AS/NZS 60079.10.1:2009
(Incorporating Amendment No. 1)

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Australian/New Zealand Standard™

# Explosive atmospheres

# Part 10.1: Classification of areas—Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0 (2008) MOD)

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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 13 August 2009 and on behalf of the Council of Standards New Zealand on 11 September 2009.
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The following are represented on Committee MS-011:

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Australian Petroleum Production and Exploration Association
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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.

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# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MS-011, Classification of Hazardous Areas, to supersede AS/NZS 60079.10:2004 and the 2004 editions of AS/NZS 2430, Parts 3.1 to 3.9.

*This Standard incorporates Amendment No. 1 (November 2013). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

The objective of this Standard is to set out requirements for the classification of areas where flammable gas or vapour risks might arise, in order to permit the proper selection and installation of equipment for use in such hazardous areas. This Standard is for the use of manufacturers and installers of equipment as well as by inspecting authorities. It provides guidance to industries and statutory authorities concerned with the classification of hazardous areas.

This Standard is an adoption with national modifications and has been reproduced from, IEC 60079-10-1, Ed.1.0 (2008), *Explosive atmospheres – Part 10-1: Classification of areas—Explosive gas atmospheres*. It has been varied as indicated to take account of Australian/New Zealand conditions and for the protection of human health and safety, a legitimate reason under the WTO Agreement on Technical Barriers to Trade (TBT).

Variations to IEC 60079-10-1, Ed. 1.0 (2008) are indicated at the appropriate places throughout this standard. Strikethrough (~~example~~) identifies IEC text, tables and figures which, for the purposes of this Australian/New Zealand Standard, are deleted. Where text, tables or figures are added, each is set in its proper place and identified by shading (example). Added figures are not themselves shaded, but are identified by a shaded border.

The significant technical changes with respect to the previous IEC edition are as follows:

(a) Introduction of Annex D which deals with explosion hazard from flammable mists generated by the release under pressure of high flash point liquids.

(b) Introduction of Clause A.3 (release rate) which gives thermodynamic equations for release rate with a number of examples for estimating release rate of fluids and gases.

This edition includes, in Annexes ZA and ZB, all of the examples of area classification from the AS/NZS 2430.3:2004 series of Standards. Annex ZC provides requirements that apply where it is decided to use Equipment Protection Levels (EPLs) as a basis for equipment selection and installation. The integration of the AS/NZS 2430.3:2004 series is intended to provide a consolidated approach to Hazardous Area Classification and more clearly indicate the approach of classification by assessment, or classification, by example. Minor changes are also made to the examples from the AS/NZS 2430.3:2004 series, as part of the ongoing revision of Standards.

The adoption of this Standard forms part of a strategic objective for adoption of all of the IEC 60079 series as Australia/New Zealand Standards.

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

(i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(ii) A full point should be substituted for a comma when referring to a decimal marker.

The terms ‘normative’ and ‘informative’ are used 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.

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# INTRODUCTION

In areas where dangerous quantities and concentrations of flammable gas or vapour may arise, protective measures are to be applied in order to reduce the risk of explosions. This part of AS/NZS 60079~~IEC 60079~~ sets out the essential criteria against which the ignition hazards can be assessed, and gives guidance on the design and control parameters which can be used in order to reduce such a hazard.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

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Any table, figure or text of the international standard that is struck through is not part of this standard. Any Australian/New Zealand table, figure or text that is added is part of this standard and is identified by shading.

## 1 Scope

This part of AS/NZS 60079~~IEC 60079~~ is concerned with the classification of areas where flammable gas or vapour or mist hazards (see notes 1, 2 and 3) may arise and may then be used as a basis to support the proper selection and installation of equipment for use in a hazardous area.

It is intended to be applied where there may be an ignition hazard due to the presence of flammable gas or vapour, mixed with air under normal atmospheric conditions (see note 4), but it does not apply to

a) mines susceptible to firedamp;

b) the processing and manufacture of explosives;

c) areas where a hazard may arise due to the presence of ignitable dusts or fibres (refer AS/NZS 61241.10~~IEC 61241.10~~/IEC 60079-10-2)

d) catastrophic failures which are beyond the concept of abnormality dealt with in this standard (see note 5);

~~e) rooms used for medical purposes;~~

f) domestic premises.

This standard does not take into account the effects of consequential damage.

Definitions and explanations of terms are given together with the main principles and procedures relating to hazardous area classification.

For detailed recommendations regarding the extent of the hazardous areas in specific industries or applications, reference may be made to national or industry codes relating to those applications (see also 5.4.6).

Attention is drawn to the fact that an area classified non-hazardous, in accordance with this Standard, may not necessarily be safe in all respects, e.g. toxic and chemical hazards.

NOTE 1 Flammable mists may form or be present at the same time as flammable vapours. Liquids not considered to be hazardous in terms of this standard (due to the flash point), when released under pressure may also generate flammable mists. In such cases, the strict application of area classification for gases and vapours may not be appropriate as the basis for selection of equipment.

Information on flammable mists is provided in Annex D.

NOTE 2 The use of ~~IEC 60079-14~~AS/NZS 2381.1 for selection of equipment and installations is not required for mist hazards. The AS/NZS 2381 series is intended to be replaced by AS/NZS 60079.14.

NOTE 3 For the purpose of this standard, an area is a three-dimensional region or space.