



Designation: D8080 – 21

# Standard Specification for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) Used as a Motor Vehicle Fuel<sup>1</sup>

This standard is issued under the fixed designation D8080; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification defines the minimum fuel quality requirements for gaseous fuels consisting primarily of methane when used as an internal combustion engine fuel.

1.2 This specification defines the criteria for compressed natural gas (CNG), liquefied natural gas (LNG), or biogas when used as a fuel for internal combustion engines in motor vehicles.

1.3 This specification covers the needs of internal combustion engines designed for use in motor vehicles.

1.4 Fuels that have been enriched with hydrogen are outside the scope of this specification.

1.5 This specification applies to the fuel as delivered into the on-board fuel tanks of a motor vehicle either as a compressed gas or cryogenic liquified gas.

1.6 This specification may serve as a guide to gaseous fuel quality requirements for internal combustion engines used in stationary applications.

1.7 This specification is not a natural gas pipeline standard; those requirements are determined by national and regional tariffs.

1.8 *Units*—The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.9 *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.*

1.10 *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 Recom-*

*mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- D1142 Test Method for Water Vapor Content of Gaseous Fuels by Measurement of Dew-Point Temperature
- D1945 Test Method for Analysis of Natural Gas by Gas Chromatography
- D3588 Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels
- D4150 Terminology Relating to Gaseous Fuels
- D4468 Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry
- D5454 Test Method for Water Vapor Content of Gaseous Fuels Using Electronic Moisture Analyzers
- D5504 Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence
- D6228 Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection
- D6968 Test Method for Simultaneous Measurement of Sulfur Compounds and Minor Hydrocarbons in Natural Gas and Gaseous Fuels by Gas Chromatography and Atomic Emission Detection
- D7165 Practice for Gas Chromatograph Based On-line/At-line Analysis for Sulfur Content of Gaseous Fuels
- D7493 Test Method for Online Measurement of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatograph and Electrochemical Detection
- D7551 Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases and Natural Gas by Ultraviolet Fluorescence
- D7607 Test Method for Analysis of Oxygen in Gaseous Fuels (Electrochemical Sensor Method)
- D7651 Test Method for Gravimetric Measurement of Particulate Concentration of Hydrogen Fuel

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.92 on Terminology Classification and Specifications.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.



Designation: D8487 – 23

# Standard Specification for Natural Gas, Hydrogen Blends for Use as a Motor Vehicle Fuel<sup>1</sup>

This standard is issued under the fixed designation D8487; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification defines the minimum fuel quality requirements for gaseous fuels consisting primarily of methane blended with volume fraction of up to 10 % hydrogen ( $H_2$ ) when used as an internal combustion engine fuel.

1.2 This specification defines the criteria for blending hydrogen with natural gas, biogas, or renewable natural gas (RNG) and then compressed into compressed natural gas (CNG) for use as a fuel for internal combustion engines in motor vehicles.

1.3 The total volume fraction of hydrogen within the fuel shall consist of hydrogen contained in the natural gas, biogas, or renewable gas and any additional hydrogen blended into the fuel mixture.

1.4 This specification covers the needs of internal combustion engines designed for use in motor vehicles.

1.5 This specification applies to the fuel as delivered into the on-board fuel tanks of a motor vehicle as a compressed gas.

1.6 This specification is not a natural gas pipeline standard; those requirements are determined by national and regional tariffs.

1.7 *Units*—The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.8 *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.*

1.9 *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:<sup>2</sup>

- D1142 Test Method for Water Vapor Content of Gaseous Fuels by Measurement of Dew-Point Temperature
- D1945 Test Method for Analysis of Natural Gas by Gas Chromatography
- D3588 Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels
- D4150 Terminology Relating to Gaseous Fuels
- D4468 Test Method for Total Sulfur in Gaseous Fuels by Hydrogenolysis and Rateometric Colorimetry
- D5454 Test Method for Water Vapor Content of Gaseous Fuels Using Electronic Moisture Analyzers
- D5504 Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence
- D6228 Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection
- D6968 Test Method for Simultaneous Measurement of Sulfur Compounds and Minor Hydrocarbons in Natural Gas and Gaseous Fuels by Gas Chromatography and Atomic Emission Detection
- D7165 Practice for Gas Chromatograph Based On-line/At-line Analysis for Sulfur Content of Gaseous Fuels
- D7493 Test Method for Online Measurement of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatograph and Electrochemical Detection
- D7551 Test Method for Determination of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases and Natural Gas by Ultraviolet Fluorescence
- D7606 Practice for Sampling of High Pressure Hydrogen and Related Fuel Cell Feed Gases
- D7607 Test Method for Analysis of Oxygen in Gaseous Fuels (Electrochemical Sensor Method)
- D7650 Practice for Sampling of Particulate Matter in High Pressure Gaseous Fuels with an In-Stream Filter

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.92 on Terminology Classification and Specifications.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.