



Designation: D7321 – 18

Standard Test Method for Particulate Contamination of Biodiesel B100 Blend Stock Biodiesel Esters and Biodiesel Blends by Laboratory Filtration¹

This standard is issued under the fixed designation D7321; 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 covers the determination of the mass of particulate contamination in B100 biodiesel in accordance with Specification [D6751](#) and BXX blends that are prepared against all No. 1 and No. 2 grade fuels allowed within Specifications [D396](#) and [D975](#).

NOTE 1—Middle distillate fuels with flash points less than 38 °C have been ignited by discharges of static electricity when the fuels have been filtered through inadequately bonded or grounded glass fiber filter systems. See Guide [D4865](#) for a more detailed discussion of static electricity formation and discharge.

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.*

1.4 *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:²

[D396](#) Specification for Fuel Oils
[D975](#) Specification for Diesel Fuel Oils
[D1193](#) Specification for Reagent Water

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.

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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.

[D4057](#) Practice for Manual Sampling of Petroleum and Petroleum Products

[D4865](#) Guide for Generation and Dissipation of Static Electricity in Petroleum Fuel Systems

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

3. Terminology

3.1 Definitions:

3.1.1 *biodiesel, n*—fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100.

3.1.2 *biodiesel blend, BXX, n*—a fuel composed of biodiesel blendstock with hydrocarbon-based diesel fuel.

3.1.3 *bond, v*—to connect two parts of a system electrically by means of a conductive wire to eliminate voltage differences.

3.1.4 *ground, vt*—to connect electrically with ground (earth).

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *filtered flushing fluids, n*—any of three solvents, methanol, propan-2-ol (isopropanol), or 2,2,4-trimethylpentane, filtered through a nominal 0.45 µm filter.

3.2.2 *glass fiber filter, n*—glass fiber filter used in this test method.

4. Summary of Test Method

4.1 B100 Biodiesel Blend Stock Filtration:

4.1.1 A measured volume of 400 mL to 450 mL of biodiesel ester (B100) is vacuum filtered through one 0.7 µm glass fiber filter. If upon visual inspection particulate contamination is observed, this may result in a high filtration time. In such cases, when the contamination is high or of a nature that induces slow filtration rates, two or more filtrations using a fresh filter each time may be required to complete filtration in a reasonable time.

4.1.2 After the filtration has been completed, the filter is washed with solvent, dried, and weighed. The particulate contamination level is determined by the mass gained by the glass fiber filter, and is reported in units of grams per cubic metre or its equivalent in milligrams per litre.

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