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ISO 19880-9

Gaseous hydrogen — Fuelling stations —

Part 9: Sampling for fuel quality analysis

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Foreword

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This document was prepared by Technical Committee ISO/TC 197, *Hydrogen technologies.*

A list of all parts in the ISO 19880 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Gaseous hydrogen — Fuelling stations —

Part 9: Sampling for fuel quality analysis

WARNING — The use of sampling apparatuses, such as those described in the annexes to this document, is associated with the safety risks associated with high pressure flammable gases. This document explains the general concepts of how gaseous and particulate samples may be taken. Sampling should be performed only by highly trained technicians experienced with the hazards of high-pressure hydrogen.

1 Scope

This document outlines requirements for sampling from hydrogen fuelling stations for samples taken at the dispenser. The document defines the best practice for sampling at the nozzle of a hydrogen fuelling station as part of the fuelling station acceptance testing, and ongoing operation.

Further, the document describes the minimum safety requirements for sampling.

This document is targeted for the sampling from the hydrogen fuelling station dispenser. Many of the generic requirements within this document are applicable to sampling at other locations within the hydrogen fuelling station, which can be carried out for hydrogen quality assurance, see ISO 19880-8, however, further specific requirements that can be necessary for safe sampling are not addressed in this document.

The intention of sampling hydrogen is to enable analysis against the requirements of ISO 14687, and by analytical methods validated by protocols described in ISO 21087.

This document supersedes, and is an extension to, the guidance published in ISO 19880-1:2020, Annex K.

NOTE Analytical methods are divided into on-line analyses and off-line analyses. On-line analysis allows for real time analysis at hydrogen stations and is not covered in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14687, *Hydrogen fuel quality — Product specification*

ISO 21087, *Gas analysis — Analytical methods for hydrogen fuel — Proton exchange membrane (PEM) fuel cell applications for road vehicles*

ISO 17268, *Gaseous hydrogen land vehicle refuelling connection devices*

ISO 19880-1, *Gaseous hydrogen — Fuelling stations — Part 1: General requirements*

ISO 19880-8, *Gaseous hydrogen — Fuelling stations — Part 8: Hydrogen quality control*

SAE J2600, *Compressed Hydrogen Surface Vehicle Fuelling Connection Devices*

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
bleed
<venting> intentional expiration of a fluid from a fluid system

3.2
building
structure, usually enclosed by walls and a roof, constructed to provide support or shelter for intended occupancy

3.3
canopy
roof, overhead shelter, or hood which affords a degree of weather protection

3.4
compressed hydrogen storage system
CHSS
hydrogen storage on-board vehicle

3.5
component pressure rating
maximum pressure at which it is permissible to operate a component as specified by the manufacturer at a specified temperature

Note 1 to entry: See ISO 19880-1 for further details.

3.6
connector
matching parts (such as male and female parts) that can be put together to form a "connection" which permits the transfer of fluids, electric power, or control signals

Note 1 to entry: *Fitting* (3.12) are a type of connector used in piping systems.

Note 2 to entry: Examples of connectors commonly used in hydrogen systems are as follows:

a) The fuelling *nozzle* (3.28) “connector” mates with the *receptacle* (3.36) “connector” on the vehicle to form the connection for transfer of compressed hydrogen between the *dispenser* (3.7) and the vehicle, as defined in ISO 17268 for this specific application;

b) The hose assemblies have connectors on each end that allow coupling to the hoses and connection to the piping system, e.g. hose *breakaway device* or fuelling nozzle;

c) *Control systems* often use electrical connectors to allow rapid and secure assembly or replacement.

3.7
dispenser
equipment in the *dispensing system* (3.9), including the *dispenser cabinet(s)* (3.8) and support structure, that is physically located in the fuelling area

Note 1 to entry: The hydrogen dispenser typically includes, as a minimum, the *fuelling assembly* (3.14), required temperature and pressure instrumentation, filters, and the user interface to conduct vehicle fuelling.

Note 2 to entry: The manufacturer of the hydrogen dispenser can elect to include additional equipment in the dispenser, including the possibility of all equipment in the dispensing system.

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