BS EN 60079-0:2012

Incorporating corrigendum November 2012

BSI Standards Publication

Explosive atmospheres

Part 0: Equipment — General requirements

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This British Standard is the UK implementation of EN 60079-0:2012.
It is derived from IEC 60079-0:2011, incorporating corrigendum November 2012. It supersedes BS EN 60079-0:2009, which is withdrawn.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags [C1] <C1].

The UK participation in its preparation was entrusted to Technical Committee EXL/31, Equipment for explosive atmospheres.

A list of organizations represented on this committee can be obtained on request to its secretary.

Published by BSI Standards Limited 2013

ISBN 978 0 580 81433 4

ICS 13.230; 29.260.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2012

Amendments/corrigenda issued since publication

Date	Text affected
30 June 2013	Implementation of IEC corrigendum November 2012: Subclause 9.3.3 modified

EUROPÄISCHE NORM

August 2012

ICS 29.260.20

English version

Explosive atmospheres - Part 0: Equipment - General requirements
(IEC 60079-0:2011, modified)

Atmosphères explosives - Partie 0: Matériel - Exigences générales (CEI 60079-0:2011, modifiée)

Explosionsgefährdete Bereiche - Teil 0: Betriebsmittel – Allgemeine Anforderungen (IEC 60079-0:2011, modifiziert)

This European Standard was approved by CENELEC on 2012-04-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 60079-0:2012 E

This document (EN 60079-0:2012) consists of the text of IEC 60079-0:2011 prepared by IEC/TC 31 "Equipment for explosive atmospheres", together with the common modifications prepared by CLC/TC 31 "Electrical apparatus for potentially explosive atmospheres".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-04-02
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-04-02

This document supersedes EN 60079-0:2009.

The State of the Art is included in Annex ZY "Significant changes between this European Standard and EN 60079-0:2009".

For the significant changes with respect to EN 60079-0:2009, see Annex ZY.

Annexes which are additional to those in IEC 60079-0:2011 are prefixed "Z".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 94/9/EC.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 60079-0:2011 was approved by CENELEC as a European Standard with agreed common modifications.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC/TS 60034-17	NOTE	Harmonized as CLC/TS 60034-17.
IEC/TS 60034-25	NOTE	Harmonized as CLC/TS 60034-25.
IEC 60034-29	NOTE	Harmonized as EN 60034-29.
IEC 60079-10-1	NOTE	Harmonized as EN 60079-10-1.
IEC 60079-10-2	NOTE	Harmonized as EN 60079-10-2.
IEC 60079-14	NOTE	Harmonized as EN 60079-14.
IEC 60079-17	NOTE	Harmonized as EN 60079-17.
IEC 60079-19	NOTE	Harmonized as EN 60079-19.
IEC 60079-27	NOTE	Harmonized as EN 60079-27.
ISO/IEC 17000	NOTE	Harmonized as EN ISO/IEC 17000.

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
-	-	Equipment and components intended for use in potentially explosive atmospheres in underground mines	EN 1710	-
-	-	Design of fans working in potentially explosive atmospheres	EN 14986	-
IEC 60034-1	-	Rotating electrical machines - Part 1: Rating and performance	EN 60034-1	-
IEC 60034-5	-	Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	EN 60034-5	-
IEC 60050-426	-	International Electrotechnical Vocabulary - Part 426: Equipment for explosive atmospheres	-	-
IEC 60079-1	-	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"	EN 60079-1	-
IEC 60079-2	-	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"	EN 60079-2	-
IEC 60079-5	-	Explosive atmospheres - Part 5: Equipment protection by powder filling "q"	EN 60079-5	-
IEC 60079-6	-	Explosive atmospheres - Part 6: Equipment protection by oil immersion "o"	EN 60079-6	-
IEC 60079-7	-	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"	EN 60079-7	-
IEC 60079-11	-	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	-
IEC 60079-15	-	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"	EN 60079-15	-
IEC 60079-18	-	Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"	EN 60079-18	-
IEC 60079-20-1	-	Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data	EN 60079-20-1	-
IEC 60079-25	-	Explosive atmospheres - Part 25: Intrinsically safe electrical systems	EN 60079-25	-

		Part 26: Equipment with equipment protection level (EPL) Ga		
IEC 60079-28	-	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation	EN 60079-28	-
IEC 60079-30-1	-	Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements	EN 60079-30-1	-
IEC 60079-31	-	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"	EN 60079-31	-
IEC 60086-1	-	Primary batteries - Part 1: General	EN 60086-1	-
IEC 60095-1	-	Lead-acid starter batteries - Part 1: General requirements and methods of test	-	-
IEC 60192	-	Low pressure sodium vapour lamps - Performance specifications	EN 60192	-
IEC 60216-1	-	Electrical insulating materials - Properties of thermal endurance - Part 1: Ageing procedures and evaluation of test results	EN 60216-1	-
IEC 60216-2	-	Electrical insulating materials - Thermal endurance properties - Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria	EN 60216-2	-
IEC 60243-1	-	Electrical strength of insulating materials - Test methods - Part 1: Tests at power frequencies	EN 60243-1	-
IEC 60254	Series	Lead-acid traction batteries	EN 60254	Series
IEC 60423	-	Conduit systems for cable management - Outside diameters of conduits for electrical installations and threads for conduits and fittings	EN 60423	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60622	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Sealed nickel-cadmium prismatic rechargeable single cells	EN 60622	-
IEC 60623	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells	EN 60623	-
IEC 60662	-	High pressure sodium vapour lamps - Performance specifications	EN 60662	-
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	-
IEC 60947-1	-	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	-

		Part 11: Vented types - General requirements and methods of tests		
IEC 60896-21	-	Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test	EN 60896-21	-
IEC 60952	Series	Aircraft batteries	EN 60952	Series
IEC 61056-1	-	General purpose lead-acid batteries (valve-regulated types) - Part 1: General requirements, functional characteristics - Methods of test	EN 61056-1	-
IEC 61241-4	-	Electrical apparatus for use in the presence of combustible dust - Part 4: Type of protection 'pD'	EN 61241-4	-
IEC 61427	-	Secondary cells and batteries for photovoltaic energy systems (PVES) - General requirements and methods of test	EN 61427	-
IEC 61951-1	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 1: Nickel-cadmium	EN 61951-1	-
IEC 61951-2	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 2: Nickel-metal hydride	EN 61951-2	-
IEC 61960	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications	EN 61960	-
IEC 62013-1	-	Caplights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion	EN 62013-1	-
ISO 178	-	Plastics - Determination of flexural properties	EN ISO 178	-
ISO 179	Series	Plastics - Determination of Charpy impact properties	EN ISO 179	Series
ISO 262	-	ISO general-purpose metric screw threads - Selected sizes for screws, bolts and nuts	-	-
ISO 273	-	Fasteners - Clearance holes for bolts and screws	EN 20273	-
ISO 286-2	-	ISO system of limits and fits - Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts	EN ISO 286-2	-
ISO 527-2	-	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics	EN ISO 527-2	-
ISO 965-1	-	ISO general-purpose metric screw threads - Tolerances - Part 1: Principles and basic data	-	-
ISO 965-3	-	ISO general-purpose metric screw threads - Tolerances - Part 3: Deviations for constructional threads	-	-
ISO 1817	-	Rubber, vulcanized - Determination of the effect of liquids		-

		Part 1: Inside diameters, cross-sections, tolerances and size identification code		
ISO 3601-2	-	Fluid power systems - O-rings - Part 2: Housing dimensions for general applications	-	-
ISO 4014	-	Hexagon head bolts - Product grades A and B	EN ISO 4014	-
ISO 4017	-	Hexagon head screws - Product grades A and B	EN ISO 4017	-
ISO 4026	-	Hexagon socket set screws with flat point	EN ISO 4026	-
ISO 4027	-	Hexagon socket set screws with cone point	EN ISO 4027	-
ISO 4028	-	Hexagon socket set screws with dog point	EN ISO 4028	-
ISO 4029	-	Hexagon socket set screws with cup point	EN ISO 4029	-
ISO 4032	-	Hexagon nuts, style 1 - Product grades A and B	EN ISO 4032	-
ISO 4762	-	Hexagon socket head cap screws	EN ISO 4762	-
ISO 4892-2	-	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps	EN ISO 4892-2	-
ISO 7380-1	-	Button head screws - Part 1: Hexagon socket button head screws	EN ISO 7380-1	-
ISO 14583	-	Hexalobular socket pan head screws	EN ISO 14583	-
ANSI/UL 746B	-	Polymeric Materials - Long-Term Property Evaluations	-	-
ANSI/UL 746C	-	Polymeric Materials - Used in Electrical Equipment Evaluations	-	-

Additional Information relating to the European ATEX Directive 94/9/EC

ZY.1 Equipment Groups

In all cases Equipment Protection Levels (EPL) as defined by EN 60079-0 are related to the corresponding Equipment Groups and Equipment Categories according to the following table. The same applies if a standard makes reference to the intended use of equipment in Zones according to the definitions in EN 60079-10-1 and EN 60079-10-2.

Table ZY.1

EN 60079-0		*Directive 94/9/EC*		*EN 60079-10-X*
EPL	***Group***	***Equipment Group***	***Equipment Category***	***Zones***
Ma	*I*	*I*	*M1*	*NA*
Mb			*M2*	
Ga	*II*	*II*	*1G*	*0*
Gb			*2G*	*1*
Gc			*3G*	*2*
Da	*III*		*1D*	*20*
Db			*2D*	*21*
Dc			*3D*	*22*

ZY.2 Instructions

The manufacturer or his authorized representative in the Community is to draw up the instructions for use in the required Community languages.

ZY.3 Marking

The marking according to this standard is to be supplemented by the marking according to Directive 94/9/EC. Examples are given below.

European marking examples

Directive part	**Standard part**	**Equipment example**
I M2	**Ex d I Mb**	Mining equipment, type of protection “Flameproof Enclosure” d
II 2G	**Ex e IIB T4 Gb**	Gas explosion protected equipment type of protection, “Increased Safety” e
II 1D	**Ex ma IIIC 120°C Da**	Dust explosion protected equipment, type of protection “Encapsulation” ma

The Ex marking for explosive gas atmospheres and explosive dust atmospheres shall be separate and not combined:

Ex II 1 G - Ex ia IIB T4

Ex II 1 D - Ex ia IIIC T120°C

ZY.4 Significant changes between this European Standard and EN 60079-0:2009

This European Standard supersedes EN 60079-0:2009.

Table ZY.2 – Significant changes with respect to EN 60079-0:2009

		Type		
Significant Changes	Clause	Minor and editorial changes	Extension	Major technical changes
Expansion of material specification data for plastics and elastomers, including UV resistance	7.1.2		x	
Addition of alternative qualification for O-rings	7.2.3		x	
Addition of alternative criteria for surface resistance	7.4.2 a)		x	
Addition of alternative breakdown voltage limit for non-metallic layers applied to metallic enclosures	7.4.2 c)		x	
Expansion of “X” marking options for non-metallic enclosure materials not meeting basic electrostatic requirements	7.4.2 d) 7.4.2 e)		x	
Clarification that non-metallic enclosure requirements also apply to painted or coated metal enclosures	7.4.3		x	
Clarification of test to determine capacitance of accessible metal parts with reduction in acceptable capacitance	7.5 Table 9			C1
Addition of limits on zirconium content for Group III and Group II (Gb only) enclosures	8.3 8.4		x	
Introduction of “X” marking for Group III enclosures not complying with basic material requirements, similar to that existing for Group II	8.4	x		
Addition of button-head cap screws to permitted “Special Fasteners”	9.2		x	
Reference for protective earthing (PE) requirements for rotating electrical machines to EN 60034 1	15.3	x		
Addition of requirements for ventilating fans	17.1.5			C2

Significant Changes	Clause	Minor and editorial changes	Extension	Major technical changes
Addition of alternative construction for disconnectors	18.2		x	
Removal of voltage limits on plugs and sockets	20.2		x	
Addition of test requirements for arc-quenching test on plugs and sockets	20.2			C3
Additional information on cell voltages	23.3 Table 12			C4
Revision to impact test of glass parts	26.4.2	x		
Revision to impact test procedure to address “bounce” of impact head	26.4.2		x	
Clarification of the test requirements for “service” and “surface” temperature	26.5.1.2 26.5.1.3	x		
Addition of temperature rise tests for converter-fed motors	26.5.1.3		x	
Addition of alternative test method for thermal endurance	26.8 Table 15		x	
Removal of “charging test” and addition of note providing guidance	Formerly 26.14			C5
Clarification of test for the measurement of capacitance	26.14	x		
Addition of a “Schedule of Limitations” to certificates for Ex Components	28.2	x		
Clarification of the marking for multiple temperature classes	29.3 d)	x		
Addition of marking for converter-fed motors	29.14	x		
Removal of IP marking for Group III	29.4 29.15	x		
Addition of specific instructions for electrical machines and for ventilating fans	30.3 30.4	x		

NOTE 1 The technical changes referred include the significant technical changes from the EN revised but is not an exhaustive list of all modifications from the previous version.

Explanations:

A) Definitions

Minor and editorial changes clarification
decrease of technical requirements
minor technical change
editorial corrections

Changes in a standard classified as 'Minor and editorial changes' refer to changes regarding the previous standard, which modify requirements in an editorial or a minor technical way. Also changes of the wording to clarify technical requirements without any technical change are classified as 'Minor and editorial changes'.

A reduction in level of existing requirement is also classified as 'Minor and editorial changes'

Extension addition of technical options

Changes in a standard classified as 'extension' refers to changes regarding the previous standard, which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements for equipment that was fully compliant with the previous standard. Therefore these 'extensions' will not have to be considered for products in conformity with the preceding edition.

Major technical change addition of technical requirements
increase of technical requirements

Changes in a standard classified as 'Major technical change' refer to changes regarding the previous standard, which add new or increase the level of existing technical requirements, in a way that a product in conformity with the preceding standard will not always be able to fulfil the requirements given in the standard. 'Major technical changes' have to be considered for products in conformity with the preceding edition. For every change classified as 'Major Technical Change' additional information is provided in B) of Annex ZY.

NOTE 2 These changes represent current technological knowledge[1]. However, these changes should not normally have an influence on equipment already placed on the market.

B) Information about the background of 'Major Technical Changes'

C1 – The values in the table have been significantly reduced based on information that is intended to be published in IEC 60079-32 (currently in preparation).

C2 – The requirements for fans which are not integral to the cooling system of a rotating electrical machine were added to the IEC version of the standard at the request of the IECEx International Product Certification Scheme as such requirements do not exist elsewhere in international standards. These requirements were removed from the EN version of the standard by common modification and replaced by reference to other European standards harmonised under the ATEX Directive 94/9/EC. If this clause is being used for IECEx purposes, it should be noted that the major new requirement for fans relates to the back pressure considerations which are also specifically addressed in EN 14986:2007.

C3 – The test has been introduced for all disconnectors as an alternative to the voltage and current restrictions in the previous standard which were considered to be arbitrary.

C4 – There has been a slight increase in some cell voltages. This is a minor change for most protection concepts but should be regarded as a major change for equipment having a type of protection relying on energy limitation, e.g. EN 60079-11

C5 – The charging test was removed as it had been found to be not repeatable. Guidance is currently provided in CLC/TR 50404 and will be given in IEC 60079-32 which is in preparation.

[1] see also ATEX Guide 10.3 and Annex ZZ.

Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in Annex II of the EU Directive 94/9/EC:

- ER 1.0.1 to ER 1.0.6
- ER 1.1
- ER 1.2.1, ER 1.2.2, ER 1.2.4 to ER 1.2.9
- ER 1.3.1 to ER 1.3.4
- ER 1.4.1, ER 1.4.2
- ER 1.6.2, ER 1.6.4
- ER 2.0 to ER 2.3

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

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