



Designation: D 5011 – 92 (Reapproved 1997)^{€1}

Standard Practices for Calibration of Ozone Monitors Using Transfer Standards^{1,2}

This standard is issued under the fixed designation D 5011; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

^{€1} NOTE—Footnote 10 was deleted editorially in September 1997.

1. Scope

1.1 These practices describe means for calibrating ambient, workplace or indoor ozone monitors, using transfer standards.

1.2 These practices describe five types of transfer standards:

- (A) Analytical instruments
- (B) Boric acid potassium iodide (BAKI) manual analytical procedure
- (C) Gas phase titration with excess nitric oxide
- (D) Gas phase titration with excess ozone
- (E) Ozone generator device.

1.3 These practices describe procedures to establish the authority of transfer standards: qualification, certification, and periodic recertification.

1.4 *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.* See Section 8 for specific precautionary statements.

2. Referenced Documents

2.1 ASTM Standards:

- D 1071 Test Methods for Volumetric Measurement of Gaseous Fuel Samples³
- D 1193 Specification for Reagent Water⁴
- D 1356 Terminology Relating to Sampling and Analysis of Atmospheres⁵
- D 3195 Practice for Rotameter Calibration⁵
- D 3249 Practice for General Ambient Air Analyzer Procedures⁵
- D 3631 Test Methods for Measuring Surface Atmospheric Pressure⁵

¹ These practices are under the jurisdiction of ASTM Committee D-22 on Sampling and Analysis of Atmospheres and are the direct responsibility of Subcommittee D22.03 on Ambient Atmospheres and Source Emissions.

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² These practices are adapted from EPA-4-79-056, September 1979; "Transfer Standards for Calibration of Air Monitoring Analyzers for Ozone. Technical Assistant Document" by F. F. McElroy, available from the National Technical Information Service, Springfield, VA 22161.

³ *Annual Book of ASTM Standards*, Vol 05.05.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

⁵ *Annual Book of ASTM Standards*, Vol 11.03.

D 5110 Practice for Calibration of Ozone Monitors and Certification of Ozone Transfer Standards Using Ultraviolet Photometry⁵

E 591 Practice for Safety and Health Requirements Relating to Occupational Exposure to Ozone⁶

2.2 Other Documents:

40 CFR Part 50, Environmental Protection Agency Regulations on Ambient Air Monitoring Reference Methods⁷

3. Terminology

3.1 For definitions of terms used in this standard, see Terminology D 1356.

3.2 Definitions of Terms Specific to This Standard:

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

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

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

3.2.4 *transfer standard*—a type of secondary standard. It is a transportable device or apparatus, which, together with operational procedures, is capable of reproducing pollutant concentration or producing acceptable assays of pollutant concentrations.

3.2.5 *zero air*—purified air that does not contain ozone and does not contain any other component that may interfere with the measurement. See 7.1.

3.3 Symbols:

b	= Spectrophotometer cell path length, cm. See Annex A2.
d_{avg}	= Average of discrete single point comparisons. See Annex A1.
d_i	= Single point comparison. See Annex A1.
F_D	= Diluent air flow, mL/min.
F_D'	= New diluent air flow, mL/min.
F_{NO}	= NO flow, mL/min.

⁶ Discontinued; see 1990 *Annual Book of ASTM Standards*, Vol 11.03.

⁷ Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.