AS 2030.1—1999
(Incorporating Amendment No. 1)

Australian Standard™

The verification, filling, inspection, testing and maintenance of cylinders for storage and transport of compressed gases

Part 1: Cylinders for compressed gases other than acetylene

Standards Australia

This Australian Standard was prepared by Committee ME-002, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 12 February 1999 and published on 5 April 1999.

The following interests are represented on Committee ME-002:

A.C.T. WorkCover

Airconditioning and Refrigeration Wholesalers Association

Australasian Railway Association

Australian Association of Certification Bodies

Australian Chamber of Commerce and Industry

Australian Chamber of Manufactures

Australian Gas Association

Australian Liquefied Petroleum Gas Association

Boiler and Pressure Vessel Manufacturers Association of Australia

Bureau of Steel Manufacturers of Australia

Department of Defence, Australia

Department for Administration and Information Services, S.A.

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The verification, filling, inspection, testing and maintenance of cylinders for storage and transport of compressed gases

Part 1: Cylinders for compressed gases other than acetylene

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PREFACE

This Standard was prepared by the Joint Australia/New Zealand Standards Committee ME-002, Gas Cylinders, to supersede AS 2030.1—1989, *The approval, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases*, Part 1: *Cylinders for compressed gases other than acetylene* and AS 2030 Supplement 1—1986, *Foreign gas cylinder specifications*. It is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

This Standard incorporates Amendment No. 1 (March 2002). 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 changes as follows:

(a) Scheme name change to now be known as 'The Standards Australia Certificated Gas Cylinder Test Station Scheme'. Test stations within the scheme will now be given a 'Certificate of Conformity' to display within the test station.

(b) All references to approval of new designs of cylinders or batch testing of imported or locally manufactured cylinders by the State or Territory regulatory authorities have been deleted from the Standard. Therefore, to bridge this gap where it may occur, the following apply:

  (i) Where State and Territory regulatory authorities do not undertake design verification, design registration or design notification services, a design identification and design record library is to be introduced. In States or Territories where design verification, design registration or design notification is undertaken by the relevant authorities, the design identification and design record library will not apply.

  The object of either scheme in Item (b)(i) is of design and verification traceability, so that continued compressed gas cylinder safety is maintained throughout Australia.

  (ii) Introduction of integrated gas cylinder test stations (IGTS) to allow manufacturers with a certificated gas cylinder test station and an appropriate quality control system to mark their own product to comply with the requirements of this Standard.

(c) The scope of the Standard has been expanded to cater for cylinders up to 3000 kg water capacity bringing it into line with ISO and CEN gas cylinders Standards.

(d) The appendices in the previous edition relating to acceptable Australian and foreign Standards have been deleted, and the manufacturing section expanded to enable cylinders built to worldwide compressed gas cylinder Standards, with suitable safeguards, to enter gas traffic in Australia in the spirit of free trade.

(e) Ultrasonic testing as alternative non-destructive test method is introduced and may be used in certain circumstances. Details of this method of inspection are given in AS 2337.1, *Gas cylinder test stations*, Part 1: *General requirements, inspection and tests—Gas cylinders.*

(f) Corrections are made to Appendix B, listing maximum developed pressure for certain gases at a range of filling pressures.

(g) Cylinders which entered traffic prior to 1 January 1997, which have an approved design, and bear an approved gas cylinder station stamp, will continue to be accepted for traffic, provided they continue to pass the tests specified in the AS 2337 series of Standards, irrespective of the Standard to which they were manufactured.

After 1 January 1997, cylinders complying with pre-existing design verification or design registration issued by the State or Territory regulatory authorities are acceptable as complying with the requirements of this Standard provided that the quality requirements of the organizations mentioned in Clause 4.1 are met.

Also details of the State and Territorial regulatory authorities as principal inspecting authorities have been deleted.

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.

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

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FOREWORD

The basic philosophy embodied in this Standard may be expressed in the following terms:

(a) Cylinders covered by acceptable Standards for current and future manufacture are to be designed to a hydrostatic test pressure.

(b) For permanent gases, the filling pressure at 15°C does not exceed two-thirds of the marked test pressure, and is such that the maximum developed pressure at 65°C does not exceed the marked test pressure minus the safety device manufacturer's guaranteed minimum tolerance on the safety device, which must not exceed 15%.

(c) For carbon dioxide, existing practice is continued where the developed pressure at 65°C does not exceed 90% of the test pressure as given in Clause 6.3.2(d).

(d) For liquefiable gases other than carbon dioxide, existing practice is continued wherein the developed pressure at 65°C does not exceed 80% of the marked test pressure as given in Clause 6.3.2(d).

This philosophy comes out of the following report extracted from the earlier edition of this Standard:

> Extensive studies were carried out prior to the publication of the 1967 edition on the effect of atmospheric conditions (solar radiation, ambient temperature, wind, shading, location, size, shape, colour, position, content, etc.) on containers for liquefiable gas. This work was initially undertaken by a group of interested companies and the Gas Cylinders Committee. It was based on field tests carried out by a number of organizations and companies which included the following:
>
> BORAL Ltd. (at Wagga Wagga and Broken Hill)
>
> The Commonwealth Industrial Gases Limited (Adelaide) (Now known as CIG)
>
> Gas and Fuel Corporation (at Highett and Altona)
>
> Imperial Chemical Industries of Australia and New Zealand Ltd. (at Sydney and Melbourne) (Now known as ICI Australia Ltd.)
>
> Mobil Oil Co. (at Townsville, Brisbane, Adelaide and Suva)
>
> N.S.W. Government Railways (at Ivanhoe) (Now known as State Rail Authority of N.S.W.)
>
> Porta-Gas Pty Ltd. (at Mortlake).
>
> As a result of the study, the Gas Cylinders Committee found that the maximum pressure in a gas cylinder was likely to occur with containers exposed to an official maximum air temperature (shade) of 46°C. For white cylinders having a thermal radius (volume/surface area) less than 0.03 m, lying horizontal and uncooled, the maximum temperature of the contents was likely to rise to 56°C. It also found that, as a reasonable average for unclean or coloured cylinders under these same conditions, the maximum temperature of the vapour phase of the contents was likely to be 9°C higher, i.e. 65°C, while for liquefiable gases stratification in the cylinders reduced the liquid density to that corresponding to a mean bulk liquid temperature of 57°C.
>
> Although it was realized that, for certain gases, cylinders are painted white or are aluminium or zinc sprayed, and/or are transported or stored vertically (and consequently if maintained in these conditions could be expected to achieve a maximum service temperature approximately 4°C lower), the Committee agreed that, for uniformity, a maximum service temperature of 65°C would apply for all gas cylinders.

STANDARDS AUSTRALIA

Australian Standard

The verification, filling, inspection, testing and maintenance of cylinders for storage and transport of compressed gases

Part 1: Cylinders for compressed gases other than acetylene

1 SCOPE

This Standard specifies requirements for the verification, filling, handling, inspection, testing, and maintenance of refillable gas cylinders for the storage and transport of compressed gases, where the cylinders exceed 0.1 kg but do not exceed 3000 kg water capacity, other than acetylene cylinders, non-refillable cylinders and vacuum-insulated cylinders.

This Standard does not apply to 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.

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

NOTES:

1 AS 2030.2 sets out requirements for acceptance, filling, inspection and care of refillable gas cylinders for the storage of compressed acetylene dissolved in a solvent, where the cylinder water capacity exceeds 5 kg.

2 AS 2030.3 sets out requirements for the approval and initial filling of non-refillable gas cylinders.

3 AS 2030.4 sets out requirements for vacuum-insulated cylinders.

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 below apply.

NOTE: All pressures are gauge pressures unless otherwise stated.

3.1 Competent person or body

A person or body who, through training, qualification or practical experience, or a combination of these, and understanding of the equipment and processes, is able to verify compliance with this Standard.

3.2 Design verifier

A competent person or body, independent to the designer, who can verify the design.

