



Gas cylinders

Part 5: Filling, inspection and testing of refillable cylinders



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The following are represented on Committee ME-002:

- Australasian Institute of Engineer Surveyors
 - Australia New Zealand Industrial Gas Association
 - Australian Chamber of Commerce and Industry
 - Australian Gas Association
 - Australian Industry Group
 - Australian Steel Association
 - Department of the Premier and Cabinet, SafeWork SA
 - Fire Protection Association of Australia
 - International Association for Natural Gas Vehicles
 - LPG Australia
 - Materials Australia
 - Pressure Equipment Association
 - Victorian WorkCover Authority
 - Welding Technology Institute of Australia
 - WorkCover New South Wales
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Australian Standard[®]

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Part 5: Filling, inspection and testing of refillable cylinders

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PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders, to supersede (in part) AS 2030.1—1999, *The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases*, Part 1: *Cylinders for compressed gases other than acetylene*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (May 2015). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

This edition introduces the following changes:

- (a) The main title of the AS 2030 series has been changed and simplified to more accurately reflect the scope of the Standard.
- (b) To clarify the application of the AS 2030 series, the scope of the previous edition of AS 2030.1 has been divided between the new edition of AS 2030.1 and this new Standard, AS 2030.5. This Standard contains requirements previously located in Clauses 5 to 9 of AS 2030.1—1999.

AS 2030.1 applies to all gas cylinders, containing requirements for design, manufacture and inspection (including conformity assessment), requirements to be met prior to the first fill and other issues applicable to all cylinders.

AS 2030.5 applies to refillable cylinders (except for acetylene, which remains in AS 2030.2), and contains additional requirements for filling, inspection (periodic and non-periodic) and other issues related to refillable cylinders.

- (c) Many terms have been re-defined to harmonize with the terminology of the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (ADG Code), which in turn takes its definitions from *UN Model Regulations on the Transport of Dangerous Goods*.

Of necessity, some terms have definitions which are not the same as the ADG Code. Of these the most significant are the following:

- (i) This Standard retains the generic term ‘gas cylinder’. The corresponding ADG Code term ‘transportable pressure receptacle’ is generally equivalent to a gas cylinder as defined in this Standard, except that a pressure receptacle may include certain vessels which are built to a general pressure vessel code, whereas such vessels are specifically excluded from the scope of this Standard.
- (ii) This Standard also retains the generic term ‘welded gas cylinder’, rather than the ADG Code term ‘pressure drum’, because ‘pressure drum’ may include general pressure vessels.

Appendix C of AS 2030.1 provides a comparison of the definitions used in this Standard, AS 2030.1—1999 and the ADG Code.

Note that some gases formerly classified as compressed (permanent) are now classified as high pressure liquefied gases.

- (d) Tables 1 to 4 have been extensively revised to harmonize as far as possible with the ADG Code.

Complete harmonization is not possible because Australian cylinder standards have, in the past, had a significantly different design philosophy from European cylinder standards. There are two practical differences arising from these philosophical differences:

- (i) In Europe, cylinders containing compressed gases do not (in general) have burst discs, and may be pressurized in service up to their test pressure. Australian Standards have for many years followed American practice in using burst discs, and these are required to operate at a pressure at or below the test pressure. Logically the maximum operating pressure must be limited to a value below the lowest release pressure of the safety device.
- (ii) In Europe, cylinders containing liquefied gases have traditionally been fitted with safety devices which release at a pressure between the test pressure and a tolerance above the TP. In Australia, the maximum service pressure is limited to specified percentages (between 80% and 90%) of the maximum test pressure.

Therefore, for certain compressed gas mixtures, the maximum filling pressure in Australia may be lower than for a cylinder of equal test pressure authorized for use in Europe, and for liquefied gases to achieve the same filling ratio, the required minimum test pressure in Australia will usually be higher than European practice. (Alternatively, lower filling ratio may be specified for the same test pressure).

- (e) Requirements for certified gas cylinder test stations (set out in AS 2337.1) have been clarified and some associated terminology has been updated to reflect current usage.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

IT SHOULD BE NOTED THAT COMPLIANCE WITH THIS STANDARD MAY NOT NECESSARILY FULFILL ALL LEGAL OBLIGATIONS.

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STANDARDS AUSTRALIA

Australian Standard Gas cylinders

Part 5: Filling, inspection and testing of refillable cylinders

1 SCOPE

This Standard specifies requirements for the filling, inspection and testing of refillable gas cylinders for the storage and transport of compressed and liquefied gases, of water capacity ranging from 0.1 kg to 3000 kg.

This Standard does not apply to the following:

- (a) Acetylene cylinders.
- (b) Closed cryogenic receptacles.
- (c) Cylinders forming part of aircraft equipment and used solely in aircraft other than as a reference made in a direction pursuant to the Civil Aviation Regulations.
- (d) Pressure drums or vessels constructed to a pressure vessel standard.

The requirements for gas cylinders in fire extinguisher systems and fire extinguishers, apply only where suitable requirements are not given in another Australian Standard.

NOTES:

- 1 The term 'cylinder' is used interchangeably with 'gas cylinder' in this Standard.
- 2 AS 2030.1 sets out requirements for design, verification and manufacturing of all gas cylinders.
- 3 AS 2030.2 sets out requirements for compressed dissolved acetylene.
- 4 AS 2030.4 sets out requirements for closed cryogenic receptacles (formerly called welded cylinders-insulated).

2 REFERENCED DOCUMENTS

A list with titles of the documents referred to in this Standard is given in Appendix A.

3 DEFINITIONS

For the purpose of this Standard, the definitions in AS 2030.1, and those below apply.

3.1 Automatic fill limiter (AFL) valve

A device in the filling system which automatically shuts off the filling when a pre-determined level in the gas cylinder has been reached.

3.2 Filling ratio definitions

3.2.1 *Filling ratio*

The ratio of the mass of gas to the mass of water at 15°C that is filled in a gas cylinder ready for use.

3.2.2 *Maximum filling ratio*

The maximum ratio of the mass of gas to the mass of water at 15°C that is permitted to be filled into a gas cylinder by Table 3 or 4 or the cylinder design.