SLOVENSKI STANDARD
SIST EN 60079-1:2007

01-november-2007

Nadomeġļa:
SIST EN 60079-1:2004

Eksplozivne atmosfere - 1. del: Zaġļita opreme z neprodirnim okrovom "d" (IEC 60079-1:2007)

Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Explosionsfähige Atmosphäre - Teil 1: Geräteschutz durch druckfeste Kapselung "d"

Atmospheres explosives - Partie 1: Protection du matériel par enveloppes antidéflagrantes «d»

Ta slovenski standard je istoveten z: EN 60079-1:2007

ICS:

29.260.20	Elektriļ ni aparati za eksplozivna ozraļ ja	Electrical apparatus for explosive atmospheres

SIST EN 60079-1:2007 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60079-1

July 2007

ICS 29.260.20

Supersedes EN 60079-1:2004

English version

Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

(IEC 60079-1:2007)

Atmosphères explosives -
Partie 1: Protection du matériel
par enveloppes antidéflagrantes "d"
(CEI 60079-1:2007)

Explosionsfähige Atmosphäre -
Teil 1: Geräteschutz durch
druckfeste Kapselung "d"
(IEC 60079-1:2007)

This European Standard was approved by CENELEC on 2007-07-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60079-1:2007 E

Foreword

The text of document 31/680/FDIS, future edition 6 of IEC 60079-1, prepared by IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-1 on 2007-07-01.

This European Standard supersedes EN 60079-1:2004 + Corrigendum April 2006.

EN 60079-1:2007 contains the following significant technical changes with regard to EN 60079-1:2004:

– revisions to Clause 5 regarding markings and conditions of safe use when a dimension of a flameproof joint is other than the relevant minimum or maximum;

– revisions to Table 1 regarding maximum gap for flanged, cylindrical or spigot joints;

– revisions to Table 4 regarding requirements for taper threaded joints;

– revisions to Clause 10 regarding volume restrictions and test conditions associated with breathing and draining devices;

– revisions to Clause 11 regarding requirements for fasteners, associated holes and blanking elements;

– revisions to Clause 12 regarding material restrictions associated with zinc and zinc alloys;

– revisions to Table 5 regarding conditions for the determination of maximum surface temperatures;

– revisions to Clause 15 regarding the determination of explosion pressure (reference pressure);

– revisions to Table 6 regarding the reduction in length of a threaded joint for nontransmission testing;

– revisions to Table 7 regarding the test factors to increase pressure or test gap (*i*E);

– revisions to Table 8 regarding the minimum distance of obstructions from flange openings;

– revisions to Clause 19 regarding tests for flameproofness;

– revisions to Clause 20 regarding a tabulated collection of marking requirements;

– revisions to Annex C regarding additional requirements for flameproof entry devices;

– revisions to Annex D regarding empty flameproof enclosures as Ex components;

– addition of a new Annex F regarding mechanical properties for screws and nuts; and

– addition of a new Annex G regarding equipment protection levels for Ex equipment.

This standard is to be used in conjunction with EN 60079-0:2004.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2008-04-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-07-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive ATEX (94/9/EC). See Annex ZZ.

Annexes ZA and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60079-1:2007 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 60034-1	NOTE	Harmonized as EN 60034-1:2004 (not modified).
IEC 60079	NOTE	Harmonized in EN 60079 series (not modified).
IEC 60079-2	NOTE	Harmonized as EN 60079-2:2004 (not modified).
IEC 60079-6	NOTE	Harmonized as EN 60079-6:2007 (not modified).
IEC 60079-15	NOTE	Harmonized as EN 60079-15:2005 (not modified).
IEC 60079-18	NOTE	Harmonized as EN 60079-18:2004 (not modified).
IEC 60079-26	NOTE	Harmonized as EN 60079-26:2007 (not modified).
IEC 60079-28	NOTE	Harmonized as EN 60079-28:2007 (not modified).
IEC 61241-0	NOTE	Harmonized as EN 61241-0:2006 (modified).
IEC 61241-4	NOTE	Harmonized as EN 61241-4:2006 (not modified).
IEC 61241-10	NOTE	Harmonized as EN 61241-10:2004 (not modified).
IEC 61241-11	NOTE	Harmonized as EN 61241-11:2006 (not modified).
IEC 61241-18	NOTE	Harmonized as EN 61241-18:2004 (not modified).
IEC 61508	NOTE	Harmonized in EN 61508 series (not modified).

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.

Publication	Year	Title	EN/HD	Year
IEC 60061	Series	Lamp caps and holders together with gauges for the control of interchangeability and safety	EN 60061	Series
IEC 60079-0 (mod)	2004	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements	EN 60079-0	2006
IEC 60079-1-1	-[1)]	Electrical apparatus for explosive gas atmospheres - Part 1-1: Flameproof enclosures "d" - Method of test for ascertainment of maximum experimental safe gap	-	-
IEC 60079-7	-[1)]	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"	EN 60079-7	2007[2)]
IEC 60079-11	-[1)]	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	2007[2)]
IEC 60079-14	2002	Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)	EN 60079-14	2003
IEC 60086-1	2000	Primary batteries - Part 1: General	EN 60086-1[3)]	2001
IEC 60112	-[1)]	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003[2)]
IEC 60127	Series	Miniature fuses	EN 60127	Series
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60623	2001	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells	EN 60623	2001

[1)] Undated reference.

[2)] Valid edition at date of issue.

[3)] EN 60086-1 is superseded by EN 60086-1:2007, which is based on IEC 60086-1:2006.

Publication	Year	Title	EN/HD	Year
IEC 60662 (mod)	1980	High pressure sodium vapour lamps	EN 60662[4)]	1993
IEC 60695-11-10	-[1)]	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	1999[2)]
IEC 61951-1	2003	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 1: Nickel-cadmium	EN 61951-1	2003
IEC 61951-2	2003	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells - Part 2: Nickel-metal hydride	EN 61951-2	2003
ISO 185	1988	Grey cast iron - Classification	-	-
ISO 965-1	1998	ISO general-purpose metric screw threads - Tolerances - Part 1: Principles and basic data	-	-
ISO 965-3	1998	ISO general-purpose metric screw threads - Tolerances - Part 3: Deviations for constructional threads	-	-
ISO 2738	1999	Sintered metal materials, excluding hard metals - Permeable sintered metal materials - Determination of density, oil content and open porosity	EN ISO 2738	1999
ISO 3864	1984	Safety colours and safety signs	-	-
ISO 4003	1977	Permeable sintered metal materials - Determination of bubble test pore size	EN 24003	1993
ISO 4022	1987	Permeable sintered metal materials - Determination of fluid permeability	EN ISO 4022	2006
ANSI/ASME B1.20.1	1983	Pipe threads, general purpose (inch)	-	-

[4)] EN 60662 includes A1:1986 (mod) + A2:1987 (mod) + A3:1990 (mod) to IEC 60662 (mod).

Annex ZZ
(informative)

Coverage of Essential Requirements of EC 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 EC Directive 94/9/EC:

- ER 1.0.1, ER 1.0.2, ER 1.0.3 (partly), ER 1.0.4 (partly)
- ER 1.1 (partly)
- ER 1.2.1 (partly), ER 1.2.2 (partly), ER 1.2.6, ER 1.2.8 (partly), ER 1.2.9
- ER 1.3.1 (partly), ER 1.3.4 (partly)
- ER 1.5.1
- ER 1.6.4 1st paragraph (partly)
- ER 2.0.2.1, ER 2.0.2.2 (partly), ER 2.0.2.3 (partly)
- ER 2.2.1.1, ER 2.2.1.2 (partly), ER 2.2.1.3 (partly)

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

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

IEC 60079-1

Edition 6.0 2007-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Explosive atmospheres –
Part 1: Equipment protection by flameproof enclosures "d"

Atmosphères explosives –
Partie 1: Protection du matériel par enveloppes antidéflagrantes «d»

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES –

Part 1: Equipment protection by flameproof enclosures “d”

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60079-1 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This sixth edition cancels and replaces the fifth edition published in 2003 and constitutes a technical revision.

This edition contains the following significant technical changes with regard to the previous edition:

a) revisions to Clause 5 regarding markings and conditions of safe use when a dimension of a flameproof joint is other than the relevant minimum or maximum;
b) revisions to Table 1 regarding maximum gap for flanged, cylindrical or spigot joints;
c) revisions to Table 4 regarding requirements for taper threaded joints;
d) revisions to Clause 10 regarding volume restrictions and test conditions associated with breathing and draining devices;
e) revisions to Clause 11 regarding requirements for fasteners, associated holes and blanking elements;
f) revisions to Clause 12 regarding material restrictions associated with zinc and zinc alloys;

g) revisions to Table 5 regarding conditions for the determination of maximum surface temperatures;
h) revisions to Clause 15 regarding the determination of explosion pressure (reference pressure);
i) revisions to Table 6 regarding the reduction in length of a threaded joint for non-transmission testing;
j) revisions to Table 7 regarding the test factors to increase pressure or test gap (i_E);
k) revisions to Table 8 regarding the minimum distance of obstructions from flange openings;
l) revisions to Clause 19 regarding tests for flameproofness;
m) revisions to Clause 20 regarding a tabulated collection of marking requirements;
n) revisions to Annex C regarding additional requirements for flameproof entry devices;
o) revisions to Annex D regarding empty flameproof enclosures as Ex components;
p) addition of a new Annex F regarding mechanical properties for screws and nuts; and
q) addition of a new Annex G regarding equipment protection levels for Ex equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
31/680/FDIS	31/692/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This standard is to be read in conjunction with IEC 60079-0:2004, *Electrical apparatus for explosive gas atmospheres – Part 0: General requirements.*

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 60079 series, under the general title *Explosive atmospheres* can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the new edition.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

EXPLOSIVE ATMOSPHERES –

Part 1: Equipment protection by flameproof enclosures “d”

1 Scope

This part of IEC 60079 contains specific requirements for the construction and testing of electrical equipment with the type of protection flameproof enclosure “d”, intended for use in explosive gas atmospheres.

This standard supplements and modifies the general requirements of IEC 60079-0. Where a requirement of this standard conflicts with a requirement of IEC 60079-0, the requirement of this standard will take precedence.

NOTE Equipment protection by flameproof enclosures “d” provides Equipment Protection Level (EPL) Gb. For further information, see Annex G.

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 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety*

IEC 60079-0:2004, *Electrical apparatus for explosive gas atmospheres – Part 0: General requirements*

IEC 60079-1-1, *Electrical apparatus for explosive gas atmospheres – Part 1-1: Flameproof enclosures “d” – Method of test for ascertainment of maximum experimental safe gap*

IEC 60079-7, E*xplosive atmospheres – Part 7: Equipment protection by increased safety “e”*

IEC 60079-11, E*xplosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”*

IEC 60079-14:2002, *Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)*

IEC 60086-1:2000, *Primary batteries – Part 1: General*

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 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60623:2001, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Vented nickel-cadmium prismatic rechargeable single cells*

IEC 60662:1980, *High-pressure sodium vapour lamps*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*