

Australian Standard[®]

**Alloy steel cylinders for compressed
gases—Seamless—0.1 kg to 500 kg**

This Australian Standard was prepared by Committee ME/2, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 1 December 1994 and published on 5 February 1995.

The following interests are represented on Committee ME/2:

A.C.T. Occupational Health and Safety Office
Aluminium Development Council
Australian Assembly of Fire Authorities
Australian Chamber of Commerce and Industry
Australian Gas Association
Australian Liquefied Petroleum Gas Association
Australian Underwater Federation
Bureau of Steel Manufacturers of Australia
Department of Defence
Department of Employment, Industrial Relations & Training, Tas.
Department of Employment, Vocational Education, Training & Industrial Relations, Qld
Department of Labour, S.A.
Department of Minerals & Energy, Qld
Department of Occupational Health Safety & Welfare, W.A.
Fire Protection Industry Association of Australia
Insurance Council of Australia
Occupational Health & Safety Authority, Vic.
Railways of Australia Committee
Welding Technology Institute of Australia
Work Health Authority
WorkCover Authority of New South Wales

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

Australian Standard[®]

**Alloy steel cylinders for compressed
gases—Seamless—0.1 kg to 500 kg**

First published as AS B114—1960.
Revised and redesignated AS 2875—1986.
AS B114—1960 made obsolescent.
Second edition AS 2875—1995.

PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee ME/2 on Gas Cylinders to supersede AS 2875—1986. It converts the 1986 edition to a variable property code for chromium-molybdenum steels thus obtaining the benefit of steels with strengths up to those specified in BS 5045.1, *Transportable gas containers, Part 1: Specification for seamless steel gas containers above 0.5 litre water capacity*, while still maintaining the proven safety margins.

As the current steel strengths, given in the 1986 edition (600 MPa yield, 770 MPa ultimate), relate to the advances in steel technology, it is, in effect, obsolete. This Standard should raise the efficiency to 4% greater than BS 5045.1 when using BS 5045.1 steel, but still preserving the current efficiency for a low-strength steel.

This Standard does not compromise safety, as the chemical composition limits of steel B are almost identical to those of BS 5045.1, Type CM. The mechanical requirements of Australian and UK steels are almost identical with regard to the quenching and tempering temperatures, and the bend test requirements. There are minor differences in the elongation test where AS 2875 requires 13% on non-standard geometry, while BS 5045.1 requires 14% on standard geometry.

There are to date many millions of BS 5045.1 Type CM cylinders in service, lending strong evidence that this Standard is safe and acceptable.

As an additional safety factor, limits on the strength of the steels used in this Standard, and known to induce stress cracking, are within those stated in the British, American and ISO Standards.

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.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
1 SCOPE	4
2 REFERENCED DOCUMENTS	4
3 DEFINITIONS	4
4 STEEL	5
5 DESIGN	5
6 MANUFACTURE	6
7 HEAT TREATMENT	6
8 TESTING	7
9 RECORD AND TEST CERTIFICATE(S)	9
10 MARKING	9
11 PREPARATION FOR DISPATCH	10

APPENDICES

A MINIMUM INFORMATION TO BE SUPPLIED BY PURCHASER	11
B DESIGN AND BATCH TESTS SPECIFIED IN THIS STANDARD	12
C TENSILE TEST PIECE	14
D METHODS FOR DERIVING THE PERCENTAGE INCREASE OF WATER CAPACITY AFTER HYDROSTATIC-TYPE TEST RUPTURE	15
E MANUFACTURER'S CERTIFICATE	18

STANDARDS AUSTRALIA

Australian Standard

**Alloy steel cylinders for compressed gases—
Seamless—0.1 kg to 500 kg**

1 SCOPE This Standard specifies requirements for the design, manufacture, testing, and marking of seamless gas cylinders manufactured from alloy steel and of water capacity not less than 0.1 kg and not greater than 500 kg.

NOTE: Appendix A lists the suggested minimum information that should be supplied by the purchaser when ordering gas cylinders covered by this Standard.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

- 1050 Methods for the analysis of iron and steel
- 1050.2 Determination of carbon content (gravimetric method)
- 1050.9 Determination of chromium (potentiometric method)
- 1050.14 Determination of manganese in iron and steel (titrimetric method)
- 1050.18 Determination of phosphorus (spectrophotometric method)
- 1050.19 Determination of nickel content—Spectrophotometric method
- 1050.23 Determination of molybdenum content—Flame atomic absorption spectrometric method
- 1050.26 Determination of silicon in iron and steel (spectrophotometric method)
- 1213 Iron and steel—Methods of sampling
- 1391 Methods for tensile testing of metals
- 2030 The approval, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases (known as the SAA Gas Cylinders Code)
- 2030.1 Part 1: Cylinders for compressed gases other than acetylene
- 2337 Gas cylinder test stations
- 2337.1 Part 1: General requirements, inspections and tests—Gas cylinders
- 2505 Methods for bend and related testing of metals
- 2505.1 Part 1: Sheet, strip and plate
- K1 Methods for the sampling and analysis of iron and steel
- K1.16 Determination of sulfur in steel (gravimetric method)

BS

- 5045 Transportable gas containers
- 5045.1 Part 1: Seamless steel gas containers above 0.5 litre water capacity

ISO

- 2566 Steel—Conversion of elongation values
- 2566.1 Part 1: Carbon and low alloy steels

3 DEFINITIONS For the purpose of this Standard, the definitions given in AS 2030.1 and the following definition apply:

Inspector—a person, acceptable to the regulatory authority, who ensures and certifies that all inspections specified herein have been carried out and that the cylinders comply with all the requirements of this Standard.