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# Gaseous hydrogen — Fuelling stations

## Part 5: Dispenser hoses and hose assemblies

AS ISO 19880.5:2021

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# Gaseous hydrogen — Fuelling stations

## Part 5: Dispenser hoses and hose assemblies

First published as AS ISO 19880.5:2021.

# 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 wire or textile reinforced hoses and hose assemblies suitable for dispensing hydrogen up to 70 MPa nominal working pressure, in the operating temperature range of −40 °C to 65 °C.

This document contains safety requirements for material, design, manufacture and testing of gaseous hydrogen hoses and hose assemblies for hydrogen fuelling stations.

This document excludes the following:

(a) Hoses and hose assemblies used as part of a vehicle high pressure on-board fuel storage system.

(b) Hoses and hose assemblies used as part of a vehicle low pressure fuel delivery system.

(c) Flexible metal hoses.

This document is identical with, and has been reproduced from, ISO 19880-5:2019, *Gaseous hydrogen — Fuelling stations — Part 5: Dispenser hoses and hose assemblies.*

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# Contents

# 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 ISO/TC 197, *Hydrogen technologies*.

A list of all parts in the ISO 19880 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.

# Introduction

This document promotes the implementation of performance-based testing for components of dispensing systems and fuelling stations that are based on proven engineering principles, research and the combined expertise of gas utilities, fuel providers, manufacturers, users, and others having specialized experience.

The successful commercialization of hydrogen vehicle technologies requires codes and standards pertaining to fuelling stations, vehicle fuel system components, and the global homologation of standards requirements for technologies with the same end use. Essentially this will allow manufacturers to achieve economies of scale by producing one product for use globally.

International harmonization contributes to reducing technical barriers and stimulates related markets. A series of documents that address hydrogen-fuelled vehicles and fuelling stations is being developed. These documents will provide internationally homologized minimum safety performance criteria at the component level, thus providing a foundation to build a safe "fuelling system".

This document was developed using the standard ANSI/CSA HGV 4.2-2013.

This document was developed based on five pressure classes of wire or textile reinforced hoses and hose assemblies suitable for use with gaseous hydrogen for hydrogen dispensing. This is based on technologies in use at the time of the development of the requirements.

In the future, other types and classes of hoses and hose assemblies will need to be evaluated to determine the suitability of requirements in this document.

This document applies to newly manufactured hoses and hose assemblies for connecting a dispenser to a high pressure fuelling nozzle.

A nozzle vent hose is included in this document; however, the pressure rating may be lower than the nozzle rating, based on the nozzle and dispenser design.

For general hydrogen safety information, see ISO/TR 15916.

# Australian Standard®

# Gaseous hydrogen — Fuelling stations

## Part 5: Dispenser hoses and hose assemblies

## 1 Scope

This document specifies the requirements for wire or textile reinforced hoses and hose assemblies suitable for dispensing hydrogen up to 70 MPa nominal working pressure, in the operating temperature range of −40 °C to 65 °C.

This document contains safety requirements for material, design, manufacture and testing of gaseous hydrogen hose and hose assemblies for hydrogen fuelling stations.

Hoses and hose assemblies excluded from the scope of this document are the following.

1) those used as part of a vehicle high pressure on-board fuel storage system,

2) those used as part of a vehicle low pressure fuel delivery system, and

3) flexible metal hoses.

NOTE 1 This document was developed primarily for hoses and hose assemblies for dispensing high pressure hydrogen from refuelling dispensers to hydrogen vehicles. Requirements for hoses used to deliver hydrogen from a transportable vessel (e.g. trailer) into a buffer storage of a station are addressed in ISO 16964.

NOTE 2 Hose assemblies include the hose with connectors on each end (see Figure 1). Each connector has two basic functional elements that are addressed as described below.

1) Coupling to hose. This function is defined by requirements and verified (along with the hose itself) by performance-based tests in this document.

2) Fitting for transition and connection to the piping system or equipment. This function is addressed by reference to appropriate hydrogen equipment standards and piping codes.