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Australian/New Zealand Standard™

Explosive atmospheres

Part 10.2: Classification of areas—Explosive dust atmospheres

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The following are represented on Committee MS-011:

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Australian Paint Manufacturers' Federation
Australian Petroleum Production and Exploration Association
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Bureau of Steel Manufacturers of Australia
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Australian/New Zealand Standard™

Explosive atmospheres

Part 10.2: Classification of areas—Explosive dust atmospheres

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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 60079.10.2:2011, *Explosive atmospheres*, Part 10.2: *Classification of areas—Combustible dust atmospheres*.

The objective of this Standard is to set out the requirements for the identification and classification of areas where explosive dust atmospheres may be present, in order to permit the proper assessment of ignition sources in such areas.

This Standard is identical with, and has been reproduced from IEC 60079-10-2, Ed.2.0 (2015), *Explosive atmospheres*, Part 10-2: *Classification of areas—Explosive dust atmospheres.* Changes to the Standard introduced by this edition are listed in the IEC Foreword.

The classification of dust hazardous areas does not apply to domestic installations and is not intended to be applied to small commercial or retail installations where the type of handling is mainly manual and the scale of the operation is small and not continuous, such that the potential for significant dust clouds is low. These criteria would typically apply to small bakeries associated with 'in store' preparation of foods and other similar applications.

Competence for classification of hazardous areas, as described in Clause 4.3 of the Standard, may also be supported by training and/or assessment to relevant units from AS/NZS 4761, Parts 1 and 2, *Competencies for working with electrical equipment for hazardous areas (EEHA),* or a similar training and/or assessment framework.

This Standard notes the optional consideration of Equipment Protection Levels (EPL) in Clause 4.1. Required processes for establishing EPL are provided in AS/NZS 60079.14.

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. The replacements at the time of publication are detailed in the following table but reference to the latest Australian or Australian/New Zealand Standard should be applied for any revisions after the publication of this Standard.

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS/NZS	
60079	Explosive atmospheres	60079	Explosive atmospheres
60079-0	Part 0: General requirements	60079.0	Part 0: General requirements
60079-10-1	Part 10-1: Classification of areas—Explosive gas atmospheres	60079.10.1	Part 10.1: Classification of areas—Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0 (2008) MOD)

Only normative references that have been adopted as Australian or Australian/New Zealand Standard have been listed.

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

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IEC FOREWORD

This edition includes the following significant technical changes with respect to the previous edition:

		Type		
Explanation of the significance of the changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Definition of “atmospheric conditions” deleted	3	X		
Definition of “combustible dust” aligned with other documents per recommendations of WG 28	3.4	X		
Editorial change to definition of “explosive dust atmosphere” to delete mention of flyings, since the definition of dust according to 60079-10-2 includes flyings.	3.5	X		
Definition of “combustible flyings” aligned with other documents per recommendations of WG 28	3.8	X		
Definition of “continuous formation of a dust cloud” added	3.14	X		
Definition of “catastrophic failure” added	3.20	X		
Definition of “ignition temperature of a dust layer” aligned with other documents per recommendations of WG 28 and to change reference from 61241-2-1 to 80079-20-2	3.22	X		
Definitions of “zone 20, zone 21 and zone 22” added. These were previously incorrectly included in the body of the document.	3.25.1 3.25.2 3.25.3	X		
Dust cloud density and concentration added as factors to consider for a release	4.1		X	
Wording changed to require EPL to be noted on area classification drawing	4.1		X	
Notes 1 and 3 changed to normative text	4.1		X	
Reference to published sources for dust characteristics deleted	4.2	X		
Reference to 80079-20-2 added	4.2 a)		X	
Section on competence of personnel added	4.3		X	
Note on verification dossier deleted	5.2	X		
Example added for continuous grade of release, zone information moved to Clause 5	5.3	X		
Paragraph added about dust layers being raised into a cloud	7		X	
EPLs added to list for documentation, note added warning of variability in published dust data	8.1		X	
Symbols are identified as preferred	8.2	X		
Note added to zone 21 and zone 22 clause about distance around source of release	Annex A	X		
Zone 22 paragraph added to this example, and figure modified to show Zone 22 location	A.2	X		
Annex B on hot surfaces deleted	Annex B in previous edition	X		
Annex D on explanation of EPLs deleted	Annex D in previous edition	X		
Annex on hybrid mixtures added	Annex C	X		

Explanation of the types of significant changes:	
1. Minor and editorial changes:	– Clarification – Decrease of technical requirements – Minor technical change – Editorial corrections
These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change, or a reduction in the level of existing requirement.	
2. Extension:	– Addition of technical options
These are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing the requirements that are fully compliant with the previous standard. Therefore these will not have to be considered for existing area classifications in conformity with the preceding edition.	
3. Major technical changes:	– Addition of technical requirements – Increase of technical requirements
These are changes to technical requirements (addition, increase of the level or removal) made in a way that an existing area classification in conformity with the preceding edition will not always be able to fulfil the requirements given in the later edition. These changes have to be considered for existing area classifications in conformity with the preceding edition.	

INTRODUCTION

Dusts, as defined in this standard, are hazardous because when they are dispersed in air by any means they may form potentially explosive atmospheres. Furthermore, layers of dust may ignite and act as ignition sources for an explosive atmosphere.

This part of IEC 60079 gives guidance on the identification and classification of areas where such hazards from dust can arise. It 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. General and special criteria are given for the process of identification and classification of hazardous areas.

This standard contains an informative Annex A giving examples for classifying areas.

AUSTRALIAN/NEW ZEALAND STANDARD

Explosive atmospheres

Part 10.2:
Classification of areas—Explosive dust atmospheres

1 Scope

This part of IEC 60079 is concerned with the identification and classification of areas where explosive dust atmospheres and combustible dust layers are present, in order to permit the proper assessment of ignition sources in such areas.

In this standard, explosive dust atmospheres and combustible dust layers are treated separately. In Clause 4, area classification for explosive dusts clouds is described, with dust layers acting as one of the possible sources of release. In Clause 7 other general considerations for dust layers are described.

The examples in this standard are based on a system of effective housekeeping being implemented in the plant to prevent dust layers from accumulating. Where effective housekeeping is not present, the area classification includes the possible formation of explosive dust clouds from dust layers.

The principles of this standard can also be followed when combustible fibres or flyings might cause a hazard.

This standard is intended to be applied where there can be a risk due to the presence of explosive dust atmospheres or combustible dust layers under normal atmospheric conditions (see Note 1).

NOTE 1 Atmospheric conditions include variations in pressure and temperature above and below reference levels of 101,3 kPa (1 013 mbar) and 20 °C (293 K), provided that the variations have a negligible effect on the explosive properties of the combustible materials.

It does not apply to

– underground mining areas,
– dusts of explosives that do not require atmospheric oxygen for combustion such as pyrophoric substances, propellants, pyrotechnics, munitions, peroxides, oxidizers, water-reactive elements or compounds, or other similar materials.
– catastrophic failures which are beyond the concept of abnormality dealt with in this standard,
– any risk arising from an emission of toxic gas from the dust.

This standard does not apply to where a hazard might arise due to the presence of flammable gas or vapour, but the principles may be used in the assessment of a hybrid mixture (see also IEC 60079-10-1).

NOTE 2 Additional guidance on hybrid mixtures is provided in Annex C.

This standard does not take into account the effects of consequential damage following a fire or an explosion.