AS/NZS 60079.7:2016
IEC 60079-7, Ed 5.0 (2015)

AS/NZS 60079.7:2016

Australian/New Zealand Standard™

Explosive atmospheres

Part 7: Equipment protection by increased safety "e"

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-014, Equipment for Explosive Atmospheres. It was approved on behalf of the Council of Standards Australia on 1 March 2016 and on behalf of the Council of Standards New Zealand on 12 February 2016.
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The following are represented on Committee EL-014:

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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.

This Standard was issued in draft form for comment as DR AS/NZS 60079.7:2015.

Australian/New Zealand Standard™

Explosive atmospheres

Part 7: Equipment protection by increased safety 'e'

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee, EL-014 Equipment for Explosive Atmospheres, to supersede AS/NZS 60079.7:2006.

The objective of this Standard is to specify the requirements for the design, construction, testing and marking of electrical apparatus with type of protection increased safety 'e' intended for use in explosive gas atmospheres. This Standard applies to electrical apparatus where the rated voltage does not exceed 15 kV r.m.s. a.c. or d.c. Additional measures are applied to ensure that the apparatus does not produce arcs, sparks, or excessive temperatures in normal operation or under specified abnormal conditions. The objective of the revision is to adopt the current edition of IEC 60079-7.

The particular requirements of this Standard supplement the general requirements specified in AS/NZS 60079.0. This Standard is intended to be read in conjunction with AS/NZS 60079.0.

This Standard is identical with, and has been reproduced from IEC 60079-7, Ed 5.0 (2015), *Explosive atmospheres*, Part 7: *Equipment protection by increased safety "e"*.

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

(a) In the source text 'this part of IEC 60079' should read 'this Australian/New Zealand standard'.

(b) 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:

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS/NZS	
60079	Explosive atmospheres	60079	Explosive atmospheres
60079-0	Part 0: Equipment—General requirements	60079.0	Part 0: Equipment—General requirements
60079-11	Part 11: Equipment protection by intrinsic safety "i"	60079.11	Part 11: Equipment protection by intrinsic safety 'i'
IEC/IEEE			
60079-30-1	Part 30-1:Electrical resistance trace heating—General and testing requirements	60079.30.1	Part 30.1: Electrical resistance trace heating—General and testing requirements
IEC			
60238	Edison screw lampholders	60238	Edison screw lampholders (IEC 60238, Ed. 8.2 (2011) MOD)
60432	Incandescent lamps—Safety specifications	60432	Incandescent lamps—Safety specifications
60432-1	Part 1: Tungsten filament lamps for domestic and similar general lighting purposes	60432.1	Part 1: Tungsten filament lamps for domestic and similar general lighting purposes
60432-2	Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes	60432.2	Part 2: Tungsten-halogen lamps for domestic and similar general lighting purposes
60432-3	Part 3: Tungsten halogen lamps (non-vehicle)	60432.3	Part 3: Tungsten-halogen lamps (non-vehicle)
IEC		AS	
60529	Degrees of protection provided by enclosures (IP Code)	60529	Degrees of protection provided by enclosures (IP Code)

IEC		AS/NZS	
60947	Low-voltage switchgear and controlgear	60947	Low-voltage switchgear and controlgear
60947-1	Part 1: General rules	60947.1	Part 1: General rules
60947-7-1	Part 7-1: Ancillary equipment—Terminal blocks for copper conductors	60947.7.1	Part 7.1: Ancillary equipment—Terminal blocks for copper conductors
60947-7-2	Part 7-2: Ancillary equipment—Protective conductor terminal blocks for copper conductors	60947.7.2	Part 7.2: Ancillary equipment—Protective conductor terminal blocks for copper conductors
60947-7-4	Part 7-4: Ancillary equipment—PCB terminal blocks for copper conductors	60947.7.4	Part 7.4: Ancillary equipment—PCB terminal blocks for copper conductors
60998	Connecting devices for low-voltage circuits for household and similar purposes	60998	Connecting devices for low-voltage circuits for household and similar purposes
60998-2-4	Part 2-4: Particular requirements for twist-on connecting devices	60998.2.4	Part 2.4: Particular requirements for twist-on connecting devices
60999	Connecting devices—Electrical copper conductors—Safety requirements for screw-type and screwless-type clamping units	60999	Connecting devices—Electrical copper conductors—Safety requirements for screw-type and screwless-type clamping units
60999-1	Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)	60999.1	Part 1: General requirements and particular requirements for clamping units for conductors from 0.2 mm^2 up to 35 mm^2 (included)
60999-2	Part 2: Particular requirements for clamping units for conductors above 35 mm^2 up to 300 mm^2 (included)	60999.2	Part 2: Particular requirements for clamping units for conductors above 35 mm^2 up to 300 mm^2 (included)
61184	Bayonet lampholders	61184	Bayonet lampholders (IEC 61184, Ed. 3.1 (2011) MOD)
ISO		AS	
2859	Sampling procedures for inspection by attributes	1199	Sampling procedures for inspection by attributes
2859-1	Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	1199.1	Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

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

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.

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AUSTRALIAN/NEW ZEALAND STANDARD

Explosive atmospheres

Part 7:
Equipment protection by increased safety ‘e’

1 Scope

This part of IEC 60079 specifies the requirements for the design, construction, testing and marking of electrical equipment and Ex Components with type of protection increased safety “e” intended for use in explosive gas atmospheres.

Electrical equipment and Ex Components of type of protection increased safety “e” are either:

a) Level of Protection “eb” (EPL “Mb” or “Gb”); or

b) Level of Protection “ec” (EPL “Gc”)

Level of Protection “eb” applies to equipment or Ex Components, including their connections, conductors, windings, lamps, and batteries; but not including semiconductors or electrolytic capacitors.

NOTE 1 The use of electronic components, such as semiconductors or electrolytic capacitors, is excluded from Level of Protection “eb” as expected malfunctions could result in excessive temperatures or arcs and sparks if the internal separation distances were not applied. It is not generally practical to maintain those separation distances and maintain the function of the electronic component.

Level of Protection “ec” applies to equipment or Ex Components, including their connections, conductors, windings, lamps, and batteries; and also including semiconductors and electrolytic capacitors.

NOTE 2 The use of electronic components, such as semiconductors or electrolytic capacitors, is permitted in Level of Protection “ec” as these are evaluated under both normal conditions and regular expected occurrences, and are not likely to result in excessive temperatures or arcs and sparks. As the requirements for separation distances are not applied to the internal construction, commercially available electronic components are generally suitable if the external separation distances comply.

The requirements of this standard apply to both Levels of Protection unless otherwise stated.

For Level of Protection “eb”, this standard applies to electrical equipment where the rated voltage does not exceed 11 kV r.m.s., a.c. or d.c.

For Level of Protection “ec”, this standard applies to electrical equipment where the rated voltage does not exceed 15 kV r.m.s., a.c. or d.c.

NOTE 3 Short circuit currents flowing through increased safety connections of mains circuits are not considered to create a significant risk of ignition of an explosive gas atmosphere due to movement of connections as a result of mechanical stresses created by the short circuit current. Normal industrial standards require that the effects of short time high currents on the security of connections be considered. The presence of the explosive gas atmosphere does not adversely affect the security of the connection.

NOTE 4 Any short term thermal excursions that occur as a result of electrical current excursions above normal rated currents, such as those that occur during the starting of motors, are not considered to create a significant risk of ignition of an explosive gas atmosphere due to the relatively short duration of the event and the convection that occurs during the event.

NOTE 5 High-voltage connections and associated wiring (above 1 kV) can be susceptible to increased partial discharge activity that could be a source of ignition. Increased spacings to earthed surfaces or other connections and provision of suitable high-voltage stress relief for the terminations are typically provided.