
**Road vehicles — Liquefied natural gas
(LNG) fuel system components —**

**Part 2:
Performance and general test
methods**

*Véhicules routiers — Équipements pour véhicules utilisant le gaz
naturel liquéfié (GNL) comme combustible —*

Partie 2: Performances et méthodes d'essai générales

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 12614-2:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

— editorial changes.

A list of all parts in the ISO 12614 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.

Road vehicles — Liquefied natural gas (LNG) fuel system components —

Part 2: Performance and general test methods

1 Scope

This document specifies the performance and general test methods of liquefied natural gas fuel system components, intended for use on the types of motor vehicles as defined in ISO 3833. This document is also applicable to other LNG-fueled motor vehicles as far as appropriate, until any specific norm is worked out for such a type of vehicle. It also provides general design principles and specifies requirements for instructions and marking.

This document is not applicable to the following:

- a) fuel containers;
- b) stationary gas engines;
- c) container mounting hardware;
- d) electronic fuel management;
- e) refuelling receptacles.

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.

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

This document is based upon a working pressure for natural gas as fuel of 1,6 MPa (16 bar)¹⁾. Other working pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example, a 2 MPa (20 bar) working pressure system will require pressures to be multiplied by 1,25.

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 188:2011, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 12614-1:2021, *Road vehicles — Liquefied natural gas (LNG) fuel system components — Part 1: General requirements and definitions*

ISO 12614 (all parts), *Road vehicles — Liquefied natural gas (LNG) fuel system components*

ISO 15500 (all parts), *Road vehicles — Compressed natural gas (CNG) fuel system components*

1) 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm².

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12614-1 apply.

ISO and IEC maintain terminological 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/>

4 General

4.1 Unless stated otherwise, the tests specified herein shall be conducted at room temperature, i.e. $20\text{ °C} \pm 5\text{ °C}$.

4.2 Components shall comply with the tests outlined in ISO 12614-3 and subsequent parts of the ISO 12614 series and any other applicable tests specified in this document. Because of the peculiarities of some components, the list of tests described in this document from [Clauses 5](#) to [15](#) is not exhaustive. If additional tests are required, their requirements are provided in the respective part of the ISO 12614 series.

4.3 Unless otherwise specified, all tests shall be conducted using inert gas. Qualified personnel can also test with natural gas providing that appropriate safety measures are fulfilled. The dewpoint of the test gas at the test pressure shall be at the temperature which ensures no icing, hydrate, or liquid formation. For testing at low temperatures, liquid nitrogen or LNG will be used, which will be specifically mentioned at the respective parts of the norm.

Unless otherwise specified, all pressures shall have a maximum tolerance of $\pm 5\%$.

Unless otherwise specified, all temperatures shall have a maximum tolerance of $\pm 5\%$.

Unless otherwise specified, all dimensions shall have a maximum tolerance of $\pm 5\%$.

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5 Hydrostatic strength

A component shall not rupture when subjected to the following test method.

Outlet opening of the component shall be plugged. Valves or internal blocks shall be ensured in the open position. The hydrostatic pressure specified for each component in the ISO 12614 series shall be applied with a test fluid to the inlet of the component for a period of at least 3 min.

Test samples shall not be used for any other testing.

6 Leakage

6.1 General

Prior to conditioning, the devices shall be purged with nitrogen and then sealed at 30 % of working pressure using nitrogen, dry air, or natural gas.

All tests shall be conducted while the devices are continuously exposed to the specified test temperatures. The device shall either be bubble free or have a leakage rate less than $20\text{ Ncm}^3/\text{h}$ according to the following test method.