



Designation: D 6426 – 02

An American National Standard

Standard Test Method for Determining Filterability of Middle Distillate Fuel Oils¹

This standard is issued under the fixed designation D 6426; 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 procedure for determining the filterability of distillate fuel oils within the viscosity range from 1.70 to 6.20 mm²/s (cSt) at 40°C.

NOTE 1—ASTM specification fuels falling within the scope of this test method are Specification D 396 Grade Nos. 1 and 2, Specification D 975 Grades 1-D, low sulfur 1-D, 2-D, and low sulfur 2-D, and Specification D 2880 Grade Nos. 1-GT and 2-GT.

1.2 This test method is not applicable to fuels that contain undissolved water.

1.3 The values stated in SI units shall be considered standard.

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:

D 396 Specification for Fuel Oils²

D 975 Specification for Diesel Fuel Oils²

D 2880 Specification for Gas Turbine Fuel Oils²

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products³

D 4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)³

D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products³

D 4860 Test Method for Free Water and Particulate Contamination in Mid-Distillate Fuels (Clear and Bright Numerical Rating)³

E 1 Specification for ASTM Thermometers⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 For this test method, filterability is a measure of the rapidity with which a standard filter medium is plugged by insoluble matter in fuel and can be described in either of the following two ways:

3.1.1.1 *filterability (by pressure)*—the pressure drop across a filter medium when 300 mL of fuel is passed at a rate of 20 mL/min.

3.1.1.2 *filterability (by volume)*—the volume of fuel passed when 104 kPa (15 psi) is reached. This method of report is used when less than 300 mL passes at that pressure.

3.1.1.3 *filterability quality factor (F-QF)*—a value that defines the filter plugging tendency of a fuel caused by particulate. The value is calculated using the volume and pressure attained at the end of the test cycle. Depending on the outcome of the test, two different equations are applied.

3.1.1.4 *Discussion*—Eq 1 is applied if the total sample was discharged prior to reaching the maximum pressure or Eq 2 if the maximum pressure was reached prior to discharging the entire sample. The equations proportion the results so that a continuous range of 0–100 is attained. Eq 1 yields values from 50 to 100, whereas Eq 2 yields values from 0 to 50. Higher values signify less particulate that can plug a filter of a given pore size and porosity.

(1) If the total sample (300 mL) is discharged prior to reaching the maximum pressure (104 kPa or 15 psi), the F-QF is calculated by the following equation:

$$F-QF_{(300 \text{ mL at } P_{(F)})} = ((15 \text{ psi} - P_{(F)}) / 15 \text{ psi})(50) + (50) \quad (1)$$

where:

$P_{(F)}$ = final pressure when the total sample (300 mL) was discharged.

(2) If the total sample is not discharged prior to reaching the maximum pressure (104 kPa or 15 psi), the F-QF is calculated by the following equation:

$$F-QF_{(V_{(F)} \text{ at } 15 \text{ psi})} = V_{(F)} / 6 \quad (2)$$

where:

$V_{(F)}$ = final volume when the maximum pressure was reached.

3.1.1.5 *Discussion*—The final volume ($V_{(F)}$) is divided by six, since the maximum possible volume is 300 mL. By

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 *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 05.02.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.