



SURFACE VEHICLE STANDARD	J2719™	MAR2020
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(R) Hydrogen Fuel Quality for Fuel Cell Vehicles		

RATIONALE

SAE J2719 is being revised to incorporate updates to the contaminant table as well as to document updated methodologies.

TABLE OF CONTENTS

1.	SCOPE.....	2
1.1	Purpose	2
1.2	Field of Applicability	2
1.3	Relationship of SAE Standard to ISO and ASTM Standards.....	2
2.	REFERENCES.....	2
2.1	Applicable Documents	2
2.1.1	ASTM Publications.....	2
2.1.2	EPA Publications.....	3
2.1.3	JIS Publications.....	4
2.1.4	NIOSH Publications	4
2.1.5	SCAQMD Publications	4
2.1.6	ISO Publications.....	4
3.	DEFINITIONS	4
4.	HYDROGEN QUALITY SPECIFICATION	5
4.1	Threshold Limits	5
4.2	Sampling	6
5.	NOTES.....	8
5.1	Revision Indicator.....	8
APPENDIX A	ADDITIONAL DEFINITIONS.....	9
APPENDIX B	RESEARCH PAPERS SUPPORTING THE DEVELOPMENT OF SAE J2719.....	10
Table 1	Hydrogen fuel quality specification	7

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1. SCOPE

This standard provides background information and a hydrogen fuel quality standard for commercial proton exchange membrane (PEM) fuel cell vehicles. This report also provides background information on how this standard was developed by the Hydrogen Quality Task Force (HQTF) of the Interface Working Group (IWG) of the SAE Fuel Cell Standards Committee.

1.1 Purpose

The purpose of this hydrogen fuel quality standard is to specify hydrogen fuel quality requirements for all commercial hydrogen fueling stations for PEM fuel cell vehicles (FCVs). Hydrogen quality is defined as the quality measured at the dispenser nozzle using a suitable adapter and standard methodology developed by the ASTM D03 (Gaseous Fuels) Committee.

1.2 Field of Applicability

This hydrogen quality standard is applicable to PEM FCVs at the point of interface between the fueling station and the vehicle. The specification of hydrogen quality is intended to meet the requirements of FCVs, and will meet or exceed the requirements of Internal Combustion Engine Vehicles (ICEVs) to the extent that they have been determined. Information considered in the specification of the fuel quality includes:

- Applicable standard chemical analysis methods to quantify the presence of identified H₂ impurities
- Infrastructure sources of contaminants and cost related to production, distribution, storage, and handling of H₂
- Fuel cell systems, specifically, levels of contaminants that adversely impact performance and/or durability
- On-board hydrogen storage and delivery systems

1.3 Relationship of SAE Standard to ISO and ASTM Standards

The content of this standard was coordinated with ISO TC197/WG27 (H₂ Fuel - Product Specification Working Group), as well as the ASTM D03 (Gaseous Fuels) Committee.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of these publications shall apply.

2.1.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D6228	Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection
ASTM D7550	Standard Test Method for Determination of Ammonium, Alkali and Alkaline Earth Metals in Hydrogen and Other Cell Feed Gases by Ion Chromatography (Withdrawn 2017 - for reference only)
ASTM D7607/D7607M	Standard Test Method for Analysis of Oxygen in Gaseous Fuels (Electrochemical Sensor Method)ASTM D7634Standard Test Method for Visualizing Particulate Sizes and Morphology of Particles Contained in Hydrogen Fuel by Microscopy

ASTM D7649	Standard Test Method for Determination of Trace Carbon Dioxide, Argon, Nitrogen, Oxygen and Water in Hydrogen Fuel by Jet Pulse Injection and Gas Chromatography/Mass Spectrometer Analysis
ASTM D7650	Standard Test Method for Sampling of Particulate Matter in High Pressure Hydrogen Used as a Gaseous Fuel with an In-Stream Filter
ASTM D7651	Standard Test Method for Gravimetric Measurement of Particulate Concentration of Hydrogen Fuel
ASTM D7652	Standard Test Method for Determination of Trace Hydrogen Sulfide, Carbonyl Sulfide, Methyl Mercaptan, Carbon Disulfide and Total Sulfur in Hydrogen Fuel by Gas Chromatography and Sulfur Chemiluminescence Detection
ASTM D7653	Standard Test Method for Determination of Trace Gaseous Contaminants in Hydrogen Fuel by Fourier Transform Infrared (FTIR) Spectroscopy
ASTM D7675	Standard Test Method for Determination of Total Hydrocarbons in Hydrogen by FID-Based Total Hydrocarbon (THC) Analyzer ASTM D7892Standard Test Method for Determination of Total Organic Halides, Total Non-Methane Hydrocarbons, and Formaldehyde in Hydrogen Fuel by Gas Chromatography/Mass Spectroscopy
ASTM D7676	Standard Practice for Screening Organic Halides Contained in Hydrogen or Other Gaseous Fuels
ASTM D7833	Standard Test Method for Determination of Hydrocarbons and Non-Hydrocarbon Gases in Gaseous Mixtures by Gas Chromatography
ASTM D7892	Standard Test Method for Determination of Total Organic Halides, Total Non-Methane Hydrocarbons, and Formaldehyde in Hydrogen Fuel by Gas Chromatography/Mass Spectrometry
ASTM D7941/D7941M	Standard Test Method for Hydrogen Purity Analysis Using a Continuous Wave Cavity Ring-Down Spectroscopy Analyzer

2.1.2 EPA Publications

Available from EPA/NSCEP, P.O. Box 42419, Cincinnati, OH 45249-0419, Telephone: 800-490-9198, website available at: www.epa.gov/ncepihom/ordering.

EPA Method 5i	Determination of Low Level Particulate Matter Emissions
EPA Method 11	Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air
EPA Method 200.7	Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emissions Spectrometry
EPA 625/R-96/010B	Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air - Second Edition
EPA Method TO-12	Method for the Determination of Non-Methane Organic Compounds (NMOC) in Ambient Air Using Cryogenic Pre-Concentration and Direct Flame Ionization Detection(PDFID)
EPA Method TO-15	Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)