AS 2746:2025

Australian STANDARD®

STANDARDS Australia

Working areas for gas fuelled vehicles

AS 2746:2025

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The following are represented on Committee ME-093:

ANZIGA
Australian Gas Association
Australian Hydrogen Council
Australian Industry Group
Chemistry Australia
Energy Networks Australia
Engineers Australia
Gas Energy Australia
Gas Technical Regulators Committee
Institute of Electrical Inspectors
National Association of Testing Authorities Australia
The University of Adelaide

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Australian Standard®

Working areas for gas fuelled vehicles

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This document was prepared by the Standards Australia Committee ME-093, Hydrogen Technologies, to supersede AS 2746—2008.

The objective of this document is to provide constructors, installers, servicing personnel and regulators with the requirements for working areas for gas-fuelled vehicles such that work on the vehicles is performed safely.

The major changes in this edition are as follows:

(a) Includes requirements for liquid hydrogen.

(b) Includes requirements for compressed hydrogen.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Introduction

Presumptions

This document is based on the following presumptions:

(a) The gas fuel system of a vehicle, provided that it is in good repair and leak free, is considered not to constitute any special hazard in a normal garage or working area. Where repair work is carried out on items excluding the gas fuel system the vehicle can be treated in the same manner as any other vehicle.

(b) Because of the sequence prescribed for installation procedures and intermediate checks, gas escapes in an installation premises will be relatively minor, both in rate and duration. Standards such as AS 1668.2 and various occupational health regulations, specify ventilation rates for automotive workshops that are considerably higher than for basic human comfort. This higher rate is considered to be adequate to disperse and dilute any normal escapes of gas, and is the rate specified in this document.

(c) The different densities of NG and LP Gas are considered to have no effect on the required airflow rates for adequate ventilation, but where LP Gas is present the positioning of the ventilation provisions requires care, having regard to gas density being heavier than air which may gravitate to low areas. NG as a vapour is lighter than air and will rise; however, if the origin of the release is LNG, which is stored under cryogenic conditions, this may be heavier than air for a brief period, due to the extremely low temperature at which it is stored. H2 as a vapour is lighter than air and will rise. However, if the origin of the release is LH2 stored under cryogenic conditions, this can be heavier than air for a brief period due to the extremely low temperature at which it is stored.

(d) At times it might be necessary to unload gas from a fuel container, e.g. to replace a service valve or fitting, in which case the potential for a considerable gas escape is much greater. Care is necessary to ensure safe dispersal, not only in regard to procedures, but also to the general operating area. In no circumstances is this procedure to be attempted inside a workshop.

(e) Where a vehicle that has been in service is found to have a gas escape, it cannot be allowed indoors while the escape continues.

Fire safety

Fire safety is a critical aspect of this document and as such incorporates a section detailing requirements for firefighting equipment.

The fire characteristics of gases, particularly LNG and LH2, differ radically from those of solids and liquids, so that conventional firefighting methods and equipment may not be useful and in some situations be counter-productive. The provision of inappropriate equipment not only represents a misdirection of effort but, more seriously, a false sense of security can be generated, leading personnel to place themselves in danger.

Essential to the consideration of safety in a gaseous fire is that uncontrolled drifting vapour is very mobile; unlike liquids or solids it may travel to an ignition source. Once gas has escaped, dissipation before reaching an ignition source is essential for safety.

Separation distances and the control and elimination of possible ignition sources are vital.

Nearby fires that radiate heat are not important considerations for LNG containers. The insulation of the container will provide adequate protection for anything but the most intense fire. An LP Gas container can tolerate a certain amount of radiated heat influx, but the level is not high. Heating the container will result in an initial discharge through a safety valve or total failure of the container in extreme circumstances.

Australian Standard®

Working areas for gas fuelled vehicles

Section 1 Scope and general

1.1 Scope

This document sets out requirements for the premises, and procedures for the following types of work or activity associated with gas-fuelled vehicles using LPG, CNG, LNG, CH2 and LH2:

(a) Converting and equipping vehicles to use gas such as liquefied petroleum gas (LP Gas), or natural gas (CNG and LNG) as an engine fuel.

(b) Maintenance, servicing and repairs to the gas fuel system, e.g. adjustment, maintenance and replacement of gas system componentry.

(c) Routine motor vehicle maintenance not involving the gas fuel system, e.g. lubrication, brake repair or wheel alignment, body or windscreen repairs, engine tuning.

NOTE The operations described in Items (a) or (b) above are undertaken in a specialist gas working area, whereas Item (c) would apply to general service workshops not having any specific requirements for working with gaseous engine fuels.

This document excludes pressure vessels and cylinders used only for gases (at normal temperature and pressure) as cargo.

1.2 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.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1210, *Pressure vessels*

AS 1319, *Safety signs for the occupational environment*

AS 1668.2, *The use of ventilation and airconditioning in buildings, Part 2: Mechanical ventilation in buildings*

AS 1851, *Routine service of fire protection systems and equipment*

AS 2337.1, *Gas cylinder test stations, Part 1: General requirements, inspections and tests — Gas cylinders*

AS 2441, *Installation of fire hose reels*

AS 2444, *Portable fire extinguishers and fire blankets — Selection and location*

AS 4265, *Wheeled fire extinguishers*

AS 4332, *The storage and handling of gases in cylinders*

AS/NZS 1221, *Fire hose reels*

AS/NZS 1425, *LP Gas fuel systems for vehicle engines*

AS/NZS 1596, *The storage and handling of LP Gas*

AS/NZS 1841.1, *Portable fire extinguishers, Part 1: General requirements*

AS/NZS 1841.5, *Portable fire extinguishers, Part 5: Specific requirements for powder type extinguishers*

AS/NZS 1841.6, *Portable fire extinguishers, Part 6: Specific requirements for carbon dioxide type extinguishers*

AS/NZS 1850, *Portable fire extinguishers — Classification, rating and performance testing*

AS/NZS 2739, *Natural gas (NG) fuel systems for vehicle engines*

AS/NZS 60079.10.1, *Explosive atmospheres, Part 10.1: Classification of areas — Explosive gas atmospheres*

ISO 15500-17, *Road vehicles — Compressed natural gas (CNG) fuel system components — Part 17: Flexible fuel line*

ISO 21012, *Cryogenic vessels — Hoses*

AGA AG807, *Approval Requirements for Natural Gas Flexible Hose and Hose Assemblies for Pressures above 2.6 MPa*

ASME, *Boiler and Pressure Vessel Code, Section VIII, Division 1*

ECE R110, *Uniform provisions concerning the approval of: I Specific components of motor vehicles using compressed natural gas (CNG) in their propulsion system II Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) in their propulsion system*

1.3 Terms and definitions

For the purposes of this document, the terms and definitions given, and the component terms used, in AS/NZS 1425 and AS/NZS 2739, and the following apply.

1.3.1
competent person
person who has acquired, through education, training, qualification or experience or a combination of these, the knowledge and skill enabling that person to perform the task required

1.3.2
container
pressure vessel, cylinder or tank for the storage of LP Gas/CNG/LNG/CH2/LH2 to be used as fuel for the internal combustion engine

1.3.3
CNG
compressed natural gas

1.3.4
gas fuel system
system including the cylinder or container together with all gas components and fittings from the fill connection through to the connection to the air induction system where the gas and air mix

Note 1 to entry: It also includes all of the specialist electrical equipment and wiring necessary for gas operation.

1.3.5
hazardous area
area in which an explosive gas atmosphere is present or can be expected to be present, in quantities such that special precautions for the construction, installation and use of equipment are required

[SOURCE: AS/NZS 60079.10.1:2022]

1.3.6
hold time
time that will elapse before cryogenic fuel pressure inside a container will rise to a pressure at which the safety valve will commence to operate

1.3.7
ignition source
source of energy sufficient to ignite a flammable atmosphere, including naked flames, exposed incandescent material, sparks, electric welding arcs, and electrical or mechanical equipment not approved for use in hazardous locations

1.3.8
LNG
liquefied natural gas

1.3.9
may
indicates the existence of an option

1.3.10
NGV
natural gas vehicle

1.3.11
service pit
pit providing standing access to the underside of a vehicle

1.3.12
shall
indicates that a statement is mandatory

1.3.13
should
indicates a recommendation

1.3.14
working area
area within a specialist gas workshop designated for equipping or conversion of a gas-fuelled vehicle

1.4 New designs and innovations

Any alternative materials, equipment, designs, methods of assembly or procedures, which do not conform to specific requirements of this document or are not mentioned in it but which give equivalent results to those specified, may be acceptable to the Regulatory Authority.

NOTE Regulatory Authority information is provided in Appendix A.