
**Road vehicles — Compressed gaseous
hydrogen (CGH₂) and hydrogen/
natural gas blends fuel system
components —**

**Part 15:
Filter**

*Véhicules routiers — Composants des circuits d'alimentation pour
hydrogène gazeux comprimé (CGH₂) et mélanges de gaz naturel et
hydrogène —*

Partie 15: Filtre



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 41, *Specific aspects for gaseous fuels*.

A list of all parts in the ISO 12619 series can be found on the ISO website.

Road vehicles — Compressed gaseous hydrogen (CGH₂) and hydrogen/natural gas blends fuel system components —

Part 15: Filter

1 Scope

This document specifies tests and requirements for the filter, a compressed gaseous hydrogen (CGH₂) and hydrogen/natural gas blend fuel system component intended for use on the types of motor vehicles defined in ISO 3833.

It is applicable to vehicles using CGH₂ in accordance with ISO 14687-1 or ISO 14687-2 and hydrogen/natural gas blend using natural gas in accordance with ISO 15403-1 and ISO/TR 15403-2. It is not applicable to the following:

- a) liquefied hydrogen (LH₂) fuel system components;
- b) fuel containers;
- c) stationary gas engines;
- d) container mounting hardware;
- e) electronic fuel management;
- f) refuelling receptacles;
- g) fuel cell vehicles.

NOTE 1 It is recognized that miscellaneous components not specifically covered herein can be examined to meet the criteria of this document and tested according to the appropriate functional tests.

NOTE 2 All references to pressure in this document are considered gauge pressures unless otherwise specified.

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 12619-1, *Road vehicles — Compressed gaseous hydrogen (CGH₂) and hydrogen/natural gas blend fuel system components — Part 1: General requirements and definitions*

ISO 12619-2:2014, *Road vehicles — Compressed gaseous hydrogen (CGH₂) and hydrogen/natural gas blend fuel system components — Part 2: Performance and general test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12619-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Marking

Marking of the component shall provide sufficient information to allow the following to be traced:

- a) the manufacturer's or agent's name, trademark or symbol;
- b) the model designation (part number);
- c) the temperature range.

The following additional markings are recommended:

- the direction of flow (when necessary for correct installation);
- the type of fuel;
- the electrical ratings (if applicable);
- the symbol of the certification agency;
- the type approval number;
- the serial number or date code;
- a reference to this document, i.e. ISO 12619-15:2017.

NOTE This information can be provided by a suitable identification code on at least one part of the component when it consists of more than one part.

5 Construction and assembly

The filter shall comply with the applicable provisions of ISO 12619-1 and ISO 12619-2 and with the tests specified in [Clause 6](#). Tolerances should follow the specifications of ISO 12619-2.

If non-conductive materials are used, the filter shall be designed to take its conductivity into account.

6 Tests

6.1 Applicability

The tests required to be carried out are indicated in [Table 1](#).

Table 1 — Applicable tests

Test	Applicable	Test procedure as required by ISO 12619-2	Specific test requirements of this document
Hydrostatic strength	X	X	X (see 6.2)
Leakage	X	X	—
Excess torque resistance	X	X	—
Bending moment	X	X	—
Continued operation	X	X	X (see 6.3)
Corrosion resistance	X	X	—
Oxygen ageing	X	X	—
Ozone ageing	X	X	—
Heat ageing	X	X	—
Automotive fluids	X	X	—
Electrical over-voltages	—	—	—
Non-metallic material immersion	X	X	—
Vibration resistance	X	—	X (see 6.4)
Brass material compatibility	X	X	—

6.2 Hydrostatic strength

Test the filter according to the procedure for testing hydrostatic strength specified in ISO 12619-2. The test pressure shall be 2,5 times the working pressure.

6.3 Continued operation

Test the filter in accordance with the procedure for testing continued operation given in ISO 12619-2 for a total of 20 00 cycles.

Following cycling testing, perform the hydrostatic strength test in accordance with 6.2.

6.4 Vibration resistance

Vibrate the filter, pressurized to its working pressure and sealed at both ends, for 30 min along each of the three orthogonal axes at the most severe resonant frequencies determined as follows:

- by an acceleration of 1,5 g;
- within a sinusoidal frequency range of 10 Hz to 500 Hz;
- with a sweep time of 10 min.

If the resonance frequency is not found in this range, the test shall be conducted at 500 Hz.

At the completion of the test, the filter shall not show any indication of fatigue or component damage and shall meet the leakage test requirements as specified in ISO 12619-2:2014, Clause 6. Following the leakage testing, perform the hydrostatic strength test in accordance with 6.2.

Bibliography

- [1] ISO 3833, *Road vehicles — Types — Terms and definitions*
- [2] ISO 11114-2, *Gas cylinders — Compatibility of cylinder and valve materials with gas contents — Part 2: Non-metallic materials*
- [3] ISO 13686, *Natural gas — Quality designation*
- [4] ISO 14687-1, *Hydrogen fuel — Product specification — Part 1: All applications except proton exchange membrane (PEM) fuel cell for road vehicles*
- [5] ISO 14687-2, *Hydrogen fuel — Product specification — Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles*
- [6] ISO 15403-1, *Natural gas — Natural gas for use as a compressed fuel for vehicles — Part 1: Designation of the quality*
- [7] ISO/TR 15403-2, *Natural gas — Natural gas for use as a compressed fuel for vehicles — Part 2: Specification of the quality*
- [8] ISO/TS 15869, *Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks*
- [9] ISO/TR 15916, *Basic considerations for the safety of hydrogen systems*