Australian Standard™

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

Part 2: Non-metallic materials (ISO 11114-2:2000, MOD)

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.

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders as a new Standard. 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 an adoption with national modifications and is reproduced from ISO 11114-2:2000, *Transportable gas cylinders—Compatibility of cylinder and valve materials with gas content*—Part 2: *Non-metallic materials*.

Variations to the source document for application in Australia are contained in Appendix ZZ and the text affected is indicated by a marginal bar.

The objective of this Standard is to give guidance in the selection and evaluation of compatibility between non-metallic for gas cylinders and valves, and the cylinders gas content. This Standard also covers bundles, tubes and pressure drums.

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

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

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

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

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

The term ‘informative’ has been used in this Standard to define the application to which it applies of An ‘informative’ appendix is only for information and guidance.

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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*.

This standard deals with the compatibility of non-metallic materials used for gas cylinders and gas cylinder valves with the gas contents of the cylinder. Compatibility of metallic materials is treated in EN ISO 11114-1.

Non-metallic materials are very often used for the construction of gas cylinder valves as seals e.g. O-ring, gland packing, seats, or as lubrication products to avoid friction. They are also commonly used to ensure sealing of the valve/cylinder connection. For gas cylinders, they are sometimes used as an internal coating or as a liner for composite materials.

Non-metallic materials not in contact with the gas are not covered by this standard.

Previously, no recognised compilation has existed for non-metallic cylinder/valve material compatibility with gas contents. This standard therefore presents the current state of the knowledge on the subject.

This standard is based on current international experience and knowledge. It does not cover the subject completely and is intended to give guidance only in evaluating the compatibility of gas/material combinations. Some data are derived from experience involving a mixture of the gas concerned with a dilutant, where no data for single component gases were available.

AUSTRALIAN STANDARD

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

Part 2:
Non-metallic materials (ISO 111140-2:2000, MOD)

1 Scope

This Standard gives guidance in the selection and evaluation of compatibility between non-metallic materials for gas cylinders and valves and the cylinders' gas contents. This standard also covers bundles, tubes and pressure drums.

This standard may be helpful for composite and laminated materials.

Only the influence of the gas in changing the material and mechanical properties is considered (for example chemical reaction or change in physical state). The basic mechanical properties of the materials required for design purposes are normally available from the materials supplier and are not considered in this standard.

The compatibility data given are related to single component gases but can be used to some extent for gas mixtures. Ceramics, glasses, and adhesives are not covered by this standard.

Aspects such as quality of delivered gas 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 European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 849:1996,	*Transportable gas cylinders - Cylinder valves - Specification and type testing*
EN 1797-1,	*Cryogenic vessels - Gas/material compatibility - Part 1 : Oxygen compatibility*
EN ISO 11114-1,	*Transportable gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 1 : Metallic materials (ISO 11114-1:1997)*
ISO 10297,	*Gas cylinders - Refillable gas cylinder valves - Specification and type testing*

3 Terms and definitions

For the purposes of this Standard the following terms and definitions apply :

3.1
competent person

a person who has the necessary technical knowledge, experience and authority to assess and approve materials for use with gases and to define any special conditions of use that are necessary. Such a person will also normally be formally qualified in an appropriate technical discipline

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