



## **Gaseous hydrogen — Land vehicle fuel containers**

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AS ISO 19881:2020

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## **Gaseous hydrogen — Land vehicle fuel containers**

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## Preface

This Standard was prepared by the Standards Australia Committee ME-093, Hydrogen Technologies.

The objective of this document is to specify the requirements for the material, design, manufacture, marking and testing of serially produced, refillable containers intended only for the storage of compressed hydrogen gas for land vehicle operation. These containers —

- (a) are permanently attached to the vehicle;
- (b) have a capacity of up to 1 000 L water capacity; and
- (c) have a nominal working pressure that does not exceed 70 MPa.

This document is limited to fuel containers containing fuel cell grade hydrogen for fuel cell land vehicles and Grade A or better hydrogen in accordance with ISO 14687 for internal combustion engine land vehicles.

This document also contains requirements for hydrogen fuel containers acceptable for use on-board light duty vehicles, heavy duty vehicles and industrial powered trucks such as forklifts and other material handling vehicles.

This document is identical with, and has been reproduced from, ISO 19881:2020, *Gaseous hydrogen — Land vehicle fuel containers*.

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

This document was prepared by Technical Committee TC 97, *Hydrogen technologies*.

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

## Introduction

The purpose of this document is to promote the implementation of hydrogen powered land vehicles through the creation of performance based testing requirements for compressed hydrogen fuel containers. The successful commercialization of hydrogen land vehicle technologies requires standards pertaining to fueling stations, vehicle fuel system components and the global homologation of standards requirements for technologies with the same end use. This will allow manufacturers to achieve economies of scale in production through the ability to manufacture one product for global use.

This document is based on the CSA Standard ANSI/HGV 2-2014.

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# Australian Standard<sup>®</sup>

## Gaseous hydrogen — Land vehicle fuel containers

### 1 Scope

This document contains requirements for the material, design, manufacture, marking and testing of serially produced, refillable containers intended only for the storage of compressed hydrogen gas for land vehicle operation. These containers

- a) are permanently attached to the vehicle,
- b) have a capacity of up to 1 000 l water capacity, and
- c) have a nominal working pressure that does not exceed 70 MPa.

The scope of this document is limited to fuel containers containing fuel cell grade hydrogen according to ISO 14687 for fuel cell land vehicles and Grade A or better hydrogen as per ISO 14687 for internal combustion engine land vehicles. This document also contains requirements for hydrogen fuel containers acceptable for use on-board light duty vehicles, heavy duty vehicles and industrial powered trucks such as forklifts and other material handling vehicles.

### 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 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 306, *Plastics — Thermoplastic Materials — Determination of Vicat Softening Temperature (VST)*

ISO 7866:2012, *Gas cylinders — Refillable seamless aluminium alloy gas cylinders — Design, construction and testing*

ISO 9809-1:2010, *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa*

ISO 9809-2:2010, *Gas cylinders — Refillable seamless steel gas cylinders — Design, construction and testing — Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa*

ISO 11439:2013, *Gas cylinders — High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles*

ISO 19078:2013, *Gas cylinders — Inspection of the cylinder installation, and requalification of high pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles*

ISO 19882, *Gaseous hydrogen — Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers*

ASTM D638, *Standard Test Method for Tensile Properties of Plastics*

ASTM D2344/D2344M-00, *Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates*

ASTM D3359, *Standard Test Methods for Measuring Adhesion by Tape Test*

ASTM D3418, *Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry*