



Standard Test Method for Acidity of Hydrocarbon Liquids and Their Distillation Residues¹

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

1. Scope

1.1 This test method covers the qualitative determination of the acidity of hydrocarbon liquids and their distillation residues. **Warning**—See Note 1.

NOTE 1—**Warning:** Many hydrocarbon liquids are extremely flammable. Harmful if inhaled. Hydrocarbon liquid vapors can cause a flash fire.

1.2 If desired to determine the basicity of a hydrocarbon liquid, proceed in accordance with 9.2 or 9.3 but substitute 3 drops of phenolphthalein indicator solution for the methyl orange indicator. A pink or red color in the aqueous solution when phenolphthalein is used indicates basicity.

1.3 The results obtained by this method are qualitative expressions. However, for the preparation of reagents and in the procedure, acceptable SI units are to be regarded as the standard.

1.4 *This standard does not purport to address all of the safety problems, 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:

- D 86 Test Method for Distillation of Petroleum Products²
- D 91 Test Method for Precipitation Number of Lubricating Oils²
- D 850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials³
- D 1078 Test Method for Distillation Range of Volatile Organic Liquids³
- D 1193 Specification for Reagent Water⁴

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.06 on Analysis of Lubricants.

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² Annual Book of ASTM Standards, Vol 05.01.

³ Annual Book of ASTM Standards, Vol 06.04.

⁴ Annual Book of ASTM Standards, Vol 11.01.

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products⁵

D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products⁵

3. Terminology

3.1 Definitions:

3.1.1 *acidity, n*—the quality, state or degree of being acid.

3.1.2 *Discussion*—In this test method, the criterion for acidity is a pink or red color when methyl orange indicator is used.

3.1.3 *basicity, n*—the quality, state or degree of being basic.

3.1.4 *Discussion*—In this test method, the criterion for basicity is a pink or red color when phenolphthalein indicator is used.

3.1.5 *distillation residue, n*—that portion of the sample remaining after distillation using specified procedures.

4. Summary of Test Method

4.1 The sample of distillation residue or hydrocarbon liquid is shaken with water and the aqueous layer tested for acidity to methyl orange indicator.

4.2 The aqueous layer can also be tested for basicity using phenolphthalein indicator.

5. Significance and Use

5.1 Some petroleum products are treated with mineral acid as part of the refining procedure. Obviously, any residual mineral acid in a petroleum product is undesirable. The absence of a positive indication in the test for acidity of the distillation residue or aqueous extract of a hydrocarbon liquid is an assurance of the care used in refining the fuel or solvent.

6. Apparatus

6.1 *Centrifuge Tube*, cone-shaped, 100-mL capacity; calibration not necessary.

6.2 *Centrifuge*, capable of swinging two centrifuge tubes at 1500 rpm.

⁵ Annual Book of ASTM Standards, Vol 05.02.