

INTERNATIONAL STANDARD

IEC
60079-0

Edition 3.1
2000-06

Edition 3:1998 consolidated with amendment 1:2000

Electrical apparatus for explosive gas atmospheres –

Part 0: General requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES –

Part 0: General requirements

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60079-0 has been prepared by technical committee 31: Electrical apparatus for explosive atmospheres.

This third edition cancels and replaces the second edition published in 1983 and constitutes a technical revision.

This International Standard is based on the text of European Standard EN 50014 (1992) published by CENELEC.

This consolidated version of IEC 60079-0 is based on the third edition (1998) [documents 31/248/FDIS and 31/252/RVD], and its amendment 1 (2000) [documents 31/322/FDIS and 31/331/RVD].

It bears the edition number 3.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

Annexes B and C form an integral part of this standard.

Annexes A and D are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES –

Part 0: General requirements

1 Scope

This part of IEC 60079 specifies the general requirements for construction, testing and marking of electrical apparatus, Ex cable entries and Ex components, intended for use in potentially explosive atmospheres of gas, vapour and mist.

This standard does not specify requirements for safety, other than those directly related to the explosion risk.

This standard is or will be supplemented or modified by the following parts of IEC 60079 concerning specific types of protection:

- IEC 60079-1: flameproof enclosures "d";
- IEC 60079-2: pressurized enclosures "p";
- IEC 60079-5: powder filling "q";
- IEC 60079-6: oil immersion "o";
- IEC 60079-7: increased safety "e";
- IEC 60079-11: intrinsic safety "i";
- IEC 60079-18: encapsulation "m";
- IEC 60079-22: caplights for mines susceptible to firedamp (under consideration).

This part of IEC 60079 and the parts of IEC 60079 mentioned above are not applicable to the construction of electromedical apparatus, shot-firing exploders, test devices for exploders and for shot-firing circuits.

NOTE 1 In addition to the types of protection listed above, IEC 60079-15 is applicable for use in a potentially explosive atmosphere.

NOTE 2 Apparatus not conforming with this standard or the standards listed in this clause may be considered safe by a national or other authorised body for use in potentially explosive atmospheres. In such cases, the apparatus is identified with the symbol "s".

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60079. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60079 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60034-5:1991, *Rotating electrical machines – Part 5: Classification of degrees of protection provided by enclosures of rotating electrical machines (IP code)*

IEC 60079-1:1990, *Electrical apparatus for explosive gas atmospheres – Part 1: Construction and verification test of flameproof enclosures of electrical apparatus*

IEC 60079-1A:1975, *Electrical apparatus for explosive gas atmospheres – Part 1: Construction and verification test of flameproof enclosures of electrical apparatus – First supplement: Appendix D: Method of test for ascertainment of maximum experimental safe gap*

IEC 60079-2:1983, *Electrical apparatus for explosive gas atmospheres – Part 2: Electrical apparatus, type of protection "p"*

IEC 60079-3:1990, *Electrical apparatus for explosive gas atmospheres – Part 3: Spark-test apparatus for intrinsically-safe circuits*

IEC 60079-4:1975, *Electrical apparatus for explosive gas atmospheres – Part 4: Method of test for ignition temperature*

IEC 60079-5:1997, *Electrical apparatus for explosive gas atmospheres – Part 5: Powder filling "q"*

IEC 60079-6:1995, *Electrical apparatus for explosive gas atmospheres – Part 6: Oil-immersion "o".*

IEC 60079-7:1990, *Electrical apparatus for explosive gas atmospheres – Part 7: Increased safety "e"*

IEC 60079-11:1991, *Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"*

IEC 60079-15:1987, *Electrical apparatus for explosive gas atmospheres – Part 15: Electrical apparatus with type of protection "n"*

IEC 60079-18:1992, *Electrical apparatus for explosive gas atmospheres – Part 18: Encapsulation "m"*

IEC 60079-19:1993, *Electrical apparatus for explosive gas atmospheres – Part 19: Repair and overhaul for apparatus used in explosive atmospheres (other than mines or explosives)*

IEC 60079-20:1996, *Electrical apparatus for explosive gas atmospheres – Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus*

IEC 60192:1973, *Low-pressure sodium vapour lamps*

IEC 60216-1:1990, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 1: General guidelines for ageing procedure and evaluation of test results*

IEC 60216-2:1990, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 2: Choice of test criteria*

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

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

IEC 60947-1:1996, *Low-voltage switchgear and controlgear – Part 1: General rules*

ISO 48:1994, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 178:1993, *Plastics – Determination of flexural properties*

ISO 179:1993, *Plastics – Determination of Charpy impact strength*

ISO 262:1973, *ISO general purpose metric screw threads – Selected sizes for screws, bolts and nuts*

ISO 273:1979, *Fasteners – Clearance holes for bolts and screws*

ISO 286-2:1988, *ISO system of limits and fits – Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 527-2:1993, *Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics*

ISO 965-1:1980, *ISO general purpose metric screw threads – Tolerances – Part 1: Principles and basic data*

ISO 965-2:1980, *ISO general purpose metric screw threads – Tolerances – Part 2: Limits of sizes for general purpose bolt and nut threads – Medium quality*

ISO 1817:1985, *Rubber, vulcanized – Determination of the effect of liquids*

ISO 1818:1975, *Vulcanized rubbers of low hardness (10 to 35 IRHD) – Determination of hardness*

ISO 4014:1988, *Hexagon head bolts – Product grades A and B*

ISO 4017:1988, *Hexagon head screws – Product grades A and B*

ISO 4026:1993, *Hexagon socket set screws with flat point*

ISO 4027:1993, *Hexagon socket set screws with cone point*

ISO 4028:1993, *Hexagon socket set screws with dog point*

ISO 4029:1993, *Hexagon socket set screws with cup point*

ISO 4032:1986, *Hexagon nuts, style 1 – Product grades A and B*

ISO 4762:1989, *Hexagon socket head cap screws – Product grade A*

ISO 4892-1:1994, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*