



Designation: D1607 – 91 (Reapproved 2018)^{ε1}

Standard Test Method for Nitrogen Dioxide Content of the Atmosphere (Griess-Saltzman Reaction)¹

This standard is issued under the fixed designation D1607; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

^{ε1} NOTE—Warning notes were editorially updated throughout in July 2018.

1. Scope

1.1 This test method² covers the manual determination of nitrogen dioxide (NO₂) in the atmosphere in the range from 4 to 10 000 µg/m³ (0.002 to 5 ppm(v)) when sampling is conducted in fritted-tip bubblers.

1.2 For concentrations of NO₂ in excess of 10 mg/m³ (5 ppm(v)), as occur in industrial atmospheres, gas burner stacks, or automotive exhaust, or for samples relatively high in sulfur dioxide content, other methods should be applied. See for example Test Method **D1608**.

1.3 The maximum sampling period is 60 min at a flow rate of 0.4 L/min.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. See also 7.2.2 for other precautions.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

- D1071** Test Methods for Volumetric Measurement of Gaseous Fuel Samples
- D1193** Specification for Reagent Water
- D1356** Terminology Relating to Sampling and Analysis of Atmospheres
- D1357** Practice for Planning the Sampling of the Ambient Atmosphere
- D1608** Test Method for Oxides of Nitrogen in Gaseous Combustion Products (Phenol-Disulfonic Acid Procedures)
- D3195** Practice for Rotameter Calibration
- D3609** Practice for Calibration Techniques Using Permeation Tubes
- D3631** Test Methods for Measuring Surface Atmospheric Pressure
- E1** Specification for ASTM Liquid-in-Glass Thermometers
- E128** Test Method for Maximum Pore Diameter and Permeability of Rigid Porous Filters for Laboratory Use

3. Terminology

3.1 For definitions of terms used in this test method, refer to Terminology **D1356**.

4. Summary of Test Method

4.1 The NO₂ is absorbed in an azo-dye-forming reagent (**1**).⁴ A red-violet color is produced within 15 min, the intensity of which is measured spectrophotometrically at 550 nm.

5. Significance and Use

5.1 Nitrogen dioxide plays an important role in photochemical smog-forming reactions and, in sufficient concentrations, is deleterious to health, agriculture, materials, and visibility.

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 Adapted from “Selected Methods for the Measurement of Air Pollutants,” PHS Publication No 999-AP-11, May 1965. A similar version has been submitted to the Intersociety Committee.

³ 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.

⁴ The boldface numbers in parentheses refer to a list of references at the end of this standard.