



Standard Test Method for Ozone in the Atmosphere: Continuous Measurement by Ethylene Chemiluminescence¹

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1. Scope

1.1 This test method describes the sampling and continuous analysis of the ozone content of the atmosphere at concentrations of 20 to 2000 μg of ozone/ m^3 (10 ppb (v) to 1 ppm (v)).

1.2 This test method is limited in application by its sensitivity to interferences as described below. This test method is not suitable for personal sampling because of instrument size and sensitivity to vibration and ambient temperature.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Some specific precautionary statements are presented in Section 8.

2. Referenced Documents

2.1 ASTM Standards:²

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D1357 Practice for Planning the Sampling of the Ambient Atmosphere

D1914 Practice for Conversion Units and Factors Relating to Sampling and Analysis of Atmospheres

D3249 Practice for General Ambient Air Analyzer Procedures

D3670 Guide for Determination of Precision and Bias of Methods of Committee D22

D5011 Practices for Calibration of Ozone Monitors Using Transfer Standards

D5110 Practice for Calibration of Ozone Monitors and Certification of Ozone Transfer Standards Using Ultraviolet Photometry

¹ This test method is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.03 on Ambient Atmospheres and Source Emissions.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

IEEE/ASTM SI-10 Practice for Use of the International System of Units (SI) (the Modernized Metric System)

2.2 *U.S. Environmental Protection Agency Standards:*³

EPA-600/4-79-056 Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone (NTIS: PB80146871)

EPA-600/4-79-057 Technical Assistance Document for the Calibration of Ozone Monitors (NTIS: PB80149552)

EPA-600/4-80-050 Evaluation of Ozone Calibration Techniques (NTIS: PB81118911)

EPA-600/4-83-003 Performance Test Results and Comparative Data for Designated Reference and Equivalent Methods for Ozone (NTIS: PB83166686)

2.3 *Code of Federal Regulations:*³

40-CFR-Part 53.20

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology **D1356** and Practice **D1914**. An explanation of units, symbols and conversion factors may be found in Practice **IEEE/ASTM SI-10**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *absolute ultra-violet photometer*—a photometer whose design, construction and maintenance is such that it can measure the absorbance caused by ozone mixtures without reference to external absorption standards. Given a value for the absorption coefficient of ozone at 253.7 nm and a reading from the absolute ultraviolet photometer, ozone concentrations can be calculated with accuracy. Measurements by an absolute ultraviolet photometer should be made on prepared ozone mixtures free from interferences.

3.2.2 *primary standard*—a standard directly defined and established by some authority, against which all secondary standards are compared.

3.2.3 *secondary standard*—a standard used as a means of comparison, but checked against a primary standard.

3.2.4 *standard*—an accepted reference sample or device used for establishing measurement of a physical quantity.

³ Available from National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, VA 22161, <http://www.ntis.gov>.