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Explosive atmospheres –
Part 26: Equipment with Equipment Protection Level (EPL) Ga

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COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EXPLOSIVE ATMOSPHERES –

Part 26: Equipment with Equipment Protection Level (EPL) Ga

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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This Redline version is not an official IEC Standard and is intended only to provide the user with an indication of what changes have been made to the previous version. Only the current version of the standard is to be considered the official document.

This Redline version provides you with a quick and easy way to compare all the changes between this standard and its previous edition. A vertical bar appears in the margin wherever a change has been made. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 60079-26 has been prepared by IEC technical committee 31: Equipment for explosive atmospheres.

This third edition cancels and replaces the second edition published in 2006 and constitutes a technical revision.

This edition includes the following significant changes with respect to the previous edition:

		Type		
Changes	**Clause**	**Minor and editorial changes**	**Extension**	**Major technical changes**
Notes deleted	1	X		
Reference to associated apparatus deleted	1	X		
Additional normative references included	3	X		
Requirements against mechanical and electrostatic ignition hazards deleted (now covered in IEC 60079-0)	4.1	X		
Requirement for separation element detailed regarding external influences	4.1.3.2	X		
Intrinsic safety Ex ia as single type of protection including associated apparatus deleted (now covered by EPL)	4.2.2 (ed.2)	X		
Encapsulation Ex ma as single type of protection deleted (now covered by EPL)	4.2.3 (ed.2)	X		
Conditions a) and b) linked with an “and” , therefore requirement of “flameproof joint” deleted in following clause. Both requirements already covered by separation elements and standardised process connections.	4.3	X		
Process connection requires a sufficiently tight joint: IP66 added alternatively to IP67	4.3		X	
Requirement for isolated conductive components deleted (now covered in IEC 60079-0)	4.4 (ed.2)	X		
Requirements for non-conductive enclosures deleted (now covered in IEC 60079-0)	4.5 (ed.2)	X		
Test of partition walls according to 4.1.3.2 b) is specified in more detail	5.2			C1
Marking example for associated apparatus deleted	6.2 b)	X		
Note 3 with an additional example added	6.2	X		
Specification of material of partition wall required in instructions (also required in 4.1.3.2)	7	X		
Alternative risk assessment method deleted (is now generally introduced)	AnnexA (ed.2)	X		

NOTE The technical changes referred to include the significance of technical changes in the revised IEC Standard, but they do not form an exhaustive list of all modifications from the previous version.

Explanation of the types of changes:

A) Definitions

1) Minor and editorial changes:

- Clarification
- Decrease of technical requirements
- Minor technical change
- Editorial corrections

These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change, or a reduction in level of existing requirement.

2) Extension: Addition of technical options

These are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements for equipment that was fully compliant with the previous standard.Therefore, these will not have to be considered for products in conformity with the preceding edition.

3) Major technical changes:

- addition of technical requirements
- increase of technical requirements

These are changes to technical requirements (addition, increase of the level or removal) made in a way that a product in conformity with the preceding edition will not always be able to fulfil the requirements given in the later edition. These changes have to be considered for products in conformity with the preceding edition. For these changes additional information is provided in Clause B below.

NOTE These changes represent current technological knowledge. However, these changes should not normally have an influence on equipment already placed on the market.

B) Information about the background of 'Major technical changes'

C1: Introduction of type tests for separation elements according to "4.1.3.2 b)"

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

FDIS	Report on voting
31/1146/FDIS	31/1155/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

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EXPLOSIVE ATMOSPHERES –

Part 26: Equipment with Equipment Protection Level (EPL) Ga

1 Scope

This part of IEC 60079 specifies ~~the particular~~ alternative requirements for construction, test and marking for electrical equipment that provides Equipment Protection Level (EPL) Ga when single standardised Types of Protection (e.g. Ex “ia” , Ex “ma”, Ex “da”) cannot be applied. This standard also applies to equipment mounted across a boundary where different Equipment Protection Levels may be required.

EXAMPLE: Equipment installed in the wall of a storage vessel containing Zone 0 (requiring EPL Ga) inside an area defined as Zone 1 (requiring EPL Gb).

This electrical equipment, within the operational parameters specified by the manufacturer, ensures a very high Level of Protection that includes rare ~~faults~~ malfunctions related to the equipment or two ~~faults~~ malfunctions occurring independently of each other.

NOTE A malfunction may result from a failure of the component parts of the electrical equipment or from anticipated externally applied influences. Two independent malfunctions which may occur more frequently and which, separately, would not create an ignition hazard but which, in combination, could create a potential ignition hazard, ~~should be~~ are regarded as occurring together to form a rare ~~fault~~ malfunction.

~~NOTE 2 This electrical equipment is intended for use in zone 0 hazardous areas, in which explosive gas atmospheres caused by mixtures of air and gases, vapours or mists under normal atmospheric conditions are present continuously, for long periods or frequently.~~

~~This standard also applies to equipment mounted across a boundary where different protection levels may be required.~~

~~EXAMPLE: In the wall of a storage vessel containing zone 0 with an ambient defined as zone 1.~~

~~This standard also applies to equipment installed in an area requiring a lower protection level, but electrically connected to equipment with equipment protection level (EPL) Ga (associated apparatus).~~

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 takes precedence. ~~and the requirements of the standardized types of protection, in accordance with the IEC 60079 series, to adapt the level of safety provided by those standards in order to provide EPL Ga.~~

~~NOTE 3 In designing equipment for operation in explosive gas atmospheres under conditions other than the atmospheric conditions given in IEC 60079-0, this standard may be used as a guide. However, additional testing is recommended related specifically to the intended conditions of use. This is particularly important when the types of protection ‘Flameproof enclosures’ (IEC 60079-1) and ‘Intrinsic safety’ (IEC 60079-11) are applied.~~

~~NOTE 4 The classification of hazardous areas in zones is defined in IEC 60079-10.~~

~~NOTE 5 There may be other non-electrical sources of ignition (for example ultrasonic, optical or ionizing radiation) that are not addressed by this standard; these should also be taken into consideration (see, for example, EN 1127-1).~~

~~NOTE 6 This concept provides equipment protection level (EPL) Ga. For further information, see Annex A.~~

2 Normative references

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 60079-0~~:2004~~, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-1, *Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"*

~~IEC 60079-10, *Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas*~~

IEC 60079-11, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

~~IEC 60079-18, *Electrical apparatus for explosive gas atmospheres – Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus*~~

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

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

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Explosive atmospheres –
Part 26: Equipment with Equipment Protection Level (EPL) Ga

Atmosphères explosives –
Partie 26: Matériel d'un niveau de protection du matériel (EPL) Ga



IEC 60079-26:2014-10(en-fr)

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NOTE A malfunction may result from a failure of the component parts of the electrical equipment or from anticipated externally applied influences. Two independent malfunctions which may occur more frequently and which, separately, would not create an ignition hazard but which, in combination, could create a potential ignition hazard, are regarded as occurring together to form a rare malfunction.

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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ATMOSPHÈRES EXPLOSIVES –

Partie 26: Matériel d'un niveau de protection du matériel (EPL) Ga

AVANT-PROPOS

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La Norme internationale IEC 60079-26 a été établie par le comité d'études 31 de l'IEC: Matériels pour atmosphères explosives.

Cette troisième édition annule et remplace la deuxième édition parue en 2006 et constitue une révision technique.

Cette édition inclut les modifications significatives suivantes par rapport à l'édition précédente:

		Type		
Modifications	**Article**	**Modifications mineures et éditoriales**	**Extension**	**Modifications techniques majeures**
Suppressions de notes	1	X		
Suppression de référence aux matériels associés	1	X		
Inclusion de références normatives supplémentaires	3	X		
Suppression des exigences relatives aux dangers d'allumage d'origine mécanique ou électrostatique (à présent couvertes par l'IEC 60079-0)	4,1	X		
Apport de détails pour l'exigence relative à l'élément de séparation concernant les influences externes	4.1.3.2	X		
Suppression de la sécurité intrinsèque Ex ia comme mode unique de protection y compris le matériel associé (désormais couverte par EPL)	4.2.2 (éd.2)	X		
Suppression de l'encapsulation Ex ma comme mode unique de protection (désormais couverte par EPL)	4.2.3 (éd.2)	X		
Conditions a) et b) reliées par un "et", d'où suppression de l'exigence de "joint antidéflagrant " dans l'article suivant. Les deux exigences étant déjà traitées par les éléments de séparation et les connexions intervenant dans les opérations normalisées.	4.3	X		
La connexion intervenant pendant l'opération nécessite un joint suffisamment étanche: Ajout de IP66 en variante à IP67	4.3		X	
Suppression de l'exigence relative aux composants conducteurs isolés (désormais couverte par l'IEC 60079-0)	4.4 (éd.2)	X		
Suppression des exigences relatives aux enveloppes non conductrices (désormais couvertes par l'IEC 60079-0)	4.5 (éd.2)	X		
L'essai des cloisons de séparation selon le 4.1.3.2 b) est davantage précisé	5.2			C1
Suppression des exemples de marquage pour le matériel associé	6.2 b)	X		
Ajout d'une Note 3 comportant un exemple supplémentaire	6.2	X		
Spécification de matériau de cloison de séparation exigée dans les instructions (également exigée en 4.1.3.2)	7	X		
Suppression de la méthode alternative d'évaluation des risques (elle est désormais généralement introduite)	Annexe A (éd.2)	X		

NOTE Les modifications techniques auxquelles il est fait référence comprennent la signification des modifications techniques dans la Norme IEC révisée, mais ne constituent pas une liste exhaustive de toutes les modifications apportées par rapport à la version précédente.

Explication des types de modifications:

A) Définitions

1) Modifications mineures et éditoriales:

- Clarification
- Diminution des exigences techniques
- Modification technique mineure
- Corrections éditoriales

Il s'agit de modifications éditoriales ou de modifications techniques mineures apportées aux exigences. Elles comprennent les modifications de formulations pour clarifier les exigences techniques sans aucune modification technique, ou une réduction du niveau des exigences existantes.

2) Extension: Ajout d'options techniques

Il s'agit de modifications qui ajoutent de nouvelles exigences techniques ou modifient les exigences techniques existantes, de telle manière que de nouvelles options sont données, mais sans augmenter les exigences pour les matériels qui étaient totalement conformes à la norme précédente. Par conséquent, celles-ci ne devront pas être prises en compte pour les produits conformes à l'édition précédente.

3) Modifications techniques majeures:

- ajout d'exigences techniques
- augmentation d'exigences techniques

Il s'agit de modifications apportées aux exigences techniques (ajout, augmentation du niveau ou suppression), de telle manière qu'un produit conforme à l'édition précédente ne pourra pas toujours satisfaire aux exigences données dans la dernière édition. Ces modifications doivent être prises en compte pour les produits conformes à l'édition précédente. Concernant ces modifications, des informations supplémentaires sont données dans l'article B ci-dessous.

NOTE Ces modifications représentent les connaissances technologiques actuelles. Il convient néanmoins que ces modifications n'aient en principe pas d'influence sur les matériels déjà commercialisés.

B) Informations de base concernant les ‘modifications techniques majeures’

C1: Introduction d'essais de type relatifs aux éléments de séparation selon le“4.1.3.2 b)”

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
31/1146/FDIS	31/1155/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

Cette publication a été rédigée selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 60079, publiées sous le titre général *Atmosphères explosives*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "http://webstore.iec.ch" dans les données relatives à la publication recherchée. A cette date, la publication sera

- reconduite,
- supprimée,
- remplacée par une édition révisée, ou
- amendée.

ATMOSPHÈRES EXPLOSIVES –

Partie 26: Matériel d'un niveau de protection du matériel (EPL) Ga

1 Domaine d'application

La présente partie de l'IEC 60079 spécifie les exigences alternatives relatives à la construction, aux essais et au marquage du matériel électrique fournissant le niveau de protection du matériel (EPL, *Equipment Protection Level*) Ga lorsque des types normalisés uniques de Protection (comme par ex. Ex “ia” , Ex “ma”, Ex “da”) ne peuvent pas être appliqués. La présente norme s’applique au matériel installé en chevauchement sur des emplacements pour lesquels différents niveaux de protection du matériel peuvent être exigés.

EXEMPLE: Matériel installé dans la cloison d'un conteneur de stockage contenant une Zone 0 (exigeant l'EPL Ga) dans un emplacement défini comme étant une Zone 1 (exigeant l'EPL Gb).

Ce matériel électrique assure, dans les limites des paramètres de fonctionnement spécifiés par le constructeur, un très haut niveau de protection prenant en compte le cas de rares dysfonctionnements liés au matériel, ou d’apparition simultanée de deux dysfonctionnements indépendants l’un de l’autre.

NOTE Un dysfonctionnement peut résulter d’une défaillance d'un composant du matériel électrique ou d’une influence externe prévisible. Deux dysfonctionnements indépendants qui peuvent apparaître plus fréquemment et qui, séparément, ne créeraient pas de risque d’allumage, mais qui, ensemble, pourraient créer un risque d’allumage, sont considérés dans leur conjonction comme formant un dysfonctionnement rare.

La présente norme complète et modifie les exigences générales de l'IEC 60079-0. Lorsqu'une exigence de la présente norme entre en contradiction avec une exigence de l'IEC 60079-0, l’exigence de la présente norme prévaut.

2 Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l’édition citée s’applique. Pour les références non datées, la dernière édition du document de référence s’applique (y compris les éventuels amendements).

IEC 60079-0, *Atmosphères explosives – Partie 0: Matériel – Exigences générales*

IEC 60079-1, *Atmosphères explosives – Partie 1: Protection du matériel par enveloppes antidéflagrantes "d"*

IEC 60079-11, *Atmosphères explosives – Partie 11: Protection de l'équipement par sécurité intrinsèque "i"*

IEC 60695-11-10, *Essais relatifs aux risques du feu – Partie 11-10: Flammes d'essai – Méthodes d'essai horizontal et vertical à la flamme de 50 W*

IEC 60529, *Degrés de protection procurés par les enveloppes (Code IP)*