

**Plahvatusohtlikud keskkonnad. Osa 11: Seadme kaitse sisemise ohutusega "i"**

**Explosive atmospheres -- Part 11: Equipment protection by intrinsic safety "i"**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 60079-11:2012 sisaldab Euroopa standardi EN 60079-11:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 60079-11:2012 consists of the English text of the European standard EN 60079-11:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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English version

**Explosive atmospheres -  
Part 11: Equipment protection by intrinsic safety "i"  
(IEC 60079-11:2011)**

Atmosphères explosives -  
Partie 11: Protection de l'équipement par  
sécurité intrinsèque "i"  
(CEI 60079-11:2011)

Explosionsgefährdete Bereiche -  
Teil 11: Geräteschutz durch  
Eigensicherheit "i"  
(IEC 60079-11:2011)

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Europäisches Komitee für Elektrotechnische Normung

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## Foreword

The text of document 31G/207/FDIS, future edition 6 of IEC 60079-11, prepared by SC 31G, "Intrinsically-safe apparatus", of IEC/TC 31, "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-11:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-07-06
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-08-04

This document supersedes EN 60079-11:2007, EN 61241-11:2006 and partially supersedes EN 60079-27:2008 (see Annex ZY for significant changes).

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(s).

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

## Endorsement notice

The text of the International Standard IEC 60079-11:2011 was approved by CENELEC as a European Standard without any modification.

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

IEC 60079-15	NOTE	Harmonized as EN 60079-15.
IEC 61086-1:2004	NOTE	Harmonized as EN 61086-1:2004 (not modified).
IEC 62133	NOTE	Harmonized as EN 62133.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60079-0	-	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	-
IEC 60079-7	-	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"	EN 60079-7	-
IEC 60079-25	-	Explosive atmospheres - Part 25: Intrinsically safe electrical systems	EN 60079-25	-
IEC 60085	-	Electrical insulation - Thermal evaluation and designation	EN 60085	-
IEC 60112	-	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	-
IEC 60127	Series	Miniature fuses	EN 60127	Series
IEC 60317-3	-	Specifications for particular types of winding wires - Part 3: Polyester enamelled round copper wire, class 155	-	-
IEC 60317-7	-	Specifications for particular types of winding wires - Part 7: Polyimide enamelled round copper wire, class 220	HD 555.7 S2	-
IEC 60317-8	-	Specifications for particular types of winding wires - Part 8: Polyesterimide enamelled round copper wire, class 180	EN 60317-8	-
IEC 60317-13	-	Specifications for particular types of winding wires - Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200	EN 60317-13	-
IEC 60529	-	Degrees of protection provided by enclosures - (IP Code)	-	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60664-3	2003	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2003

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-2	-	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	EN 61158-2	-
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	-
ANSI/UL 248-1	-	Standard for low-voltage fuses - Part 1: General requirements	-	-

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**Annex ZY**  
(informative)

**Significant changes between this European Standard and EN 60079-11:2007**

This European Standard supersedes EN 60079-11:2007.

The significant changes with respect to EN 60079-11:2007 are as listed below.

Significant Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Inclusion of non-edition specific references to EN 60079-11	Table 1	X		
The merging of the requirements for combustible dust atmospheres from EN 61241-11	e.g. 5.6.5. 6.1.3		X	
The merging of the apparatus requirements for FISCO from EN 60079-27	Annex G		X	
Clarification of the requirements for accessories connected to intrinsically safe apparatus such as chargers and data loggers.	6.2.5 7.4.9		X	
Addition of new test requirements for opto-isolators	10.11		X	
Introduction of Annex H about ignition testing of semiconductor limiting power supply circuits	Annex H		X	

**NOTE: 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 clause B) of the Annex ZY.

Note: These changes represent current technological knowledge<sup>1</sup>. 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'**

None.

**Instructions:**

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

**Marking:**

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

**European marking examples**

Directive part	Standard part	Equipment example
 II 1G	Ex ia IIC T4 -25 °C ≤ Ta ≤ +50 °C	Self-contained intrinsically safe apparatus
 II 2G	Ex ib IIB T4 Ui = 24 V li = 80 mA Pi = 0.48 W	Intrinsically safe apparatus designed to be connected to other apparatus
 I (M2)	[Ex ib] I Uo = 20 V lo = 300 mA Po = 1.5 W	Associated apparatus
 II 2 (1) G	Ex ib [ia IIC Ga] IIB T6 Gb Ui = 30 V, Uo = 12 V, lo = 100 mA	Intrinsically safe apparatus Level of Protection 'ib' with 'ia' outputs
 II 2 (1) G	Ex db [ia Ga] IIB T4 Gb Uo = 12 V, lo = 200 mA Po = 0.6 W	Associated apparatus protected by a flameproof enclosure

<sup>1</sup> see also ATEX Guidelines 10.3 and Annex ZZ.

**Annex ZZ**  
(informative)

**Coverage of Essential Requirements of EU Directives**

This European Standard has been prepared under a mandate given to CENELEC by the European Union 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 indent 2, ER 1.0.2 (partly), ER 1.0.3 (partly), ER 1.0.4 (partly), ER 1.0.5 (partly), ER 1.0.6 (partly)
- ER 1.1 (partly)
- ER 1.2.1 (partly), ER 1.2.2 (partly), ER 1.2.4 (partly), ER 1.2.6 (partly), ER 1.2.8 (partly)
- ER 1.3.1 (partly)
- ER 1.4 (partly)
- ER 2.0.1.1 to ER 2.0.1.4
- ER 2.0.2.1 (partly), ER 2.0.2.2, ER 2.0.2.3
- ER 2.1.1.1 to ER 2.1.1.3
- ER 2.1.2.1 to ER 2.1.2.4
- ER 2.2.1.1 to ER 2.2.1.3
- ER 2.2.2.1 to ER 2.2.2.4
- ER 2.3.1.1, ER 2.3.1.2
- ER 2.3.2.1 to ER 2.3.2.3

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

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

## CONTENTS

FOREWORD.....	7
1 Scope.....	9
2 Normative references.....	14
3 Terms and definitions .....	15
4 Grouping and classification of intrinsically safe apparatus and associated apparatus .....	20
5 Levels of protection and ignition compliance requirements of electrical apparatus.....	21
5.1 General .....	21
5.2 Level of protection "ia" .....	21
5.3 Level of protection "ib" .....	22
5.4 Level of protection "ic" .....	22
5.5 Spark ignition compliance .....	22
5.6 Thermal ignition compliance .....	22
5.6.1 General .....	22
5.6.2 Temperature for small components for Group I and Group II .....	23
5.6.3 Wiring within intrinsically safe apparatus for Group I and Group II .....	23
5.6.4 Tracks on printed circuit boards for Group I and Group II .....	24
5.6.5 Intrinsically safe apparatus and component temperature for Group III .....	25
5.7 Simple apparatus.....	26
6 Apparatus construction .....	27
6.1 Enclosures .....	27
6.1.1 General .....	27
6.1.2 Enclosures for Group I or Group II apparatus .....	27
6.1.3 Enclosures for Group III apparatus.....	28
6.2 Facilities for connection of external circuits .....	28
6.2.1 Terminals .....	28
6.2.2 Plugs and sockets.....	31
6.2.3 Determination of maximum external inductance to resistance ratio ( $L_0/R_0$ ) for resistance limited power source .....	31
6.2.4 Permanently connected cable .....	32
6.2.5 Requirements for connections and accessories for IS apparatus when located in the non-hazardous area .....	32
6.3 Separation distances .....	33
6.3.1 General .....	33
6.3.2 Separation of conductive parts .....	33
6.3.3 Voltage between conductive parts .....	37
6.3.4 Clearance .....	37
6.3.5 Separation distances through casting compound .....	37
6.3.6 Separation distances through solid insulation .....	38
6.3.7 Composite separations .....	38
6.3.8 Creepage distance.....	38
6.3.9 Distance under coating .....	40
6.3.10 Requirements for assembled printed circuit boards .....	40
6.3.11 Separation by earthed screens .....	41
6.3.12 Internal wiring .....	42
6.3.13 Dielectric strength requirement .....	42
6.3.14 Relays .....	42
6.4 Protection against polarity reversal .....	43

6.5	Earth conductors, connections and terminals .....	43
6.6	Encapsulation .....	44
6.6.1	General .....	44
6.6.2	Encapsulation used for the exclusion of explosive atmospheres .....	45
7	Components on which intrinsic safety depends .....	45
7.1	Rating of components .....	45
7.2	Connectors for internal connections, plug-in cards and components .....	46
7.3	Fuses .....	46
7.4	Primary and secondary cells and batteries .....	47
7.4.1	General .....	47
7.4.2	Battery construction .....	48
7.4.3	Electrolyte leakage and ventilation .....	48
7.4.4	Cell voltages .....	49
7.4.5	Internal resistance of cell or battery .....	49
7.4.6	Batteries in equipment protected by other types of protection .....	49
7.4.7	Batteries used and replaced in explosive atmospheres .....	49
7.4.8	Batteries used but not replaced in explosive atmospheres .....	50
7.4.9	External contacts for charging batteries .....	50
7.5	Semiconductors .....	50
7.5.1	Transient effects .....	50
7.5.2	Shunt voltage limiters .....	50
7.5.3	Series current limiters .....	51
7.6	Failure of components, connections and separations .....	51
7.7	Piezo-electric devices .....	52
7.8	Electrochemical cells for the detection of gases .....	52
8	Infallible components, infallible assemblies of components and infallible connections on which intrinsic safety depends .....	53
8.1	Level of Protection “ic” .....	53
8.2	Mains transformers .....	53
8.2.1	General .....	53
8.2.2	Protective measures .....	53
8.2.3	Transformer construction .....	53
8.2.4	Transformer type tests .....	54
8.2.5	Routine test of mains transformers .....	54
8.3	Transformers other than mains transformers .....	54
8.4	Infallible windings .....	55
8.4.1	Damping windings .....	55
8.4.2	Inductors made by insulated conductors .....	55
8.5	Current-limiting resistors .....	56
8.6	Capacitors .....	56
8.6.1	Blocking capacitors .....	56
8.6.2	Filter capacitors .....	57
8.7	Shunt safety assemblies .....	57
8.7.1	General .....	57
8.7.2	Safety shunts .....	57
8.7.3	Shunt voltage limiters .....	58
8.8	Wiring, printed circuit board tracks, and connections .....	58
8.9	Galvanically separating components .....	59
8.9.1	General .....	59

8.9.2	Isolating components between intrinsically safe and non-intrinsically safe circuits .....	59
8.9.3	Isolating components between separate intrinsically safe circuits .....	59
9	Supplementary requirements for specific apparatus.....	60
9.1	Diode safety barriers.....	60
9.1.1	General .....	60
9.1.2	Construction .....	60
9.2	FISCO apparatus.....	60
9.3	Handlights and caplights .....	61
10	Type verifications and type tests .....	61
10.1	Spark ignition test.....	61
10.1.1	General.....	61
10.1.2	Spark test apparatus .....	61
10.1.3	Test gas mixtures and spark test apparatus calibration current .....	62
10.1.4	Tests with the spark test apparatus .....	63
10.1.5	Testing considerations .....	64
10.2	Temperature tests.....	65
10.3	Dielectric strength tests.....	66
10.4	Determination of parameters of loosely specified components .....	66
10.5	Tests for cells and batteries .....	66
10.5.1	General.....	66
10.5.2	Electrolyte leakage test for cells and batteries .....	66
10.5.3	Spark ignition and surface temperature of cells and batteries.....	67
10.5.4	Battery container pressure tests .....	68
10.6	Mechanical tests .....	68
10.6.1	Casting compound .....	68
10.6.2	Determination of the acceptability of fuses requiring encapsulation .....	68
10.6.3	Partitions.....	68
10.7	Tests for intrinsically safe apparatus containing piezoelectric devices .....	68
10.8	Type tests for diode safety barriers and safety shunts .....	69
10.9	Cable pull test.....	70
10.10	Transformer tests .....	70
10.11	Optical isolators tests.....	70
10.11.1	General.....	70
10.11.2	Thermal conditioning, dielectric and carbonisation test.....	70
10.11.3	Dielectric and short-circuit test .....	72
10.12	Current carrying capacity of infallible printed circuit board connections .....	72
11	Routine verifications and tests .....	73
11.1	Routine tests for diode safety barriers .....	73
11.1.1	Completed barriers .....	73
11.1.2	Diodes for 2-diode “ia” barriers.....	73
11.2	Routine tests for infallible transformers .....	73
12	Marking .....	74
12.1	General .....	74
12.2	Marking of connection facilities .....	74
12.3	Warning markings .....	75
12.4	Examples of marking .....	75
13	Documentation .....	77
Annex A (normative)	Assessment of intrinsically safe circuits.....	78

Annex B (normative) Spark test apparatus for intrinsically safe circuits .....	100
Annex C (informative) Measurement of creepage distances, clearances and separation distances through casting compound and through solid insulation .....	108
Annex D (normative) Encapsulation .....	111
Annex E (informative) Transient energy test .....	118
Annex F (normative) Alternative separation distances for assembled printed circuit boards and separation of components .....	121
Annex G (normative) Fieldbus intrinsically safe concept (FISCO) – Apparatus requirements .....	125
Annex H (informative) Ignition testing of semiconductor limiting power supply circuits .....	130
Bibliography .....	141
Figure 1 – Separation of intrinsically safe and non-intrinsically safe terminals .....	31
Figure 2 – Example of separation of conducting parts .....	36
Figure 3 – Determination of creepage distances .....	39
Figure 4 – Creepage distances and clearances on printed circuit boards .....	41
Figure 5 – Examples of independent and non-independent connecting elements .....	44
Figure A.1 – Resistive circuits .....	81
Figure A.2 – Group I capacitive circuits .....	82
Figure A.3 – Group II capacitive circuits .....	83
Figure A.4 – Inductive circuits of Group II .....	84
Figure A.5 – Group I inductive circuits .....	85
Figure A.6 – Group IIC inductive circuits .....	86
Figure A.7 – Simple inductive circuit .....	87
Figure A.8 – Simple capacitive circuit .....	87
Figure A.9 – Equivalent capacitance .....	99
Figure B.1 – Spark test apparatus for intrinsically safe circuits .....	104
Figure B.2 – Cadmium contact disc .....	105
Figure B.3 – Wire holder .....	105
Figure B.4 – Example of a practical design of spark test apparatus .....	106
Figure B.5 – Arrangement for fusing tungsten wires .....	107
Figure C.1 – Measurement of clearance .....	108
Figure C.2 – Measurement of composite distances .....	109
Figure C.3 – Measurement of creepage .....	110
Figure C.4 – Measurement of composite creepage .....	110
Figure D.1 – Examples of encapsulated assemblies conforming to 6.3.5 and 6.6 .....	113
Figure D.2 – Applications of encapsulation using casting compound without an enclosure .....	115
Figure D.3 – Examples of assemblies using moulding conforming to 6.6 .....	116
Figure E.1 – Example of test circuit .....	119
Figure E.2 – Example of output waveform .....	120
Figure G.1 – Typical system .....	129
Figure H.1 – Safety factor vs ignition probability .....	140

Table 1 – Applicability of specific clauses of IEC 60079-0 .....	9
Table 2 – Temperature classification of copper wiring (in a maximum ambient temperature of 40 °C).....	24
Table 3 – Temperature classification of tracks on printed circuit boards (in a maximum ambient temperature of 40 °C) .....	25
Table 4 – Maximum permitted power dissipation within a component immersed in dust .....	26
Table 5 – Clearances, creepage distances and separations .....	35
Table 6 – Minimum foil thickness or minimum wire diameter of the screen in relation to the rated current of the fuse .....	54
Table 7 – Compositions of explosive test mixtures adequate for 1,0 safety factor .....	62
Table 8 – Compositions of explosive test mixtures adequate for 1,5 safety factor .....	63
Table 10 – Routine test voltages for infallible transformers .....	73
Table 11 – Text of warning markings .....	75
Table A.1 – Permitted short-circuit current corresponding to the voltage and the Equipment Group .....	88
Table A.2 – Permitted capacitance corresponding to the voltage and the Equipment Group .....	93
Table A.3 – Permitted reduction of effective capacitance when protected by a series resistance .....	99
Table F.1 – Clearances, creepage distances and separations for Level of Protection "ia" and "ib" when ingress protected, and special conditions of material and installation are fulfilled .....	123
Table F.2 – Clearances, creepage distances and separations for Level of Protection "ic" when ingress is protected by an enclosure or by special conditions of installation .....	124
Table G.1 – Assessment of maximum output current for use with 'ia' and 'ib' FISCO rectangular supplies .....	126
Table G.2 – Assessment of maximum output current for use with 'ic' FISCO rectangular supplies .....	126
Table H.1 – Sequence of tests .....	133
Table H.2 – Safety factor provided by several explosive test mixtures that may be used for the tests in Table H.1 .....	135
Table H.3 – Example of a Group I circuit with characteristics described by Curve II of Figure H.1 – This passes the test sequence of Table H.1.....	136
Table H.4 – Example of a Group I circuit with characteristics described by Curve III of Figure H.1 – This does not pass the test sequence of Table H.1 .....	138

## EXPLOSIVE ATMOSPHERES –

### Part 11: Equipment protection by intrinsic safety "i"

#### 1 Scope

This part of IEC 60079 specifies the construction and testing of intrinsically safe apparatus intended for use in an explosive atmosphere and for associated apparatus, which is intended for connection to intrinsically safe circuits which enter such atmospheres.

This type of protection is applicable to electrical equipment in which the electrical circuits themselves are incapable of causing an explosion in the surrounding explosive atmospheres.

This standard is also applicable to electrical equipment or parts of electrical equipment located outside the explosive atmosphere or protected by another Type of Protection listed in IEC 60079-0, where the intrinsic safety of the electrical circuits in the explosive atmosphere may depend upon the design and construction of such electrical equipment or parts of such electrical equipment. The electrical circuits exposed to the explosive atmosphere are evaluated for use in such an atmosphere by applying this standard.

The requirements for intrinsically safe systems are provided in IEC 60079-25.

This standard supplements and modifies the general requirements of IEC 60079-0, except as indicated in Table 1. Where a requirement of this standard conflicts with a requirement of IEC 60079-0, the requirements of this standard shall take precedence.

If requirements in this standard are applicable to both intrinsically safe apparatus and associated apparatus the term "apparatus" is used throughout the standard.

This standard is for electrical equipment only; therefore the term "equipment" used in the standard always means "electrical equipment".

If associated apparatus is placed in the explosive atmosphere, it shall be protected by an appropriate Type of Protection listed in IEC 60079-0, and then the requirements of that method of protection together with the relevant parts of IEC 60079-0 also apply to the associated apparatus.

**Table 1 – Applicability of specific clauses of IEC 60079-0**

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
1	1	Scope	Applies	Applies	Applies
2	2	Normative references	Applies	Applies	Applies
3	3	Terms and definitions	Applies	Applies	Applies
4	4	Equipment grouping	Applies	Applies	Applies
4.1	4.1	Group I	Applies	Excluded	Applies
4.2	4.2	Group II	Applies	Excluded	Applies

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
4.3	4.3	Group III	Excluded	Applies	Applies
4.4	4.4	Equipment for a particular explosive atmosphere	Applies	Applies	Applies
5.1	5.1	Environmental influences	Applies	Applies	Applies
5.1.1	5.1.1	Ambient temperature	Applies	Applies	Applies
5.1.2	5.1.2	External source of heating or cooling	Applies	Applies	Applies
5.2	5.2	Service temperature	Applies	Applies	Applies
5.3.1	5.3.1	Determination of maximum surface temperature	Applies	Applies	Excluded
5.3.2.1	5.3.2.1	Group I electrical equipment	Applies	Excluded	Excluded
5.3.2.2	5.3.2.2	Group II electrical equipment	Applies	Excluded	Excluded
5.3.2.3	5.3.2.3	Group III electrical equipment	Excluded	Applies	Excluded
5.3.3	5.3.3	Small component temperature for Group I or Group II electrical equipment	Applies	Excluded	Excluded
6.1	6.1	General	Applies	Applies	Applies
6.2	6.2	Mechanical strength of equipment	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
6.3	6.3	Opening times	Excluded	Excluded	Excluded
6.4	6.4	Circulating currents in enclosures (e.g. of large electrical machines)	Excluded	Excluded	Excluded
6.5	6.5	Gasket retention	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
6.6	6.6	Electromagnetic and ultrasonic radiating equipment	Applies	Applies	Excluded
7.1.1	7.1.1	Applicability	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
7.1.2	7.1.2.1	Specification of materials	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
7.1.3	7.1.2.2	Plastic materials	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
7.1.4	7.1.2.3	Elastomers	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
7.2	7.2	Thermal endurance	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
7.3	7.3	Resistance to light	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
7.4	7.4	Electrostatic charges on external non-metallic materials	Applies	Applies	Excluded
NR	7.5	Accessible metal parts	Applies	Applies	Excluded
7.5	NR	Threaded holes	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
8.1	8.1	Material composition	Applies	Applies	Excluded
8.1.1	8.2	Group I	Applies	Excluded	Excluded
8.1.2	8.3	Group II	Applies	Excluded	Excluded
8.1.3	8.4	Group III	Excluded	Applies	Excluded
8.2	NR	Threaded holes	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
9	9	Fasteners	Excluded	Excluded	Excluded
10	10	Interlocking devices	Excluded	Excluded	Excluded
11	11	Bushings	Excluded	Excluded	Excluded
12	12	Materials used for cementing	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
13	13	Ex Components	Applies	Applies	Applies
14	14	Connection facilities and termination compartments	Excluded	Excluded	Excluded
15	15	Connection facilities for earthing or bonding conductors	Excluded	Excluded	Excluded
16	16	Entries into enclosures	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
17	17	Supplementary requirements for rotating machines	Excluded	Excluded	Excluded
18	18	Supplementary requirements for switchgear	Excluded	Excluded	Excluded
19	19	Supplementary requirements for fuses	Excluded	Excluded	Excluded
20	20	Supplementary requirements for plugs, socket outlets and connectors	Excluded	Excluded	Excluded
21	21	Supplementary requirements for luminaires	Excluded	Excluded	Excluded
22	22	Supplementary requirements for caplights and handlights	Modified	Modified	Excluded
23.1	23.1	General	Applies	Applies	Applies

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
23.2	23.2	Batteries	Excluded	Excluded	Excluded
23.3	23.3	Cell types	Applies	Applies	Applies
23.4	23.4	Cells in a battery	Applies	Applies	Applies
23.5	23.5	Ratings of batteries	Applies	Applies	Applies
23.6	23.6	Interchangeability	Applies	Applies	Applies
23.7	23.7	Charging of primary batteries	Applies	Applies	Applies
23.8	23.8	Leakage	Applies	Applies	Applies
23.9	23.9	Connections	Applies	Applies	Applies
23.10	23.10	Orientation	Applies	Applies	Applies
23.11	23.11	Replacement of cells or batteries	Applies	Applies	Applies
23.12	23.12	Replaceable battery pack	Applies	Applies	Applies
24	24	Documentation	Applies	Applies	Applies
25	25	Compliance of prototype or sample with documents	Applies	Applies	Applies
26.1	26.1	General	Applies	Applies	Applies
26.2	26.2	Test configuration	Applies	Applies	Applies
26.3	26.3	Tests in explosive test mixtures	Applies	Applies	Applies
26.4.1	26.4.1	Order of tests	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.1.1	26.4.1.1	Metallic enclosures, metallic parts of enclosures and glass parts of enclosures	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.1.2	26.4.1.2	Non-metallic enclosures or non-metallic parts of enclosures	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.1.2.1	26.4.1.2.1	Group I electrical equipment	Excluded except when 6.1.2.3a) is applied	Excluded	Excluded except when 6.1.2.3a) is applied
26.4.1.2.2	26.4.1.2.2	Group II and Group III electrical equipment	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.2	26.4.2	Resistance to impact	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.3	26.4.3	Drop test	Applies	Applies	Excluded except when 6.1.2.3a) is applied
26.4.4	26.4.4	Acceptance criteria	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.4.5	26.4.5	Degree of protection (IP) by enclosures	Applies	Applies	Applies
26.5.1.1	26.5.1.1	General	Applies	Applies	Excluded
26.5.1.2	26.5.1.2	Service temperature	Modified	Modified	Modified

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
26.5.1.3	26.5.1.3	Maximum surface temperature	Modified	Modified	Modified
26.5.2	26.5.2	Thermal shock test	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.5.3	26.5.3	Small component ignition test (Group I and Group II)	Applies	Excluded	Excluded
26.6	26.6	Torque test for bushings	Excluded	Excluded	Excluded
26.7	26.7	Non-metallic enclosures or non-metallic parts of enclosures	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.8	26.8	Thermal endurance to heat	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.9	26.9	Thermal endurance to cold	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.10	26.10	Resistance to light	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
26.11	26.11	Resistance to chemical agents for Group I electrical equipment	Excluded except when 6.1.2.3a) is applied	Excluded	Excluded
26.12	26.12	Earth continuity	Excluded	Excluded	Excluded
26.13	26.13	Surface resistance test of parts of enclosures of non-metallic materials	Applies	Applies	Excluded
26.15	26.14	Measurement of capacitance	Applies	Applies	Excluded
NR	26.15	Verification of ratings of ventilating fans	Excluded	Excluded	Excluded
NR	26.16	Alternative qualification of elastomeric sealing O-rings	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
27	27	Routine tests	Applies	Applies	Applies
28	28	Manufacturer's responsibility	Applies	Applies	Applies
29	29	Marking	Applies	Applies	Applies
30	30	Instructions	Applies	Applies	Applies
Annex A (Normative)	Annex A (Normative)	Supplementary requirements for cable glands	Excluded	Excluded	Excluded
Annex B (Normative)	Annex B (Normative)	Requirements for Ex Components	Applies	Applies	Applies
Annex C (Informative)	Annex C (Informative)	Example of rig for resistance to impact test	Applies	Applies	Excluded except when 6.1.2.3a) is applied

Clause or subclause of IEC 60079-0			IEC 60079-0 clause application to IEC 60079-11		
			Intrinsically safe apparatus		Associated apparatus
Ed. 5.0 (2007) (informative)	Ed. 6.0 (2011) (informative)	Clause / Subclause title (normative)	Group I and Group II	Group III	
Annex D (Informative)	NR	Alternative risk assessment method encompassing "equipment protection levels" for Ex equipment	Applies	Applies	Applies
Annex E (Informative)	Annex D (Informative)	Motors supplied by converters	Excluded	Excluded	Excluded
NR	Annex E (Informative)	Temperature rise testing of electric machines	Excluded	Excluded	Excluded
NR	Annex F (Informative)	Guideline flowchart for tests of non-metallic enclosures or non-metallic parts of enclosures (26.4)	Excluded except when 6.1.2.3a) is applied	Excluded except when 6.1.3 a) is applied.	Excluded except when 6.1.2.3a) is applied
<p>Applies – This requirement of IEC 60079-0 is applied without change.</p> <p>Excluded – This requirement of IEC 60079-0 does not apply.</p> <p>Excluded except – This requirement of IEC 60079-0 does not apply except when the conditions stated are met.</p> <p>Modified – This requirement of IEC 60079-0 is modified as detailed in this standard.</p> <p>NR – No requirements.</p>					
<p>NOTE The clause numbers in the above table are shown for information only. The applicable requirements of IEC 60079-0 are identified by the clause title which is normative. This table was written against the specific requirements of IEC 60079-0, ed. 6.0. The clause numbers for the previous edition are shown for information only. This is to enable the General requirements IEC 60079-0, ed. 5.0, to be used where necessary with this part of IEC 60079. Where there were no requirements, indicated by NR, or there is a conflict between requirements, the later edition requirements take precedence.</p>					

## 2 Normative references

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

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-7, *Explosive atmospheres – Part 7: Equipment protection by increased safety "e"*

IEC 60079-25, *Explosive atmospheres – Part 25: Intrinsically safe electrical systems*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127 (all parts), *Miniature fuses*

IEC 60317-3, *Specifications for particular types of winding wires – Part 3: Polyester enamelled round copper wire, class 155*

IEC 60317-7, *Specifications for particular types of winding wires – Part 7: Polyimide enamelled round copper wire, class 220*

IEC 60317-8, *Specifications for particular types of winding wires – Part 8: Polyesterimide enamelled round copper winding wire, class 180*

IEC 60317-13, *Specifications for particular types of winding wires – Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 61158-2, *Industrial communication networks – Fieldbus specifications – Part 2: Physical layer specification and service definition*

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*

ANSI/UL 248-1, *Low-Voltage Fuses – Part 1: General Requirements*

### **3 Terms and definitions**

For the purposes of this document, the terms and definitions given in IEC 60079-0, and the following apply.

#### **3.1**

##### **general**

##### **3.1.1**

##### **intrinsic safety “i”**

type of protection based on the restriction of electrical energy within equipment and of interconnecting wiring exposed to the explosive atmosphere to a level below that which can cause ignition by either sparking or heating effects

##### **3.1.2**

##### **associated apparatus**

electrical equipment which contains both intrinsically safe circuits and non-intrinsically safe circuits and is constructed so that the non-intrinsically safe circuits cannot adversely affect the intrinsically safe circuits

NOTE Associated apparatus may be either:

- a) electrical equipment which has another type of protection listed in IEC 60079-0 for use in the appropriate explosive atmosphere, or
- b) electrical equipment not so protected and which, therefore, is not normally used within an explosive atmosphere, for example a recorder which is not itself in an explosive atmosphere, but is connected to a thermocouple situated within an explosive atmosphere where only the recorder input circuit is intrinsically safe.

##### **3.1.3**

##### **intrinsically safe apparatus**

electrical equipment in which all the circuits are intrinsically safe circuits