(PREVIEW)

Indian Standard

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 gas 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 apparatus in which the electrical circuits themselves are incapable *of* causing an explosion in the surrounding explosive atmospheres.

This standard is also applicable to electrical apparatus or parts of electrical apparatus located outside the explosive gas atmosphere or protected by another type of protection listed in IEC 60079-0, where the intrinsic safety of the electrical circuits in the explosive gas atmosphere may depend upon the design and construction of such electrical apparatus or parts of such electrical apparatus. The electrical circuits exposed to the explosive gas 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. The requirements for intrinsically safe concepts for fieldbus are provided in IEC 60079-27.

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 associated apparatus is placed in the explosive gas atmosphere, it must 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- Exclusion of specific clauses of IEC 60079-0

Clause or subclause of IEC 60079-0		**Intrinsically safe apparatus**	**Associated apparatus**
4.2.2	Group II - Surface temperature marking	Applies	Excluded
5.3	Maximum surface temperature	Applies	Excluded
5.4	Surface temperature and ignition temperature	Applies	Excluded
5.5	Small components	Applies	Excluded
6.3	Opening times	Excluded	Excluded
7.1.1	Applicability	Applies	Excluded
7.1.2	Specification of materials	Applies	Excluded

7.1.3	Plastic materials	Excluded	Excluded
7.2	Thermal endurance	Excluded	Excluded
7.3	Electrostatic charges on external non-metallic materials of enclosures	Applies	Excluded
7.3.2	Avoidance of a build-up electrostatic charge	Applies	Excluded
7.4	Threaded holes	Excluded	Excluded
8.1	Material composition	Excluded	Excluded
8.2	Threaded holes	Excluded	Excluded
9	Fasteners	Excluded	Excluded
10	Interlocking devices	Excluded	Excluded
11	Bushings	Excluded	Excluded
12	Materials used far cementing	Excluded	Excluded
14	Connection facilities and terminal compartments	Excluded	Excluded
15	Connection facilities for earthing or bonding conductors	Excluded	Excluded
16.5	Conductor temperature	Excluded	Excluded
17	Supplementary requirements for rotating electrical machines	Excluded	Excluded
18	Supplementary requirements for switchgear	Excluded	Excluded
19	Supplementary requirements for fuses	Excluded	Excluded
20	Supplementary requirements for plugs and sockets	Excluded	Excluded
21	Supplementary requirements for luminaires	Excluded	Excluded
22	Supplementary requirements for caplights and handlights	Excluded	Excluded
23.1	Batteries	Applies	Excluded
26.4	Tests of enclosures	Applies	Excluded
26.5.1	Temperature measurement	Applies	Excluded
26.5.2	Thermal shock test	Applies	Excluded
26.5.3	Small component ignition test	Applies	Excluded
26.6	Torque test for bushings	Excluded	Excluded
26.7*	Non-metallic enclosures or non-metallic parts of enclosures	Excluded	Excluded
26.8 *	Thermal endurance to heat	Excluded	Excluded
26.9*	Thermal endurance to cold	Excluded	Excluded
26.10*	Resistance to light	Excluded	Excluded
26.11*	Resistance to chemical agents for Group I electrical apparatus	Excluded	Excluded
26.12	Earth continuity	Excluded	Excluded
26.13	Surface resistance test of parts of enclosures or non-metallic materials	Applies	Excluded
26.14	Charging tests	Applies	Excluded
26.15	Measurement of capacitance	Applies	Excluded
Annex A	Ex cable glands	Excluded	Excluded

* indicates that these requirements apply for 6.1 2a) only.

2 Normative references

The following normative documents constitute provisions of this part of contain provisions which, through reference in this text, constitute provisions of this part of contain provisions which, through reference in this text, IEC 60079. For dated references, only the edition cited applies, For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

IEC 60079-25, *Electrical apparatus for explosive gas atmospheres – Part 25: Intrinsically safe systems*

IEC 60079-27, *Electrical apparatus for explosive* gas *atmospheres – Part* 27: *Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FNICO)*

IEC 60085, Electrical insulation – Thermal classification

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 enameled round copper wire, class 155*

IEC 60317-7, *Specifications for particular types of* winding wires - Part 7: polyimide enameled *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 60664-1:2002, *Insulation coordination for equipment within l*ow-voltage systems – Part 1: *Principles, requirements and tests* [1)]
Amendment 1 (2000)
Amendment 2 (2002)

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

ANSUUL 248-1, low-Voltage Fuses – Part 1: General Requirements