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.

Designation: D8147 – 17 (Reapproved 2023)

Standard Specification for Special-Purpose Test Fuels for Aviation Compression-Ignition Engines[1]

This standard is issued under the fixed designation D8147; 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 specification is intended to support purchasing agencies when formulating specifications for purchases of aviation distillate fuel under contract.

1.2 This specification defines specialized property requirements to produce special-purpose aviation distillate test fuels that are intended only for engineering and certification testing of aircraft, engines, and aircraft equipment. Use of this specification for engineering and certification testing of aircraft is not mandatory. Its use is at the discretion of the aircraft manufacturer, engine manufacturer, or certification authorities when determining criteria for validation of aircraft equipment design.

1.3 This specification defines special-purpose test fuels that may be used to evaluate the operability, performance and durability of aviation compression-ignition engines when operating with fuels of marginal performance. The aviation distillate test fuels defined in this specification are not intended for general purpose use in aircraft. This specification also lists acceptable additives for aviation distillate special-purpose test fuels.

1.4 Specification D8147 is directed at civil applications, and maintained as such, but may be adopted for military, government, or other specialized uses.

1.5 This specification can be used as a standard in describing the quality of aviation distillate fuel from production to the aircraft. However, this specification does not define the quality assurance testing and procedures necessary to ensure that fuel continues to comply with this specification after batch certification.

1.6 This specification does not include all fuels satisfactory for aviation compression-ignition (CI) engines.

1.7 The values stated in SI units are to be regarded as standard.

1.7.1 *Exception*—Other units of measurement are included in this standard.

1.8 *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.*

1.9 *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]

D56 Test Method for Flash Point by Tag Closed Cup Tester

D86 Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure

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

D130 Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test

D381 Test Method for Gum Content in Fuels by Jet Evaporation

D445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

D1266 Test Method for Sulfur in Petroleum Products (Lamp Method)

D1298 Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

D1319 Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption

D1322 Test Method for Smoke Point of Kerosene and Aviation Turbine Fuel

[1] This specification is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.J0.02 on Aviation Piston Engine 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.

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