



Designation: D4625 – 04 (Reapproved 2009)



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Standard Test Method for Middle Distillate Fuel Storage Stability at 43°C (110°F)¹

This standard is issued under the fixed designation D4625; 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 Department of Defense.

1. Scope

1.1 This test method covers a method for evaluating the inherent storage stability of distillate fuels having flash points above 38°C (100°F), by Test Methods **D93**, and 90 % distilled points below 340°C (644°F), by Test Method **D86**.

NOTE 1—ASTM specification fuels falling within the scope of this test method are Specification **D396**, Grade Nos. 1 and 2; Specification **D975**, Grades 1-D and 2-D; and Specification **D2880**, Grades 1-GT and 2-GT.

1.2 This test method is not suitable for quality control testing but, rather it is intended for research use to shorten storage time relative to that required at ambient storage temperatures.

1.3 **Appendix X1** presents additional information about storage stability and the correlation of Test Method D4625 results with sediment formation in actual field storage.

1.4 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

D86 Test Method for Distillation of Petroleum Products at Atmospheric Pressure

D93 Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

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

D381 Test Method for Gum Content in Fuels by Jet Evaporation

D396 Specification for Fuel Oils

D975 Specification for Diesel Fuel Oils

D1193 Specification for Reagent Water

D2880 Specification for Gas Turbine Fuel Oils

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *adherent insolubles, n*—gums formed during storage that remain tightly attached to the walls of the vessel.

3.1.2 *filterable insolubles, n*—solids formed during storage that can be removed from the fuel by filtration.

3.1.3 *inherent storage stability, n*—of middle distillate fuel—the resistance to change in storage in contact with air, but in the absence of other environmental factors such as water, or reactive metallic surfaces and dirt.

3.1.4 *total insolubles, n*—sum of the filterable insolubles plus the adherent insolubles.

4. Summary of Test Method

4.1 Four-hundred millilitre volumes of filtered fuel are aged by storage in borosilicate glass containers at 43°C (110°F) for periods of 0, 4, 8, 12, 18, and 24 weeks. After aging for a selected time period, a sample is removed from storage, cooled to room temperature, and analyzed for filterable insolubles and for adherent insolubles.

5. Significance and Use

5.1 Fuel oxidation and other degradative reactions leading to formation of sediment (and color) are mildly accelerated by the test conditions compared with typical storage conditions. Test results have been shown to predict storage stability more