



# Standard Test Method for Oxidation Stability of Biodiesel (B100) and Blends of Biodiesel with Middle Distillate Petroleum Fuel (Accelerated Method)<sup>1</sup>

This standard is issued under the fixed designation D7462; 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 a measurement of the oxidation stability of biodiesel (B100) blendstock as specified in Specification [D6751](#) and blends of biodiesel with middle distillate petroleum fuels, including B6 to B20 blends as specified in Specification [D7467](#) under specified oxidizing conditions at 95°C. Specifically, the oxidation stability is assessed by the formation and measurement of insoluble degradation materials.

NOTE 1—Biodiesel B100, composed of alkyl esters, can have good solubility for some products of oxidative degradation. Thus some B100 samples could undergo significant degradation, but show little or no sediment formation. By contrast, many petroleum diesel fuels have relatively poor solubility for products of oxidative degradation, so Bxx blends, such as B20, could show higher sediment levels. Refer to [Appendix X1](#) for a suggested paraffinic dilution procedure to evaluate oxidative degradation of B100 for degradation materials that are soluble in B100, but insoluble in iso-octane.

NOTE 2—No. 1 and No. 2 grades in Specifications [D396](#) or [D975](#) currently allow up to 5% biodiesel meeting Specification [D6751](#). This method is preferred for testing these fuels that may contain biodiesel blendstock rather than Test Method [D2274](#) due to the incompatibility of biodiesel blendstock with the membrane filters specified in Test Method [D2274](#).

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.*

<sup>1</sup> 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.

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## 2. Referenced Documents

### 2.1 *ASTM Standards:*<sup>2</sup>

- [D381](#) Test Method for Gum Content in Fuels by Jet Evaporation
- [D396](#) Specification for Fuel Oils
- [D943](#) Test Method for Oxidation Characteristics of Inhibited Mineral Oils
- [D975](#) Specification for Diesel Fuel Oils
- [D1193](#) Specification for Reagent Water
- [D2274](#) Test Method for Oxidation Stability of Distillate Fuel Oil (Accelerated Method)
- [D4057](#) Practice for Manual Sampling of Petroleum and Petroleum Products
- [D4177](#) Practice for Automatic Sampling of Petroleum and Petroleum Products
- [D4625](#) Test Method for Middle Distillate Fuel Storage Stability at 43 °C (110 °F)
- [D6751](#) Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels
- [D7467](#) Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)

## 3. Terminology

### 3.1 *Definitions:*

3.1.1 *adherent insolubles* (formerly *adherent gum*), *n*—material that is produced in the course of stressing distillate fuel under the conditions of this test and which adheres to the glassware after fuel has been flushed from the system.

3.1.2 *filterable insolubles*, *n*—material that is produced in the course of stressing the sample fuel under the conditions of this test and can be removed from the fuel by filtration. This

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.