

Australian Standard™

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

**Part 3: Autogenous ignition test in  
oxygen atmosphere**

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 Standards may also be withdrawn.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](http://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](mailto: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 03317.*

Australian Standard™

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

**Part 3: Autogenous ignition test in  
oxygen atmosphere**

First published as AS 4955.3—2003.

**COPYRIGHT**

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

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

ISBN 0 7337 5623 9

## 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 11114-3:1997, *Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents, Part 3: Autogenous ignition test in oxygen atmosphere*.

The objective of this Standard is to specify a test method to determine the autogenous ignition temperature of non-metallic materials in pressurized gaseous oxygen.

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.

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

## CONTENTS

	<i>Page</i>
Introduction .....	iv
1 Scope .....	1
2 Principle.....	1
3 Preparation of test samples .....	1
4 Test apparatus .....	2
5 Oxygen purity .....	3
6 Test procedure.....	3
7 Results .....	5
8 Test record .....	5
Annex A (informative) Test record sheet.....	6
Annex B (informative) Bibliography .....	7
Annex ZZ (informative) Corresponding International and European Standards for which equivalents are not given in the text .....	9

## INTRODUCTION

This Standard is one 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.

The following test method is referenced in EN ISO 11114-1.

Further information about oxygen compatibility is given in EN ISO 11114-1 and prEN ISO 11114-2.

Other oxygen compatibility test methods include oxygen index (see ISO 4589), heat of combustion and adiabatic compression on materials.

AUSTRALIAN STANDARD

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

Part 3:

Autogenous ignition test in oxygen atmosphere

### **1 Scope**

This standard specifies a test method to determine the autogenous ignition temperature of non metallic materials in pressurized gaseous oxygen.

Autogenous ignition temperature is a criterion for ranking materials, and can be used to assist with the choice of materials used in the presence of gaseous oxygen.

Annex B of this standard is a comprehensive bibliography of the published material on which this standard is based.

NOTE : This standard can be used for the selection of nonmetallic materials for gas cylinders and accessories ; for example, to select the materials in order to meet the requirement for type-testing for oxygen compatibility of all oxygen gas cylinder valves as specified in EN 849.

### **2 Principle**

A small quantity of the test material is heated in pressurized oxygen. A continuous recording is made of pressure and temperature in order to determine the point of autogenous ignition, at which point a sudden increase in temperature and pressure is observed (this point is known as autogenous ignition temperature).

### **3 Preparation of test samples**

Test samples shall be prepared in such a manner as to prevent contamination.

Test samples may be in liquid or solid form. In the case of solids, the material shall be finely divided. A sample mass between 0,06 g and 0,5 g is used for each test.

NOTE : This mass should be adjusted to take into consideration the volume of the test cell. A sample of 0,5 g in a test cell volume of between 30 cm<sup>3</sup> and 250 cm<sup>3</sup> has been found to be suitable.