



Standard Practice for Aviation Fuel Sample Containers for Tests Affected by Trace Contamination¹

This standard is issued under the fixed designation D 4306; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice² describes the types of and preparation of containers found most suitable for the handling of aviation fuel samples for the determination of critical properties affected by trace contamination.

1.2 *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.* For specific hazard statements, see Note 2, Note 4, and 5.

2. Referenced Documents

2.1 ASTM Standards:

D 2624 Test Methods for Electrical Conductivity of Aviation and Distillate Fuels Containing a Static Dissipator Additive³

D 3602 Field Test Method for Water-Separation Characteristics of Aviation Turbine Fuels⁴

D 3948 Test Methods for Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Separometer⁴

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products⁴

D 4308 Test Method for Electrical Conductivity of Liquid Hydrocarbons by Precision Meter⁴

2.2 SAE Standard:

SAE MAP-1794, The Ball on Cylinder Method for Measuring Lubricity of Aviation Turbine Fuel^{5,6}

3. Significance and Use

3.1 General descriptions for the manual sampling of petroleum products are given in Practice D 4057. However, a number of aviation fuel properties are established or affected by trace levels of polar or other compounds. Measurement significance therefore requires that the sample containers not add or adsorb any materials. This practice presents types and preparations of sampling containers found satisfactory for the determination of water separation, copper corrosion, electrical conductivity, thermal stability, lubricity, and trace metal content. An approval procedure for new containers is also given.

3.2 Two properties, particulate contamination and free water content, involve materials easily removed by any sampling container. These properties should be determined by placing the sample directly into the measuring apparatus and not using containers to transport the sample to the measuring equipment.

4. Apparatus

4.1 Sampling Containers:

4.1.1 Epoxy-coated Containers:

4.1.1.1 While generally superior to other coatings, certain epoxy-coatings evolve plasticizers which can adversely affect critical fuel properties. Because no specification is known to describe a satisfactory epoxy-coating, 6.2 lists an approval procedure which can be used to identify a satisfactory coating.

4.1.1.2 Coated cans should be examined closely to assure that the coating covers all inside surfaces. If not, the cans should be considered the same as tin-plated, soldered side seam cans.

4.1.2 Borosilicate (hard) Glass Bottles.

4.1.2.1 Amber colored or bottles covered with an opaque material such as aluminum foil are preferred to avoid possible reactions with sunlight.

4.1.3 Polytetrafluoroethylene Bottles.

4.1.4 Polyethylene Bottles, high-density, linear.

4.1.5 Steel Cans, tin-plated, soldered side seam.

4.2 Closures:

4.2.1 Closures with a metallic inside surface are preferred. Closures with the same inside surfaces as suitable containers such as polytetrafluoroethylene are also suitable.

4.2.2 Where required by shipping regulations such as DOT

¹ This practice is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.J0.09 on Additive-Related Properties.

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² The detailed data on which this Practice is based may be found in ASTM Research Report D02-1169. Practice on Sampling Aviation Fuels for Tests Affected by Trace Contamination, ASTM Research Report D02-1142 Sampling for Trace Metals in Gas Turbine and SAE Practice MAP-1794.

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

⁴ *Annual Book of ASTM Standards*, Vol 05.03.

⁵ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

⁶ Alconox made by Alconox Inc., New York, NY 10003 has been found suitable.