SURFACE VEHICLE STANDARD

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(R) Hydrogen Fuel Quality for Fuel Cell Vehicles

RATIONALE

SAE J2719 is the result of a Five-Year Review and update of the specification.

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Full document details: SAE J2719-2026 (R) Hydrogen Fuel Quality for Fuel Cell Vehicles

1. SCOPE

This standard provides background information and a hydrogen fuel quality standard for commercial proton exchange membrane (PEM) fuel cell electric vehicles. This standard also provides background information on how it was developed by the Interface Task Force (ITF) 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 electric vehicles (FCEVs). 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 FCEVs at the point of interface between the fueling station and the vehicle. The specification of hydrogen quality is intended to meet the requirements of FCEVs, 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 H_2 impurities
- Infrastructure sources of contaminants and impacts related to production, distribution, storage, and handling of H_2
- 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 (Hydrogen Fuel Quality), 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 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 1-877-606-7323 (U.S. and Canada only) or 1-724-776-4970 (outside U.S. and Canada), www.sae.org.

SAE J2574 Fuel Cell Vehicle Terminology

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9500, www.astm.org.

ASTM D5466 Standard Test Method for Determination of Volatile Organic Compounds in Atmospheres (Canister Sampling, Mass Spectrometry Analysis Methodology)

ASTM D6228 Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Flame Photometric Detection

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ASTM D7606	Standard Practice for Sampling of High Pressure Hydrogen and Related Fuel Cell Feed Gases
ASTM D7607/D7607M	Standard Test Method for Analysis of Oxygen in Gaseous Fuels (Electrochemical Sensor Method)
ASTM D7634	Standard Practice 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 (Withdrawn 2023 - for reference only)
ASTM D7650	Standard Practice for Sampling of Particulate Matter in High Pressure Hydrogen 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 (Withdrawn 2020 - for reference only)
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 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

2.1.3 CSA Group Publications

Copies of these documents are available online at www.csagroup.org/store.

HGV 4.1	Hydrogen-dispensing systems

2.1.4 EPA Publications

Copies of these documents are available online at www.epa.gov/nscep.

EPA Method 5i	Determination of Low Level Particulate Matter Emissions
EPA Method 11	Determination of Hydrogen Sulfide Content of Fuel Gas Streams in Petroleum Refineries
EPA Method 200.7	Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emissions Spectrometry

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