



Designation: D1265 – 23a

Standard Practice for Sampling Liquefied Petroleum (LP) Gases, Manual Method¹

This standard is issued under the fixed designation D1265; 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 practice covers equipment and procedures for obtaining a representative sample of specification Liquefied Petroleum Gas (LPG), such as specified in Specification **D1835**, GPA 2140, and comparable international standards. This standard is applicable to flow-through cylinders with two valves and is not applicable to single valve cylinders or larger LPG sample containers such as those utilized for barbecue grills and/or forklift cylinders.

1.2 This practice is suitable for obtaining representative samples for all routine tests for LP gases required by Specification **D1835**. In the event of a dispute involving sample integrity when sampling for testing against Specification **D1835** requirements, Practice **D3700** shall be used as the referee sampling procedure.

1.3 This practice may also be used for other Natural Gas Liquid (NGL) products that are normally highly volatile, single phase materials (NGL mix, natural gasoline, field butane, etc.), defined in other industry specifications or contractual agreements, where use of open sample containers would risk the loss of volatile components. It is not intended for non-specification products that contain significant quantities of undissolved gases (N₂, CO₂), free water or other separated phases, such as raw or unprocessed gas/liquids mixtures and related materials. The same equipment can be used for these purposes, but additional precautions are generally needed to obtain representative samples of multiphase products (see Appendix X1 on Sampling Guidelines in Practice **D3700**).

NOTE 1—Practice **D3700** describes a recommended practice for obtaining a representative sample of a light hydrocarbon fluid and the subsequent preparation of that sample for laboratory analysis when dissolved gases are present. Use of Practice D1265 will result in a small but predictable low bias for dissolved gases due to the liquid venting procedure to establish the 20 % minimum ullage.

1.4 This practice includes recommendations for the location of a sample point in a line or vessel. It is the responsibility of the user to ensure that the sampling point is located so as to obtain a representative sample.

¹ This practice is under the jurisdiction of ASTM Committee **D02** on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee **D02.H0** on Liquefied Petroleum Gas.

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1.5 The values stated in SI units are to be regarded as standard.

1.5.1 *Exception*—Non-SI units are shown in parentheses for information only.

1.6 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- D1835** Specification for Liquefied Petroleum (LP) Gases
- D1838** Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases
- D3700** Practice for Obtaining LPG Samples Using a Floating Piston Cylinder
- D4175** Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants
- D6849** Practice for Storage and Use of Liquefied Petroleum Gases (LPG) in Sample Cylinders for LPG Test Methods

2.2 Other Regulations:

- Transport Canada (TC)** Transportation of Dangerous Goods Regulations³
- GPA 2140** Gas Processors Association Liquefied Petroleum Gas Specifications & Test Methods⁴
- IATA** Transportation of Dangerous Goods by Air⁵

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 the Canadian General Standards Board, Sales Centre, Gatineau, Canada K1A 1G6, <https://www.laws-lois.justice.gc.ca/eng/regulations/SOR-2001-286>.

⁴ Available from Gas Processors Association (GPA), 6526 E. 60th St., Tulsa, OK 74145, <http://www.gpaglobal.org>.

⁵ Available from IATA Customer Care, 800 Place Victoria, PO Box 113, Montréal, Quebec H4Z 1M1. www.iata.org.

*A Summary of Changes section appears at the end of this standard

U.S. 49 CFR Transportation⁶

2.3 Other Publications:

API RP 2003 Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this practice, refer to Terminology **D4175**.

3.1.2 *high pressure sample cylinder, n*—a container used for storage and transportation of a sample obtained at pressures above atmospheric pressure.

3.1.3 *liquefied petroleum gas (LP Gas, LPG), n*—a narrow boiling range mixture of hydrocarbons consisting of propane, propylene, butanes and butylenes, individually or in specified combinations, with limited amounts of other hydrocarbons (such as ethane) and may contain naturally occurring, petroleum-derived, non-hydrocarbons.

3.1.4 *maximum fill volume (reduced fill volume), n*—the volume of a container that may be safely occupied by the liquid sample, usually expressed as a percentage of the total capacity.

3.1.4.1 *Discussion*—Some regulatory agencies use the expressions “maximum fill density” and “reduced fill density.”

3.1.5 *outage tube (internal), n*—a “cut to length” tube placed inside the cylinder used as a way to remove excess liquid sample from the cylinder via manual evacuation after the sample cylinder assembly is removed from the sample point.

3.1.5.1 *Discussion*—*In relation to LPG sampling*, outage tube is synonymous with the terms “ullage tube” and “dip tube.”

3.1.6 *outaging, n*—practice of removing a portion of liquid contents from a conventional sampling cylinder after filling to provide expansion room.

3.1.7 *ullage (outage), n*—in LPG sampling, the volume in a container after filling that remains as vapor phase above the liquid contents to allow for thermal expansion of the liquid.

3.1.8 *upright, adj*—the vertical orientation of the cylinder where the outage tube end is at the top.

4. Summary of Practice

4.1 A liquid sample of LPG is transferred from the source into a high pressure sample container by purging the container and filling it with liquid, then providing a minimum 20 % ullage by venting liquid, so that 80 % or less of the liquid volume remains.

NOTE 2—When sampling under very cold conditions, where there is a significant difference between original sample temperature and sample temperature in a laboratory or shipping situation, an ullage volume greater than 20 % may be required to safely account for the significant expansion of LPG with a large rise in temperature.

5. Significance and Use

5.1 Samples of liquefied petroleum gases are examined by various test methods to determine physical and chemical characteristics and conformance with specifications.

5.2 Equipment described by this practice may be suitable for transportation of LPG samples, subject to applicable transportation regulations.

6. General Information

6.1 Considerable effort is required to obtain a representative sample, especially if the material being sampled is a mixture of liquefied petroleum gases. Consider the following factors:

6.1.1 Obtain samples of the liquid phase only.

6.1.2 When it is definitely known that the material being sampled is composed predominantly of only one liquefied petroleum gas, a liquid sample may be taken from any part of the vessel.

6.1.3 When the material being sampled has been mixed or circulated until it is homogeneous, a liquid sample may be taken from any part of the vessel.

6.1.4 Because of wide variations in the construction details of containers for liquefied petroleum gases, it is difficult to specify a uniform method for obtaining representative samples of heterogeneous mixtures. If it is not practicable to homogenize a mixture to ensure uniformity, obtain liquid samples by a procedure which has been agreed upon by the contracting parties.

6.1.5 Directions for sampling cannot be made explicit enough to cover all cases. They must be supplemented by judgment, skill, and sampling experience. Extreme care and good judgment are necessary to ensure samples which represent the general character and average condition of the material. Because of the hazards involved, liquefied petroleum gases should be sampled by, or under the supervision of, persons familiar with the necessary safety precautions.

6.1.6 Control hydrocarbon vapors vented during sampling to ensure compliance with applicable safety and environmental regulations. Do not vent near ignition sources.

6.1.7 This standard is applicable to flow-through double-ended cylinders with two valves. It is not applicable to single-ended (single valve) cylinders or larger LPG sample containers such as those utilized for barbecue grills and/or forklift cylinders. Additional pertinent information for these applications can be found in Practice **D6849**.

6.1.8 Elimination of potential static charge accumulation and discharge is critical for safety. Provisions for grounding/bonding shall be in place for the sample station and sample cylinders. Having continuous electrical contact to dissipate charge is required, including the transfer lines. Non-conductive materials cannot be utilized unless special grounding provisions are applied. More information on static charge accumulation and grounding/bonding can be obtained from API RP 2003.

7. Interferences

7.1 Certain properties of interest can be affected by the material making up the sampling system and sample cylinder assembly. Two examples of analytes commonly associated

⁶ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <https://www.ecfr.gov/>.