



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.

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 $\mu\text{m(c)}$ to 100 $\mu\text{m(c)}$ and in the size bands $\geq 4 \mu\text{m(c)}$, $\geq 6 \mu\text{m(c)}$, and $\geq 14 \mu\text{m(c)}$.

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 $\mu\text{m(c)}$, however the precision has only been determined for the size bands $\geq 4 \mu\text{m(c)}$, $\geq 6 \mu\text{m(c)}$, and $\geq 14 \mu\text{m(c)}$. All measurements are per mL.

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 and health 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 and Cleanliness of Liquid Fuels.

Current edition approved Dec. 1, 2012. Published March 2013. Originally approved in 2010. Last previous edition approved in 2012 as D7619–12a. DOI: 10.1520/D7619-12B.

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.

2. Referenced Documents

2.1 ASTM Standards:³

- D396** Specification for Fuel Oils
- D975** Specification for Diesel Fuel Oils
- 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
- 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 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

2.3 ISO Standards:⁵

- ISO 11171** Hydraulic Fluid Power—Calibration of Automatic Particle Counters for Liquids
- ISO 4406** Hydraulic Fluid Power—Fluids—Method for Coding Level of Contamination by Solid Particles
- ISO 12103-A1** Specification for Ultra Fine Test Dust (UFTD)
- ISO 12103-A3** Specification for Medium Test Dust (MTD)

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.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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