AS 4955.1—2003
ISO 11114-1:1997

Australian Standard™

Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents

Part 1: Metallic materials

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 6 November 2003 and published on 24 December 2003.

The following are represented on Committee ME-002:

Air Conditioning and Refrigeration Wholesalers Association
Australasian Institute of Engineer Surveyors
Australasian Railway Association
Australian Chamber of Commerce and Industry
Australian Gas Association
Australian Industry Group
Australian Liquefied Petroleum Gas Association
Boiler and Pressure Vessel Manufacturers Association of Australia
Bureau of Steel Manufacturers of Australia
Certification Bodies (Australia)
Department for Administrative and Information Services, S.A.
Department of Defence (Australia)
Department of Industrial Relations, Qld
Department of Labour New Zealand
Department of Natural Resources and Mines
Fire Protection Association of Australia
Institute of Materials Engineering Australasia
Institution of Engineers Australia
International Accreditation New Zealand
New Zealand Institute of Welding
Victorian WorkCover Authority
Welding Technology Institute of Australia
WorkCover New South Wales

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 03315.

Australian Standard™

Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents

Part 1: Metallic materials

First published as AS 4955.1—2003.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5625 5

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian rather than Australian/New Zealand Standard.

This Standard is identical with and has been reproduced from ISO 11114-1:1997, *Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents*, Part 1: *Metallic materials.*

The objective of this Standard is to give guidance in the selection and evaluation of compatibility between metallic gas cylinder and valve materials, and the gas content.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) A full point substitute for a comma when referring to decimal marker.

(c) Substitute ‘mL’ for ‘ml’ whenever it appears.

(d) The ISO documents listed as normative references in Clause 2 have not been adopted as Australian 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.

CONTENTS

Page

INTRODUCTION

This Standard is one part of a three-part standard concerning compatibility of gases and gas mixtures with materials :

- Part 1 : Metallic materials ;
- Part 2 : Non metallic materials ;
- Part 3 : Autogenous ignition test in oxygen atmosphere.

Industrial, medical and special gases (e.g. high purity gases, calibration gases) can be transported or stored in gas cylinders. An essential requirement of the material from which such gas cylinders and their valves are manufactured is compatibility with the gas contents.

Compatibility of cylinder materials with gas content has been established over many years by practical application and experience. Existing national and international regulations and standards do not fully cover this aspect.

This Standard is based on current international experience and knowledge.

AUSTRALIAN STANDARD

Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents

Part 1:
Metallic materials

1 Scope

This standard gives guidance in the selection and evaluation of compatibility between metallic gas cylinder and valve materials, and the gas content.

The compatibility data given is related to single component gases.

Seamless and welded gas cylinders used to contain compressed, liquefied and dissolved gases, are considered.

> NOTE: In this Standard the term “cylinder” refers to transportable pressure receptacles, which also include tubes and pressure drums.

Aspects such as quality of delivered product are not considered.

2 Normative references

This Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 485-2	Wrought aluminium and aluminium alloys - Sheets, strips and plates - Part 2 : Mechanical properties.
EN 586-2	Aluminium and aluminium alloys forgings - Part 2 : Mechanical and additional properties.
EN 720-2:1996	Transportable gas cylinders - Gases and gas mixtures - Part 2: Determination of flammability and oxidizing ability of gases and gas mixtures
EN 849:1996	Transportable gas cylinders - Cylinder valves - Specification and type testing
prEN 1964-1:1995	Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless steel gas cylinders of capacity from 0,5 litre up to and including 150 litres - Part 1 : Seamless steel with a maximum R_m value of 1100 N/mm^2
prEN 1975:1996	Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless aluminium alloy gas cylinders of capacity from 0,5 litre up to 150 litre
EN 10088-1	Stainless steels - Part 1: List of stainless steels
prEN ISO 11114-2:1997	Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2 : Non metallic materials