



Designation: D7545 – 14 (Reapproved 2024)

Standard Test Method for Oxidation Stability of Middle Distillate Fuels—Rapid Small Scale Oxidation Test (RSSOT)¹

This standard is issued under the fixed designation D7545; 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 laboratory test method covers a quantitative determination of the stability of middle distillate fuels such as diesel fuels and heating oils, with up to 100 % biodiesel, under accelerated oxidation conditions, by an automatic instrument.

NOTE 1—This test method is technically equivalent to test method EN 16091

1.2 This test method is designed for products complying with Specification D975 on Diesel Fuel, Grades No. 1D and 2D; Specification D396 on Burner Fuel, Grades No. 1 and No. 2; Specification D6751 on Biodiesel, B100, and Specification D7467 on Diesel Fuel Oil, B6 to B20.

1.3 This test method measures the induction period, under specified conditions, which can be used as an indication of the oxidation and storage stability of middle distillate fuels.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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.*

1.6 *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.*

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. Referenced Documents

2.1 ASTM Standards:²

D396 Specification for Fuel Oils

D975 Specification for Diesel Fuel

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products

D6751 Specification for Biodiesel Fuel Blendstock (B100) for Middle Distillate Fuels

D7467 Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)

2.2 Other Standards:

CEN/TR 16366:2012 Liquid Petroleum Products—Middle Distillates and Fatty Acid Methyl Ester (FAME) Fuels and Blends—Round Robin Report on Applicability of Rapid Small Scale Oxidation Test Method³

EN 590 Automotive Fuels—Diesel—Requirements and Test Methods³

EN 16091 Liquid Petroleum Products—Middle Distillates and Fatty Acid Methyl Ester (FAME) Fuels and Blends—Determination of Oxidation Stability by Rapid Small Scale Oxidation Method³

ISO 4259 Petroleum Products—Determination and Application of Precision Data in Relation to Methods of Test⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *break point, n*—pressure in the test apparatus which is 10 % below the maximum pressure of the actual test run.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from European Committee for Standardization (CEN), Avenue Marnix 17, B-1000, Brussels, Belgium, <http://www.cen.eu>.

⁴ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, <http://www.iso.org>.