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Standard Practice for Sampling and Handling of Fuels for Volatility Measurement¹

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1. Scope

1.1 This practice covers procedures and equipment for obtaining, mixing, and handling representative samples of volatile fuels for the purpose of testing for compliance with the standards set forth for volatility related measurements applicable to light fuels. The applicable dry vapor pressure equivalent range of this practice is 13 to 105 kPa (2 to 16 psia).

1.2 This practice is applicable to the sampling, mixing, and handling of reformulated fuels including those containing oxygenates.

1.3 The values stated in SI units are to be regarded as the standard except in some cases where drawings may show inch-pound measurements which are customary for that equipment.

1.4 *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.*

2. Referenced Documents

- 2.1 *ASTM Standards*:² (API MPMS Chapter 8.1)
D4057 Practice for Manual Sampling of Petroleum and Petroleum Products (API MPMS Chapter 8.2)
D4177 Practice for Automatic Sampling of Petroleum and Petroleum Products (API MPMS Chapter 8.3)
D5854 Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products

- 2.2 *API Standards*:³

¹ This practice is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and the API Committee on Petroleum Measurement, and is the direct responsibility of Subcommittee D02.02.0B the joint ASTM-API Committee on Sampling, Sediment, Water.

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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 Available from American Petroleum Institute (API), 1220 L. St., NW, Washington, DC 20005-4070, <http://www.api.org>.

MPMS Chapter 8.1—Practice for Manual Sampling of Petroleum and Petroleum Products (ASTM Practice **D4057**)
MPMS Chapter 8.2—Practice for Automatic Sampling of Petroleum and Petroleum Products (ASTM Practice **D4177**)

MPMS Chapter 8.3—Practice for Mixing and Handling of Liquid Samples of Petroleum and Petroleum Products (ASTM Practice **D5854**)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *bottom sample*—a sample obtained from the material at the bottom of the tank, container, or line at its lowest point.

3.1.1.1 *Discussion*—In practice the term bottom sample has a variety of meanings. As a result, it is recommended that the exact sampling location (for example, 15 cm [6 in.] from the bottom) should be specified when using this term.

3.1.2 *dead legs*—sections of pipe that, by design, do not allow for the flow of material through them.

3.1.2.1 *Discussion*—Dead legs are not suitable for obtaining representative samples.

3.1.3 *relief lines*—sections of pipe that lead to a pressure/vacuum relief valve.

3.1.3.1 *Discussion*—Relief lines are not suitable for obtaining representative samples.

3.1.4 *stand pipes*—vertical sections of pipe or tubing extending from the gaging platform to near the bottom of tanks that are equipped with external or internal floating roofs. Stand pipes also may be found on ships and barges.

3.1.4.1 *Discussion*—Stand pipes which are not slotted or perforated will not yield representative samples. Further information on proper stand pipe design is given in **6.4.3**.

3.1.5 Other sample definitions are given in Practice **D4057**/API MPMS Chapter 8.1.

4. Summary of Practice

4.1 It is necessary that the samples be representative of the fuel in question. The basic principle of each sampling procedure involves obtaining a sample in such a manner and from such locations in the tank or other container that the sample will be representative of the fuel. A summary of the sampling procedures and their application is presented in **Table 1**. Each