



Designation: D3700 – 21

Standard Practice for Obtaining LPG Samples Using a Floating Piston Cylinder¹

This standard is issued under the fixed designation D3700; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This practice covers the equipment and procedures for obtaining a representative sample of liquefied petroleum gas (LPG), such as specified in ASTM Specification [D1835](#), GPA 2140, and comparable international standards. It may also be used for other natural gas liquid (NGL) products that are normally single phase (for example, NGL mix, field butane, and so forth), defined in other industry specifications or contractual agreements, and for volatile (higher vapor pressure) crude oils.

NOTE 1—Some floating piston cylinders have such tight piston seals that the vapor pressure of some high vapor pressure crude oils may not be sufficient to allow sampling without a handle to move the piston. An alternative sampling practice for UN Class 3 liquids (under 300 kPa at 52 °C) is Practice [D8009](#), which utilizes a Manual Piston Cylinder (MPC) sampler.

1.2 This practice is not intended for non-specification products that contain significant quantities of undissolved gases (N_2 , CO_2), 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 multi-phase products (see [Appendix X1](#)).

1.3 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.

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

1.4.1 *Exception*—The values given in parentheses are for information only.

1.5 *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.*

1.6 *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

[D1265 Practice for Sampling Liquefied Petroleum \(LP\) Gases, Manual Method](#)

[D1835 Specification for Liquefied Petroleum \(LP\) Gases](#)

[D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants](#)

[D8009 Practice for Manual Piston Cylinder Sampling for Volatile Crude Oils, Condensates, and Liquid Petroleum Products](#)

2.2 GPA Midstream Association Standards:³

[GPA 2140 Liquefied Petroleum Gas Specifications and Test Methods](#)

[GPA 2174 Obtaining Liquid Hydrocarbon Samples for Analysis by Gas Chromatography](#)

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this practice, refer to Terminology [D4175](#).

3.1.2 *floating piston cylinder (FPC)*, *n*—a high pressure sample container, with a free floating internal piston that effectively divides the container into two separate compartments.

3.1.2.1 *Discussion*—A floating piston cylinder is used to collect a sample of liquid under pressure without the formation of a gaseous phase which can result in changes in the composition of the liquid sample.

3.1.3 *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.

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.

Current edition approved Dec. 1, 2021. Published December 2021. Originally approved in 1978. Last previous edition approved in 2016 as D3700 – 16. DOI: 10.1520/D3700-21.

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 GPA Midstream Association, 6526 E. 60th St., Tulsa, OK 74145, www.gpaglobal.org

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