SVENSK STANDARD SS-EN 60079-1

| Fastställd | Utgåva | Sida | Ansvarig kommitté |
|---|---|---|---|
| 2007-08-13 | 2 | 1 (1+76) | SEK TK 31 |



# Explosiv atmosfär –
# Del 1: Utrustning i utförande med explosionstät kapsling "d"

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

Som svensk standard gäller europastandarden EN 60079-1:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60079-1:2007.

**Nationellt förord**

Europastandarden EN 60079-1:2007

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60079-1, Sixth edition, 2007 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden skall användas tillsammans med SS-EN 60079-0, utgåva 1, 2004.

Tidigare fastställd svensk standard SS-EN 60079-1, utgåva 1, 2004 och SS-EN 60079-1 C1, utgåva 1, 2006, gäller ej fr o m 2010-07-01.

ICS 29.260.20

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
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Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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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)



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.

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## 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). |

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# 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 -<br>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 -<br>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 -<br>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 -<br>Part 1: Principles and basic data | - | - |
| ISO 965-3 | 1998 | ISO general-purpose metric screw threads - Tolerances -<br>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).

# CONTENTS

# 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*

IEC 61951-1:2003, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Portable sealed rechargeable single cells – Part 1: Nickel-cadmium*

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*

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*

ISO 3864: 1984, *Safety colours and safety signs*

ISO 4003:1977, *Permeable sintered metal materials – Determination of bubble test pore size*

ISO 4022:1987, *Permeable sintered metal materials – Determination of fluid permeability*

ANSI/ASME B1.20.1-1983 (R2001), *Pipe threads, general purpose (inch)*