



National Differences For

UL 60079-1

**Standard for Explosive Atmospheres - Part 1: Equipment Protection by Flameproof Enclosures
'd'**

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National Differences For

UL 60079-1

Standard for Explosive Atmospheres - Part 1: Equipment Protection by Flameproof Enclosures 'd'

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Adoption of IEC 60079-1, Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures “d” (seventh edition, issued June 2014) as a new IEC-based UL standard, UL 60079-1 (IEC 60079-1:2014), with US National Differences.

This document provides a single listing of the National Differences included in the UL adoption of the corresponding IEC standard.

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Preface

This document provides a single listing of the technical National Differences included in the UL adoption of the corresponding IEC standard.

In its IEC-based standards, UL uses the notations indicated below to identify national difference type, and these types are additionally noted in this document. The standard may not use all types of these deviations.

D1 - These are deviations which are based on basic safety principles and requirements, elimination of which would compromise safety for U.S. consumers and users of products.

D2 - These are deviations based on safety practices. These are deviations for IEC requirements that may be acceptable, but adopting the IEC requirements would require considerable retesting or redesign on the manufacturer's part.

DC - These are deviations based on the component standards and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE - These are deviations based on editorial comments or corrections.

DR - These are deviations based on the national regulatory requirements.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

National Differences

1DV.1 DR Modification of Clause 1, first paragraph to replace with the following:

1DV.1.1 This part of IEC 60079 standard 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.

1DV.2 DR Addition of 1DV.2.1

1DV.2.1 Where references are made to IEC 60079 standards, the referenced requirements found in these standards shall apply as modified by any applicable U.S. National Differences.

2DV D1 Modification of Clause 2 references to replace with the following:

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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, Explosive atmospheres – Part 0: Equipment – General requirements~~

~~IEC 60079-7, Explosive atmospheres – Part 7: Equipment protection by increased safety “e”~~

~~IEC 60079-11, Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”~~

~~IEC 60079-15, Explosive atmospheres – Part 15: Equipment protection by type of protection “n”~~

IEC 60127 (all parts), Miniature fuses

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

ISA 60079-7, Explosive atmospheres – Part 7: Equipment protection by increased safety “e”

ISA 60079-11, Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”

ISA 60079-15, Explosive atmospheres – Part 15: Equipment protection by type of protection “n”

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

ISO 965-3, ISO general-purpose metric screw threads – Tolerances – Part 3: Deviations for constructional screw threads

ISO 2738, Sintered metal materials, excluding hardmetals – Permeable sintered metal materials – Determination of density, oil content and open porosity

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

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

ANSI/ASME B1.20.1, Pipe threads, general purpose (inch)

UL 94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

UL 2225 Metal-Clad Cables and Cable-Sealing Fittings for Use in Hazardous (Classified) Locations

UL 60079-0 Explosive Atmospheres Part 0: Equipment – General Requirements

UL 60079-7 Explosive Atmospheres – Part 7: Equipment Protection by Increased Safety "e"

UL 60079-11 Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety "i"

UL 60079-15 Explosive Atmospheres – Part 15: Equipment Protection by Type of Protection "n"

3.7DV DE Modification of Clause 3.7 to replace with the following:

maximum experimental safe gap (for an explosive mixture) *MESG* maximum gap of a joint of 25 mm in width which prevents any transmission of an explosion during 10 tests made under the conditions specified in IEC 60079-20-1 [2]

NOTE 1 to entry: ANSI/NFPA 497 also includes information on (MESG) including a table of values.

3.16DV DR Modification of Clause 3.16 to replace with the following:

3.16.1DV Ex equipment blanking element threaded blanking elements for Group I or II, and non-threaded blanking elements for Group I, that

- are intended to close unused entries,
- are tested separately from the equipment enclosure,
- have an equipment certificate, and
- are intended to be fitted to the equipment enclosure without further consideration

Note 1 to entry: This does not preclude a component certificate for Ex component blanking elements in accordance with IEC UL 60079-0. ~~Examples of blanking elements are shown in Figure C.1.~~

Note 2 to entry: Non-threaded blanking elements are not equipment for Group II applications.

5.1DV.1 DR Modification of Clause 5.1, to replace with the following:

All flameproof joints, whether permanently closed or designed to be opened from time to time, shall comply, in the absence of pressure, with the appropriate requirements of Clause 5.

The design of joints shall be appropriate to the mechanical constraints applied to them.

The dimensions given in 5.2 to 5.5 specify the essential parameters of flamepaths. In instances where any of the following apply (for example, in order to comply with the test for non-transmission of an internal ignition):

- the minimum length of the flameproof joint as stated by the documentation is greater than the relevant minimum; or
- the maximum gap of the flameproof joint as stated by the documentation is less than the relevant maximum; or
- the minimum number of threads engaged for the flameproof joint as stated by the documentation is more than the relevant minimum;

NOTE 1 IEC UL 60079-0 defines the documentation as the documents that give a full and correct specification of the explosion safety aspects of the electrical equipment.

~~the equipment certificate number shall include the "X" suffix in accordance with the shall be marked according to marking requirements of IEC UL 60079-0 to indicate that there are and the specific conditions of use listed in the instructions on the certificate and in the. The instructions shall detail one of the following:~~

- dimensions of the flameproof joints shall be detailed; or
- specific drawing referenced that details the dimensions of the flameproof joints; or
- specific guidance noted to contact the original manufacturer for information on the dimensions of the flameproof joints; or

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- specific indication that the flameproof joints are not intended to be repaired.

NOTE 2 IEC UL 60079-0 permits the use of an advisory marking on the equipment as an alternative to the conditions of use in the instructions for the requirements for the “X” marking.

The surface of joints may be protected against corrosion.

Coating with paint or powder-coat finish is not permitted. Other coating material may be used if the material and application procedure have been shown not to adversely affect the flameproof properties of the joint.

Corrosion inhibiting grease, such as petrolatum or soap-thickened mineral oils, may be applied to joint surfaces before assembly. The grease, if applied, shall be of a type that does not harden because of ageing, does not contain an evaporating solvent, and does not cause corrosion of the joint surfaces. Verification of suitability shall be in accordance with the grease manufacturer's specifications.

Joint surfaces may be electroplated. The metal plating, if applied, shall be in accordance with the following:

- if not more than 0,008 mm thick, no additional consideration is necessary;
- if more than 0,008 mm thick, then the maximum gap without the plating shall still be in accordance with the applicable joint requirements, and shall be tested for flame transmission based on the gap dimension that would exist without the plating.

Note: Anodizing of aluminum enclosures is not considered to be plating.

A thread locking compound shall be permitted as a sealant on threaded joints that are not intended to be opened after assembly.

5.2.9DV.1 DR Modification of Clause 5.2.9 to replace with the following:

5.2.9DV.1.1 A multi-step joint shall consist of not less than 3 adjacent segments where the path changes direction not less than two times by $90^\circ \pm 5^\circ$.

Multi-step joints need not comply with the requirements of Tables 2 or 3 but shall satisfy the test requirements of 15.3 with the test length of each segment reduced to not more than 75 % of the manufacturer's specified design minimum lengths.

For flameproof enclosures that incorporate multi-step joints, the equipment certificate number shall include the "X" suffix be marked in accordance with the marking requirements of IEC UL 60079-0 and the specific conditions of use listed on the certificate instructions shall detail one of the following:

- dimensions of the flameproof joints shall be detailed; or
- specific drawing referenced that details the dimensions of the flameproof joints; or
- specific guidance noted to contact the original manufacturer for information on the dimensions of the flameproof joints; or
- specific indication that the flameproof joints are not intended to be repaired.

NOTE 1 IEC UL 60079-0 permits the use of an advisory marking on the equipment as an alternative to the conditions of use in the instructions for the requirements for the "X" marking .

NOTE 2 Multi-step joints are distinct from labyrinth joints on rotating shafts as addressed in this standard (see 8.1.3).

Table 5DV DR Modification of Table 5DV to replace with the following:

Table 5DV – Taper threaded joints ^{a, c}

Threads provided on each part	≥ 5 ^b
^a Internal and external thread shall have the same nominal size. ^b Threads shall conform to the NPT requirements of ANSI/ASME B1.20.1 and shall be made-up wrench tight. External threaded parts shall be provided with: 1) an effective thread length not less than the "L2" dimension; and 2) if a shoulder is provided, a length not less than the "L4" dimension between the face of the shoulder and end of the thread.	
Internal threads shall gauge at "flush" to "2-3-1/2 turns large" using an L1 plug-gauge.	
^c Where the tapered threaded joint consists of both the internal and external threaded parts with at least 4,5 fully engaged threads, the requirements of footnote b in this table need not be applied.	
NOTE See Annex C for tapered thread requirements applicable to flameproof entry devices.	