



Designation: D7606 – 17

Standard Practice for Sampling of High Pressure Hydrogen and Related Fuel Cell Feed Gases¹

This standard is issued under the fixed designation D7606; 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 standard practice describes a sampling procedure of high pressure hydrogen at fueling stations operating at 35 or 70 megapascals (MPa) using a hydrogen quality sampling apparatus (HQSA).

1.2 This practice does not include the analysis of the acquired sample. Applicable ASTM standards include but are not limited to test methods referenced in Section 2 of this practice.

1.3 This practice is not intended for sampling and measuring particulate matter in high pressure hydrogen. For procedures on sampling and measuring particulate matter see ASTM D7650 and D7651.

1.4 The values stated in SI units are standard. The values stated in inch-pounds 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

D4150 Terminology Relating to Gaseous Fuels

D7650 Test Method for Sampling of Particulate Matter in

High Pressure Hydrogen used as a Gaseous Fuel with an In-Stream Filter

D7651 Test Method for Gravimetric Measurement of Particulate Concentration of Hydrogen Fuel

2.2 SAE Standards³

SAE J2600 Compressed Hydrogen Surface Vehicle Fueling Connection Devices

SAE J2719 Hydrogen Fuel Quality for Fuel Cell Vehicles

SAE J2799 Hydrogen Surface Vehicle to Station Communications Hardware and Software

3. Terminology

3.1 *Definitions:* See D4150 for definitions of terms for use with gaseous fuels.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *high pressure hydrogen*—hydrogen pressurized between 35 and 70 MPa.

3.2.2 *hydrogen quality sampling apparatus (HQSA)*—an apparatus used to collect hydrogen from a 35 or 70 MPa hydrogen fueling dispenser (SAE J2600 and SAE J2799) into a sample container.

4. Summary of Practice

4.1 This practice describes an apparatus and procedure for the sampling of high pressure hydrogen from fueling stations conforming to SAE J2600 or SAE J2799. This practice is intended as a guideline for ensuring collection of a representative sample without introducing trace levels of contaminants. Samples collected using this practice should be suitable for trace analysis of contaminants, utilizing a variety of analytical techniques.

5. Significance and Use

5.1 Hydrogen is delivered to fuel cell powered automotive vehicles and stationary appliances at pressures up to 87.5 MPa. The quality of hydrogen delivered is a significant factor in maximizing fuel cell efficiency and life span. Contamination can occur during the production of fuel cell feed gases, contaminating storage containers, station tubing, and fuel lines

¹ This practice is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.14 on Hydrogen and Fuel Cells.

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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 SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.