



Designation: D7619 – 22

Standard Test Method for Sizing and Counting Particles in Light and Middle Distillate Fuels, by Automatic Particle Counter^{1,2}

This standard is issued under the fixed designation D7619; 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.

1. Scope*

1.1 This test method uses a specific automatic particle counter² (APC) to count and measure the size of dispersed dirt particles, water droplets and other particles, in light and middle distillate fuel, and bio fuels such as biodiesel and biodiesel blends, in the overall range from 4 $\mu\text{m}(\text{c})$ to 100 $\mu\text{m}(\text{c})$ and in the size bands $\geq 4 \mu\text{m}(\text{c})$, $\geq 6 \mu\text{m}(\text{c})$, and $\geq 14 \mu\text{m}(\text{c})$.

NOTE 1—ASTM and military specification fuels falling within the scope of this test method include Specifications: **D975** grades 1D and 2D, **D1655**, **D3699**, **D4814** (see 14.1.1.1), **D6751**, **D7467**, distillate grades of **D396** and **D2880**, MIL-DTL-83133, and MIL-DTL-16884.

NOTE 2—For the purposes of this test method, water droplets are counted as particles, and agglomerated particles are detected and counted as a single larger particle. Dirt includes biological particles. Although the projected area of a particle is measured, this is expressed as the diameter of a sphere for the purposes of this test method.

NOTE 3—The notation (c), used with particle sizes, is used to denote that the apparatus has been calibrated in accordance with ISO 11171. Strictly this only applies to particles up to 50 μm .

NOTE 4—This test method may be used for particle sizes bands up to 100 $\mu\text{m}(\text{c})$, however the precision has only been determined for the size bands $\geq 4 \mu\text{m}(\text{c})$, $\geq 6 \mu\text{m}(\text{c})$, and $\geq 14 \mu\text{m}(\text{c})$. All measurements are per millilitre.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

¹ This test method is under the jurisdiction of ASTM Committee **D02** on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee **D02.14** on Stability, Cleanliness and Compatibility of Liquid Fuels.

Current edition approved April 1, 2022. Published May 2022. Originally approved in 2010. Last previous edition approved in 2017 as D7619 – 17. DOI: 10.1520/D7619-22.

² The sole source of the apparatus known to the committee at this time is SETA-AvCount, available from Stanhope-Seta, London Street, Chertsey, Surrey KT16 8AP UK. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration of a meeting of the responsible technical committee,¹ which you may attend.

1.4 *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

D396 Specification for Fuel Oils

D975 Specification for Diesel Fuel

D1655 Specification for Aviation Turbine Fuels

D2880 Specification for Gas Turbine Fuel Oils

D3699 Specification for Kerosine

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products

D4814 Specification for Automotive Spark-Ignition Engine Fuel

D5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products

D6300 Practice for Determination of Precision and Bias Data for Use in Test Methods for Petroleum Products, Liquid Fuels, and Lubricants

D6751 Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels

D7467 Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)

2.2 ASTM Adjuncts:⁴

ADJ6300 D2PP Determination of Precision and Bias data for Use in Test Methods for Petroleum Products

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 Out of print.

*A Summary of Changes section appears at the end of this standard