



Designation: D2619 – 09

Standard Test Method for Hydrolytic Stability of Hydraulic Fluids (Beverage Bottle Method)¹

This standard is issued under the fixed designation D2619; 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 test method² covers the determination of the hydrolytic stability of petroleum or synthetic-based hydraulic fluids.

NOTE 1—Water-based or water-emulsion fluids can be evaluated by this test method, but they are run “as is.” Additional water is not added to the 100-g sample. In these cases, the person requesting the test needs to let the test operator know that water is present.

1.2 The values stated in SI units are to be regarded as the standard. The English units given in parentheses are provided for information only.

1.3 *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.* Specific warning statements are given in 3.1, 6.1, 6.3, 6.9 and Annex A1.

2. Referenced Documents

2.1 ASTM Standards:³

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

D974 Test Method for Acid and Base Number by Color-Indicator Titration

3. Summary of Test Method

3.1 A copper test specimen and 75 g of test fluid plus 25 g of water (or 100 g of a water-containing fluid) are sealed in a pressure-type beverage bottle. The bottle is rotated, end for end, for 48 h in an oven at 93 °C (200 °F). Layers are separated and the weight change of the copper specimen is measured.

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.N0.08 on Thermal Stability.

Current edition approved Dec. 1, 2009. Published February 2010. Originally approved in 1967. Last previous edition approved in 2002 as D2619–95(2002) ϵ^1 . DOI: 10.1520/D2619-09.

² This test method is a modification of Federal Test Method Standard No. 791a, Method 3457 for Hydrolytic Stability.

³ 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.

The acid number change of the fluid and acidity of the water layer are determined. (**Warning**—In addition to other precautions, because this test method involves the use of a glass bottle that may contain approximately 200 kPa (2 atm) of air and water vapor at temperatures up to 93 °C, a full face shield and heavy woven fabric gloves should be worn when handling or working with the heated and sealed sample container.)

4. Significance and Use

4.1 This test method differentiates the relative stability of hydraulic fluids in the presence of water under the conditions of the test. Hydrolytically unstable hydraulic fluids form acidic and insoluble contaminants which can cause hydraulic system malfunctions due to corrosion, valve sticking, or change in viscosity of the fluid. The degree of correlation between this test method and service performance has not been fully determined.

5. Apparatus

5.1 *Air Oven*, convection, adjusted to 93 ± 0.5 °C (200 ± 1 °F).⁴

5.2 *Pressure-Type Beverage Bottles*,⁵ 200-mL (7-oz).

5.3 *Capping Press*, for bottles.

5.4 *Rotating Mechanism*, for holding bottles and rotating end over end at 5 r/min in oven.

5.5 *Büchner Funnel and Filter Flask*.

5.6 *Water Aspirator*.

5.7 *Typewriter Brush*.

5.8 *Separatory Funnel*, 125-mL.

5.9 *Balance*, sensitive to 0.2 mg.

5.10 *Caps*, for sealing bottles.

⁴ The sole source of supply of the apparatus known to the committee at this time is Falex Corp. 1020 Airpark Dr., Sugar Grove, IL 60554. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

⁵ Bottles can be obtained from beverage distributors.

5.11 *Inert Seal*, for cap gasket, 0.127-mm (0.005-in.) thick fluorocarbon seal.