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Standard Specification for Jet B Wide-Cut Aviation Turbine Fuel¹

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1. Scope*

1.1 This specification covers the use of purchasing agencies in formulating specifications for purchases of aviation turbine fuel under contract.

1.2 This specification defines one specific type of aviation turbine fuel for civil use. This fuel has advantages for operations in very low temperature environments compared with other fuels described in Specification **D1655**. This fuel is intended for use in aircraft that are certified to use such fuel.

1.3 This specification does not define the quality assurance testing and procedures necessary to ensure that fuel in the distribution system continues to comply with this specification after batch certification. Such procedures are defined elsewhere, for example in ICAO 9977, EI/JIG Standard 1530, JIG 1, JIG 2, API 1543, API 1595, and ATA-103.

1.4 *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

- D86** Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure
- D130** Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
- D323** Test Method for Vapor Pressure of Petroleum Products (Reid Method)
- D381** Test Method for Gum Content in Fuels by Jet Evaporation
- D1094** Test Method for Water Reaction of Aviation Fuels

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.J0.01 on Jet Fuel Specifications.

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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.

- D1266** Test Method for Sulfur in Petroleum Products (Lamp Method) (Withdrawn 2025)³
- 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
- D1655** Specification for Aviation Turbine Fuels
- D1660** Method of Test for Thermal Stability of Aviation Turbine Fuels (Withdrawn 1992)³
- D1840** Test Method for Naphthalene Hydrocarbons in Aviation Turbine Fuels by Ultraviolet Spectrophotometry
- D2276** Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
- D2386** Test Method for Freezing Point of Aviation Fuels
- D2622** Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry
- D2624** Test Methods for Electrical Conductivity of Aviation and Distillate Fuels
- D3227** Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosene, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
- D3240** Test Method for Undissolved Water In Aviation Turbine Fuels
- D3241** Test Method for Thermal Oxidation Stability of Aviation Turbine Fuels
- D3338/D3338M** Test Method for Estimation of Net Heat of Combustion of Aviation Fuels
- D3948** Test Method for Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Separator
- D4052** Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
- D4057** Practice for Manual Sampling of Petroleum and Petroleum Products
- D4171** Specification for Fuel System Icing Inhibitors
- D4175** Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard

- D4176** Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)
- D4294** Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-ray Fluorescence Spectrometry
- D4306** Practice for Aviation Fuel Sample Containers for Tests Affected by Trace Contamination
- D4529** Test Method for Estimation of Net Heat of Combustion of Aviation Fuels
- D4809** Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)
- D4865** Guide for Generation and Dissipation of Static Electricity in Petroleum Fuel Systems
- D4952** Test Method for Qualitative Analysis for Active Sulfur Species in Fuels and Solvents (Doctor Test)
- D5001** Test Method for Measurement of Lubricity of Aviation Turbine Fuels by the Ball-on-Cylinder Lubricity Evaluator (BOCLE)
- D5006** Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels
- D5191** Test Method for Vapor Pressure of Petroleum Products and Liquid Fuels (Mini Method)
- D5452** Test Method for Particulate Contamination in Aviation Fuels by Laboratory Filtration
- D5453** Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence
- D5972** Test Method for Freezing Point of Aviation Fuels (Automatic Phase Transition Method)
- D6379** Test Method for Determination of Aromatic Hydrocarbon Types in Aviation Fuels and Petroleum Distillates—High Performance Liquid Chromatography Method with Refractive Index Detection
- E29** Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.2 *EI Standard*.⁴

EI/JIG 1530 Quality Assurance Requirements for the Manufacture, Storage and Distribution of Aviation Fuels to Airports

2.3 *API Standards*.⁵

API 1543 Documentation, Monitoring and Laboratory Testing of Aviation Fuel During Shipment from Refinery to Airport

API 1595 Design, Construction, Operation, Maintenance, and Inspection of Aviation Pre-Airfield Storage Terminals⁵

2.4 *Joint Inspection Group Standards*.⁶

JIG 1 Aviation Fuel Quality Control & Operating Standards for Into-Plane Fuelling Services

JIG 2 Aviation Fuel Quality Control & Operating Standards for Airport Depots & Hydrants⁶

2.5 *Military Standard*.⁷

MIL-DTL-5624 Turbine Fuel, Aviation, Grades JP-4, JP-5, and JP-5/JP-8 ST

2.6 *Other Standards and Guidance Material*:

ATA-103 Standard for Jet Fuel Quality Control at Airports⁸

CAN/CGSB 3.22-97 “Aviation Turbine Fuel, Wide Cut Type” includes grade Jet B and NATO grade F-40 fuel⁹

ICAO 9977 Manual on Civil Aviation Jet Fuel Supply¹⁰

3. Terminology

3.1 For definitions of terms used in this specification, refer to Terminology **D4175**.

4. General

4.1 This specification, unless otherwise provided, prescribes the required properties of Jet B wide-cut aviation turbine fuel at the time and place of delivery.

5. Classification

5.1 One type of aviation turbine fuel is provided, as follows:

5.1.1 *Jet B*—A relatively wide boiling range volatile distillate.

6. Materials and Manufacture

6.1 Aviation turbine fuel, except as otherwise specified in this specification, shall consist of blends of refined hydrocarbons (see **Note 1**) derived from conventional sources, including crude oil, natural gas liquid condensates, heavy oil, shale oil, and oil sands. The use of jet fuel blends, containing components from other sources, is permitted only on a specific individual basis.

NOTE 1—Conventionally refined jet fuel contains trace levels of materials which are not hydrocarbons including oxygenates, organosulfur, and nitrobenzene compounds.

6.1.1 Fuels used in certified engines and aircraft are ultimately approved by the certifying authority subsequent to formal submission of evidence to the authority as part of the type certification program for that aircraft and engine model. Additives to be used as supplements to an approved fuel must also be similarly approved on an individual basis (see **X1.2.4** and **X1.12.1**).

6.2 *Additives*—May be added to each type of aviation turbine fuel in the amount and of the composition specified in **Table 2** or the following list of approved material:¹¹

⁷ Available from Dept. of Defense Single Stock Point, Bldg 4D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

⁸ Available from Air Transport Association of America, Inc. (ATA) d/b/a Airlines for America, 1301 Pennsylvania Ave. NW, Suite 1100, Washington, D.C. 20004, <http://www.airlines.org>.

⁹ Available from the Canadian General Standards Board (CGSB), Ottawa, Canada K1A 1G6.

¹⁰ Available from International Civil Aviation Organization (ICAO), 999 University St., Montreal, Quebec H3C 5H7, Canada, <http://www.icao.int>.

¹¹ Supporting data (guidelines for approval or disapproval of additives) have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:D02-1125. Contact ASTM Customer Service at www.astm.org/contact.

⁴ Available from Energy Institute, 61 New Cavendish St., London, W1G 7AR, U.K., <http://www.energyinst.org.uk>.

⁵ Available from American Petroleum Institute (API), 200 Massachusetts Ave. NW, Suite 1100, Washington, DC 20001, <http://www.api.org>.

⁶ Available from Joint Inspection Group (JIG), <http://www.jigonline.com>.