

Australian/New Zealand Standard™

**Explosive atmospheres**

**Part 20.1: Material characteristics for  
gas and vapour classification—Test  
methods and data**



## **AS/NZS 60079.20.1:2012**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee MS-011, Classification of Hazardous Areas. It was approved on behalf of the Council of Standards Australia on 14 February 2012 and on behalf of the Council of Standards New Zealand on 31 January 2012. This Standard was published on 29 February 2012.

---

The following are represented on Committee MS-011:

Auckland Regional Chamber of Commerce  
Australian Chamber of Commerce and Industry  
Australian Industry Group  
Australian Institute of Petroleum  
Australian Paint Manufacturers Federation  
Australian Petroleum Production and Exploration Association  
Bureau of Steel Manufacturers of Australia  
Department of Employment, Economic Development and Innovation, Qld  
Department of Labour New Zealand  
Electrical Contractors Association of New Zealand  
Energy Networks Association  
Engineers Australia  
Environmental Protection Authority New Zealand  
Gas Association of New Zealand  
Institute of Electrical Inspectors  
Institute of Instrumentation, Control and Automation, Australia  
LPG Australia  
Ministry of Economic Development, New Zealand  
National Electrical and Communications Association  
New Zealand Oil Refining Companies  
Responsible Care New Zealand  
Royal Australian Chemical Institute  
The Aviation and Marine Engineers Association  
WorkCover New South Wales  
WorkSafe Victoria

---

### **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 Standards may also be withdrawn.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 joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at [www.saiglobal.com.au](http://www.saiglobal.com.au) or Standards New Zealand web site at [www.standards.co.nz](http://www.standards.co.nz) and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

---

*This Standard was issued in draft form for comment as DR AS/NZS 60079.20.1.*

---

# Australian/New Zealand Standard™

## Explosive atmospheres

### Part 20.1: Material characteristics for gas and vapour classification—Test methods and data

Originated in part as AS/NZS 60079.1.1:2002, AS/NZS 60079.4:2000,  
AS/NZS 60079.12:2000 and AS/NZS 60079.20:2000.  
Revised, amalgamated and redesignated AS/NZS 60079.20.1:2012.

#### **COPYRIGHT**

© Standards Australia Limited/Standards New Zealand

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, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140

ISBN 978 1 74342 045 4

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MS-011, Classification of Hazardous Areas.

This Standard forms the first edition of AS/NZS 60079.20.1 and it is intended to replace AS/NZS 60079.1.1:2002, *Electrical apparatus for explosive gas atmospheres—Flameproof enclosures ‘d’—Method of test for ascertainment of maximum experimental safe gap*, AS/NZS 60079.4:2000 *Electrical apparatus for explosive gas atmospheres—Method of test for ignition temperature*, AS/NZS 60079.12:2000, *Electrical apparatus for explosive gas atmospheres—Classification of mixtures of gases or vapours with air according to their maximum experimental safe gaps and minimum igniting currents*, AS/NZS 60079.20:2000, *Electrical apparatus for explosive gas atmospheres—Data for flammable gases and vapours, relating to the use of electrical apparatus*, and its Amendment 1.

The objective of this Standard is to provide guidance on classification of gases and vapours. It describes a test method intended for the measurement of the maximum experimental safe gaps (MESG) for gas or vapour-air mixtures under normal conditions of temperature and pressure so as to permit the selection of an appropriate group of equipment. It describes also a test method intended for use in the determination of the auto-ignition temperature of a chemically pure vapour or gas in air at atmospheric pressure.

The tabulated values of chemical and engineering properties of substances are provided to assist engineers in their selection of equipment to be used in hazardous areas.

This Standard is identical with, and has been reproduced from IEC 60079-20-1, Ed.1.0 (2010), *Explosive atmospheres—Part 20-1: Material characteristics for gas and vapour classification—Test methods and data*.

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) In the source text ‘this part of IEC 60079’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>	<i>Australian/New Zealand Standard</i>
IEC	AS/NZS
60079 Explosive atmospheres	60079 Explosive atmospheres
60079-11 Part 11: Equipment protection by intrinsic safety "i"	60079.11 Part 11: Equipment protection by intrinsic safety ‘i’
60079-14 Part 14: Electrical installations design, selection and erection	60079.14 Part 14: Electrical installations design, selection and erection

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

## CONTENTS

	<i>Page</i>
1	Scope.....6
2	Normative references .....6
3	Terms and definitions .....6
4	Classification of gases and vapours.....7
4.1	General .....7
4.2	Classification according to the maximum experimental safe gaps (MESG).....7
4.3	Classification according to the minimum igniting currents (MIC) .....8
4.4	Classification according to MESG and MIC.....8
4.5	Classification according to a similarity of chemical structure.....8
4.6	Classification of mixtures of gases .....8
5	Data for flammable gases and vapours, relating to the use of equipment.....9
5.1	Determination of the properties .....9
5.1.1	General .....9
5.1.2	Equipment group .....9
5.1.3	Flammable limits .....9
5.1.4	Flash point FP .....9
5.1.5	Temperature class.....10
5.1.6	Minimum igniting current (MIC).....10
5.1.7	Auto-ignition temperature .....10
5.2	Properties of particular gases and vapours.....10
5.2.1	Coke oven gas .....10
5.2.2	Ethyl nitrite .....10
5.2.3	MESG of carbon monoxide .....10
5.2.4	Methane, Group IIA .....11
6	Method of test for the maximum experimental safe gap .....11
6.1	Outline of method .....11
6.2	Test apparatus .....11
6.2.1	General .....11
6.2.2	Mechanical strength .....12
6.2.3	Interior chamber .....12
6.2.4	Exterior chamber .....12
6.2.5	Gap adjustment .....12
6.2.6	Injection of mixture .....12
6.2.7	Source of ignition .....12
6.2.8	Materials of test apparatus .....12
6.3	Procedure .....12
6.3.1	Preparation of gas mixtures .....12
6.3.2	Temperature and pressure .....12
6.3.3	Gap adjustment .....13
6.3.4	Ignition .....13
6.3.5	Observation of the ignition process.....13
6.4	Determination of maximum experimental safe gap (MESG) .....13
6.4.1	Preliminary tests.....13
6.4.2	Confirmatory tests .....13
6.4.3	Reproducibility of maximum experimental safe gaps .....13

This is a free preview. Purchase the entire publication at the link below:

**AS/NZS 60079.20.1 : 2012 : EN PDF**

- 
- ⊙ Looking for additional Standards? Visit SAI Global Infostore
  - ⊙ Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
- 

Need to speak with a Customer Service Representative - Contact Us