



Standard Practice for Automatic Sampling of Petroleum and Petroleum Products¹

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

This practice has been approved by the sponsoring committees and accepted by the cooperating organizations in accordance with established procedures.

1. Scope

1.1 This practice covers information for the design, installation, testing, and operation of automated equipment for the extraction of representative samples of petroleum and petroleum products from a flowing stream and storing them in a sample receiver. If sampling is for the precise determination of volatility, use Practice D 5842 in conjunction with this practice. For sample mixing, refer to Practice D 5854. Petroleum products covered in this practice are considered to be a single phase and exhibit Newtonian characteristics at the point of sampling.

1.2 *Applicable Fluids*—This practice is applicable to petroleum and petroleum products with vapor pressures at sampling and storage temperatures less than or equal to 101 kPa (14.7 psi). Refer to D 5842 when sampling for Reid vapor pressure (RVP) determination.

1.3 *Non-applicable Fluids*—Petroleum products whose vapor pressure at sampling and sample storage conditions are above 101 kPa (14.7 psi) and liquified gases (that is, LNG, LPG etc.) are not covered by this practice.

1.3.1 While the procedures covered by this practice will produce a representative sample of the flowing liquid into the sample receiver, specialized sample handling may be necessary to maintain sample integrity of more volatile materials at high temperatures or extended residence time in the receiver. Such handling requirements are not within the scope of this practice. Procedures for sampling these fluids are described in Practice D 1265, Test Method D 1145, and GPA 2166.

1.4 Annex A2 contains theoretical calculations for selecting the sampler location. Annex A3 lists acceptance methodologies for sampling systems and components. Annex A4 gives performance criteria for permanent installations, while Annex A5 has the criteria for portable sampling units. Appendix X1 is a

design data sheet for automatic sampling systems; Appendix X2 compares the percent sediment and water to unloading time period.

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

2. Referenced Documents

2.1 ASTM Standards:

D 923 Practice for Sampling Electrical Insulating Liquids²

D 1145 Test Method for Sampling Natural Gas³

D 1265 Practice for Sampling Liquified Petroleum (LP) Gases—Manual Method⁴

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products⁵

D 4928 Test Method for Water in Crude Oils by Coulometric Karl Fischer Titration⁵

D 5842 Practice for Sampling and Handling of Fuels for Volatility Measurements⁶

D 5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products⁶

2.2 API Standards:⁷

API Manual of Petroleum Measurement Standards, Chapter 3

API Manual of Petroleum Measurement Standards, Chapter 4

API Manual of Petroleum Measurement Standards, Chapter 5

API Manual of Petroleum Measurement Standards, Chapter 6

API Manual of Petroleum Measurement Standards, Chapter 10

¹ This practice is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.02 on Static Petroleum Measurement.

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² Annual Book of ASTM Standards, Vol 10.03.

³ Discontinued; see 1987 Annual Book of ASTM Standards, Vol 05.05.

⁴ Annual Book of ASTM Standards, Vol 05.01.

⁵ Annual Book of ASTM Standards, Vol 05.02.

⁶ Annual Book of ASTM Standards, Vol 05.03.

⁷ Available from American Petroleum Institute, 1220 L St., NW, Washington, DC 20005.