylinder to validate its certification period. Please affix this sticker to the cylinder upon the receipt of the SRM.

Each cylinder of gas is individually analyzed, and the concentration given applies only to the cylinder identified by cylinder number and sample number on this certificate.

Material Preparation: 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 to ensure that the lot is homogeneous and stable.

Analysis: These mixtures were analyzed using a gas chromatograph equipped with a flame ionization detector (GC/FID) with a 2.44 m x 3.2 mm o.d. ss column packed with 8% SP-1000 on 60/80 mesh Carbopack* B. The column oven was operated isothermally at 200 °C with a carrier gas flow rate of 45 mL/min nitrogen and the sample volume injected onto the head of the column was 10 mL. The GC/FID was calibrated with gravimetrically prepared gas standards which bracketed the unknowns.

STABILITY: The stability of this SRM is considered excellent and no changes in concentration have been observed for similar samples contained in aluminum cylinders for periods of time greater than 4 years. The value appearing on this certificate is considered valid for 4 years from date of shipment. Periodic reanalyses of representative samples from this lot will be performed, and if significant changes are observed within a 4-year period, the purchaser will be notified.

Samples from similar gas mixtures have exhibited a change in constituent concentration when the cylinder pressure fell below 1.04 MPa (150 psi). Therefore, it is recommended that the SRM <u>not</u> be used below this pressure.

Reanalysis: The NIST will reanalyze this SRM for the original purchaser for a fee not to exceed the analytical cost of similar SRMs available at the time of the request for reanalysis, providing the cylinder pressure is at least 6.9 MPa (1000 psi). The original purchaser should contact the NIST Organic Analytical Research Division at (301) 975-3108 to arrange for this service.

*The use of a trademark in this certificate is for identification only and does not imply endorsement of the product by the National Institute of Standards and Technology.