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Road vehicles — Liquefied petroleum gas (LPG) fuel systems components —

Part 2: Performance and general test methods

Véhicules routiers — Équipements pour véhicules utilisant le gaz de pétrole liquéfié (GPL) comme combustible —

Partie 2: Performances et méthodes d'essai générales

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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 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 of gaseous fuels*.

A list of all parts in the ISO 20766 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 petroleum gas (LPG) fuel systems components —

Part 2: Performance and general test methods

1 Scope

This document specifies performance and general test methods of liquefied petroleum gas fuel system components, intended for use on the types of motor vehicles as defined in ISO 3833.

This document is applicable to vehicles (mono-fuel, bi-fuel or dual-fuel applications) using liquefied petroleum gas in accordance with ISO 9162. It is not applicable to the following:

a) fuel containers;

b) stationary gas engines;

c) container mounting hardware;

d) electronic fuel management; and

e) refuelling receptacles.

NOTE 1 It is recognized that miscellaneous components not specifically addressed herein can be examined for compliance with the criteria of any applicable part of ISO 20766, including testing to the appropriate functional tests.

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

NOTE 3 This document applies to devices which have a service pressure in the range of 110 kPa (Butane rich at 20 °C) and 840 kPa (Propane rich at 20 °C), hereinafter referred to in this document. Other service pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio).

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

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

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

ISO 20766 (all parts)[1)], *Road vehicles — liquefied petroleum gas (LPG) fuel system components*

IEC 60068-2-52, *Environmental testing — Part 2: Tests — Test Kb: Salt mist, cyclic (sodium, chloride solution)*

ISO 1431-1, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing*

1) Under preparation.

ASTM D4814, *Standard specification for automotive spark-ignition engine fuel*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20766-1 and the following 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 https://www.iso.org/obp

3.1
fill cycle
sequence of events performed on a filling system that has a defined beginning and ending

3.2
duty cycle
sequence of events performed on a component that has a defined beginning and ending

4 General

4.1 Unless otherwise stated, the tests shall be conducted at a room temperature of 20 °C ± 5 °C.

4.2 Components shall comply with the tests specified in this document as well as the relevant parts of ISO 20766, as applicable for each component.

NOTE Because of the peculiarities of some components, the list of tests given in this document, (Clauses 5 to 15) is not exhaustive. Where additional tests are required, their provisions are given in other parts of ISO 20766.

4.3 Unless otherwise specified, all tests shall be conducted using dry air or nitrogen. Tests may also be conducted with liquefied petroleum gas provided appropriate safety measures are taken.

5 Hydrostatic strength

5.1 General

A component shall not show any visible evidence of rupture when subjected to the following test procedure.

5.1.1 Plug the outlet opening of the component and have the valve seats or internal blocks assume the open position.

5.1.2 Apply, with a test fluid, the hydrostatic pressure specified in the applicable part of ISO 20766 to the inlet of the component for a period of at least 3 min.

5.1.3 The hydrostatic pressure shall then be increased at a rate of less than or equal to 1,4 kPa/s until component failure. The hydrostatic pressure at failure shall be recorded. The benchmark value for a specific component shall be determined by testing a component that has not undergone previous testing. Previously untested sample shall withstand at least 2,25 times working pressure. Hydrostatic testing of components that have been subjected to previous testing shall result in an acceptable failure pressure that is at least 80 % of the benchmark value or at least 2,25 times the working pressure of the component.

The samples used in this test shall not be used for any other testing.