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**Road vehicles — Compressed natural  
gas (CNG) fuel systems —**

**Part 1:  
Safety requirements**

*Véhicules routiers — Systèmes d'alimentation en gaz naturel  
comprimé (GNC) —*

*Partie 1: Exigences de sécurité*



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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](http://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](http://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 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](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 41, *Specific aspects for gaseous fuels*.

This third edition cancels and replaces the second edition (ISO 15501-1:2012), which has been technically revised.

A list of all parts in the ISO 15501 series can be found on the ISO website.

## Introduction

For the purposes of this document, all fuel system components in contact with natural gas have been considered suitable for natural gas as defined in ISO 15403.

When applying this document, it is to be understood that a safety device to prevent overfilling the vehicle's fuel system is part of the refuelling station. The pressure gauge has not been considered as a safety component.

When necessary, technical solutions regarding functional requirements are given in [Annex A](#).

This document refers to a service pressure of 20 MPa (200 bar).

NOTE 1 1 bar = 0,1 MPa =  $10^5$  Pa. 1 MPa = 1 N/mm<sup>2</sup>.

NOTE 2 This document is based upon a service pressure for natural gas as fuel of 20 MPa (200 bar) settled at 15 °C. Other service pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example, a 25 MPa (250 bar) service pressure system will require pressures to be multiplied by 1,25.



# Road vehicles — Compressed natural gas (CNG) fuel systems —

## Part 1: Safety requirements

### 1 Scope

This document specifies the minimum safety requirements applicable for the functionality of CNG on-board fuel systems intended for use on the types of motor vehicles defined in ISO 3833. This document is applicable to vehicles using compressed natural gas in accordance with ISO 15403, including mono-fuel, bi-fuel or dual-fuel applications, original-production and converted vehicles.

All matters relating to the skills of installers and converters have been excluded from 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 11439, *Gas cylinders — High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles*

ISO 14469 (all parts), *Road vehicles — Compressed natural gas (CNG) refuelling connector*

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

ISO 15501-2, *Road vehicles — Compressed natural gas (CNG) fuel systems — Part 2: Test methods*

IEC 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1176, ISO 15500-1 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 <http://www.iso.org/obp>

#### 3.1

##### service pressure

settled pressure of 20 MPa (200 bar) at a uniform gas temperature of 15 °C

#### 3.2

##### CNG on-board fuel system

compressed natural gas fuel system comprising cylinder, or cylinders according to ISO 11439, mounting, one or more refuelling receptacles according to ISO 14469 (all parts), and the components described in ISO 15500-3 to ISO 15500-20