



Standard Test Method for Distillation of Heavy Hydrocarbon Mixtures (Vacuum Potstill Method)¹

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1. Scope

1.1 This test method covers the procedure for distillation of heavy hydrocarbon mixtures having initial boiling points greater than 150°C (300°F), such as heavy crude oils, petroleum distillates, residues, and synthetic mixtures. It employs a potstill with a low pressure drop entrainment separator operated under total takeoff conditions. Distillation conditions and equipment performance criteria are specified and typical apparatus is illustrated.

1.2 This test method details the procedures for the production of distillate fractions of standardized quality in the gas oil and lubricating oil range as well as the production of standard residue. In addition, it provides for the determination of standard distillation curves to the highest atmospheric equivalent temperature possible by conventional distillation.

1.3 The maximum achievable atmospheric equivalent temperature (AET) is dependent upon the heat tolerance of the charge. For most samples, a temperature up to 565°C (1050°F) can be attained. This maximum will be significantly lower for heat sensitive samples (for example, heavy residues) and might be somewhat higher for nonheat sensitive samples.

1.4 The recommended distillation method for crude oils up to cutpoint 400°C (752°F) AET is Test Method [D2892](#). This test method can be used for heavy crude oils with initial boiling points greater than 150°C (302°F). However, distillation curves and fraction qualities obtained by these methods are not comparable.

1.5 This test method contains the following annexes:

1.5.1 [Annex A1](#)—Test Method for Determination of Temperature Response Time,

1.5.2 [Annex A2](#)—Practice for Calibration of Sensors,

1.5.3 [Annex A3](#)—Test Method for Dehydration of a Wet Sample of Oil,

1.5.4 [Annex A4](#)—Practice for Conversion of Observed Vapor Temperature to Atmospheric Equivalent Temperature (AET), and

1.5.5 [Annex A5](#)—Test Method for Determination of Wet-tage.

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

1.7 *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 warnings, see [6.5.4.2](#), [6.5.6.3](#), [6.9.3](#), [9.5](#), [9.7](#), and [A2.3.1.3](#).

2. Referenced Documents

2.1 ASTM Standards:²

[D941](#) Test Method for Density and Relative Density (Specific Gravity) of Liquids by Lipkin Bicapillary Pycnometer³

[D1217](#) Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer

[D1250](#) Guide for Use of the Petroleum Measurement Tables

[D1298](#) Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

[D1480](#) Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer

[D2892](#) Test Method for Distillation of Crude Petroleum (15-Theoretical Plate Column)

[D4057](#) Practice for Manual Sampling of Petroleum and Petroleum Products

[D4177](#) Practice for Automatic Sampling of Petroleum and Petroleum Products

[D5002](#) Test Method for Density and Relative Density of Crude Oils by Digital Density Analyzer

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

¹ This test method is under the jurisdiction of ASTM Committee [D02](#) on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee [D02.08](#) on Volatility.

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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.

³ Withdrawn.