Designation: D4054 – 09

Standard Practice for Qualification and Approval of New Aviation Turbine Fuels and Fuel Additives[1]

This standard is issued under the fixed designation D4054; 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 practice covers and provides a framework for the qualification and approval of new fuels and new fuel additives for use in commercial and military aviation gas turbine engines. The practice was developed as a guide by the aviation gas-turbine engine Original Equipment Manufacturers (OEMs) with ASTM International member support. The OEMs are solely responsible for approval of a fuel or additive in their respective engines and airframes. For the purpose of this guide, "approval" means "permission to use;" it is not an endorsement of any kind. Standards organizations such as ASTM International (Subcommittee D02.J0), United Kingdom Ministry of Defence, and the U.S. military list only those fuels and additives that are mutually acceptable to all OEMs. ASTM International and OEM participation in the evaluation or approval procedure does not constitute an endorsement of the fuel or additive.

1.2 The OEMs will consider a new fuel or additive based on an established need or benefit attributed to its use. Upon OEM and regulatory authority approval, the fuel or fuel additive may be listed in fuel specifications such as Pratt & Whitney (P&W) Service Bulletin No. 2016; General Electric Aviation (GE) Specification No. D50TF2; and Rolls Royce (RR) engine manuals. Subsequent to OEM approval and industry (ASTM) review and ballot, the fuel or fuel additive may be listed in fuel specifications such as Specification D1655, Defence Standard 91-91, United States Air Force MIL-DTL-83133, and the United States Navy MIL-DTL-5624. This qualification and approval process has been coordinated with airworthiness and certification groups within each company, the Federal Aviation Administration (FAA), and the European Aviation Safety Agency (EASA).

1.3 Units of measure throughout this practice are stated in International System of Units (SI) unless the test method specifies non-SI units.

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]

A240/A240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

B36/B36M Specification for Brass Plate, Sheet, Strip, And Rolled Bar

B93/B93M Specification for Magnesium Alloys in Ingot Form for Sand Castings, Permanent Mold Castings, and Die Castings

D56 Test Method for Flash Point by Tag Closed Cup Tester

D86 Test Method for Distillation of Petroleum Products at Atmospheric Pressure

D257 Test Methods for DC Resistance or Conductance of Insulating Materials

D395 Test Methods for Rubber Property—Compression Set

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

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

D471 Test Method for Rubber Property—Effect of Liquids

D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

D924 Test Method for Dissipation Factor (or Power Factor) and Relative Permittivity (Dielectric Constant) of Electrical Insulating Liquids

D1002 Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)

D1319 Test Method for Hydrocarbon Types in Liquid

[1] This practice is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.J0.04 on Additives and Electrical Properties.

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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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