

საქართველოს სტანდარტი

ფეთქებადი გარემო - ნაწილი 1: აფეთქებისაგან დამცავი აღჭურვილობა "d"
(IEC 60079-1:2014)

საქართველოს სტანდარტებისა და
მეტროლოგიის ეროვნული სააგენტო
თბილისი

სსტ ენ 60079-1:2014/2015

საინფორმაციო მონაცემები

1 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს 2015 წლის 27 მარტის № 21 და 2015 წლის 10 თებერვლის № 9 განკარგულებებით

2 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 60079-1:2014 „ ფეთქებადი გარემო - ნაწილი 1: აფეთქებისაგან დამცავი აღჭურვილობა "d" IEC 60079-1:2014“

3 პირველად

4 რეგისტრირებულია საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2015 წლის 27 მარტი №268-1.3-7029

აკრძალულია ამ სტანდარტის გადაცემა მესამე პირებისათვის ან/და მისი სხვა ფორმით გავრცელება

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

English Version

Explosive atmospheres - Part 1: Equipment protection by
flameproof enclosures "d"
(IEC 60079-1:2014)

Atmosphères explosives - Partie 1: Protection du matériel
par enveloppes antidéflagrantes "d"
(IEC 60079-1:2014)

Explosionsgefährdete Bereiche - Teil 1: Geräteschutz
durch druckfeste Kapselung "d"
(IEC 60079-1:2014)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 31/1111/FDIS, future edition 7 of IEC 60079-1, prepared by IEC/TC 31 "Equipment for explosive atmospheres" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60079-1:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-05-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-08-01

This document supersedes EN 60079-1:2007.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 60079-1:2014 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|----------------------|-------------|---|--------------------|-------------|
| IEC 60061 | - | Lamp caps and holders together with gauges for the control of interchangeability and safety | - | - |
| IEC 60079-0 (mod) | - | Explosive atmospheres - Part 0: Equipment - General requirements | EN 60079-0 +A11 | - 2013 |
| IEC 60079-7 | - | Explosive atmospheres - Part 7: Equipment protection by increased safety "e" | EN 60079-7 | - |
| IEC 60079-11 | - | Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" | EN 60079-11 | - |
| IEC 60079-15 | - | Explosive atmospheres - Part 15: Equipment protection by type of protection "n" | EN 60079-15 | - |
| IEC 60127 | series | Miniature fuses | EN 60127 | series |
| 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 | EN ISO 2738 | - |
| ISO 4003 | - | Permeable sintered metal materials - Determination of bubble test pore size | EN 24003 | - |
| ISO 4022 | - | Permeable sintered metal materials - Determination of fluid permeability | EN ISO 4022 | - |
| ANSI/ASME B 1.20.1 - | - | | - | - |

საინფორმაციო ნაწილი. სრული ტექსტის სახანავედ შეიძინეთ სტანდარტი.

Annex ZY (informative)

Significant changes between this European Standard and EN 60079-1:2007

This European Standard supersedes EN 60079-1:2007.

The significant changes with respect to EN 60079-1:2007 are as listed below.

| Significant Changes | Clause | Type | | |
|--|------------------|-----------------------------|-----------|-------------------------|
| | | Minor and editorial changes | Extension | Major technical changes |
| <i>Normative references</i> (Removal of the edition date from the reference for 60079-0) | 2 | X | | |
| <i>Requirements for level of protection "da"</i> (Catalytic sensors for combustible gas detectors) | 4.2 | | X | |
| Requirements for level of protection "dc" ("Enclosed break" devices from IEC 60079-15) | 4.4, 15.5 | X | | |
| Flameproof joints, General requirements (Documentation clarification and examples of corrosion inhibiting grease) | 5.1 | X | | |
| Flameproof joints, General requirements (Specific Conditions of Use that joints are not intended to be repaired) | 5.1 | | X | |
| Flameproof joints, General requirements (Electroplating more than 0.008 mm think) | 5.1 | | X | |
| Non-threaded joints, Gap (<i>i</i>) (Intentional gaps between surface for flanged joints) | 5.2.2 | X | | |
| Serrated joints (Use and test requirements) | 5.2.8 | X | | |
| Multi-step joints (Not less than 3 adjacent segments and two path changes) | 5.2.9 | | X | |
| Minimum width of joint and maximum gap for enclosures of groups IIA and IIB (Maximum gaps for flanged, cylindrical or spigot joints of 9,5 mm minimum width and volume greater than 2,000 cm ³) | Table 2 | | X | |
| Minimum width of joint and maximum gap for enclosures of groups I, IIA, IIB and IIC (ISO 80000-1 for constructional value rounding) | Table 2, Table 3 | X | | |
| Cylindrical threaded joints (ISO 965-1 standard in respect of thread form or quality of fit) | Table 4 | X | | |
| Taper threaded joints (External and internal thread construction) | Table 5 | X | | |
| Cemented joints (Supplemental mechanical means of securement) | 6.1.2 | | | C1 |
| Cemented joints (Evaluation criteria if there is leakage) | 6.1.2 | | X | |
| Fused glass joints (Glass-to-metal joints) | 6.2 | | X | |

| Significant Changes | Clause | Type | | |
|--|-----------|-----------------------------|-----------|-------------------------|
| | | Minor and editorial changes | Extension | Major technical changes |
| Thermal tests of breathing and draining devices (Temperature class based on external surface temperature after the 10 min test period) | 10.9.3.2 | X | | |
| Test of the ability of the breathing and draining device to withstand pressure (Relocated from before thermal tests to after the non-transmission test) | 10.9.3.4 | X | | |
| Ex component certificate (Service temperature range for non-metallic enclosures per IEC 60079-0) | 10.9.4 | X | | |
| Fasteners and openings (Relocation of blanking element content to Clauses 13.8 and C.2.3) | 11 | X | | |
| Fasteners and openings, Property class or yield stress (Certificate specific condition of use) | 11.3 | X | | |
| Fasteners and openings (Openings in the wall of the enclosure) | 11.8 | X | | |
| Materials (Material limitation in acetylene atmospheres) | 12.8 | | | C2 |
| Entries for flameproof enclosures, General (Metric and NPT threaded entries) | 13.1 | X | | |
| Entries for flameproof enclosures, General (Group I non-threaded joints) | 13.1 | | X | |
| Entries for flameproof enclosures, Non-threaded holes (Group I application) | 13.3 | | X | |
| Entries for flameproof enclosures, Cable glands (Group I application) | 13.4 | | X | |
| Cable glands, Conduit sealing devices (Documentation to facilitate mounting) | 13.4,13.5 | X | | |
| Plugs and sockets and cable couplers (Load requirement for arc-quenching test) | 13.6.4 | | | C3 |
| Bushings (Documentation to facilitate mounting) | 13.7 | X | | |
| Blanking elements (Relocated from Clause 11) | 13.8 | X | | |
| Verification and tests (Maximum surface temperature conditions) | Table 6 | X | | |
| Type tests (Sequence and number of samples for tests) | 15 | X | | |
| Determination of explosion pressure, General (Devices that can cause turbulence) | 15.2.2.2 | X | | |
| Determination of explosion pressure, General (Number of tests for Group IIC) | 15.2.2.2 | X | | |
| Determination of explosion pressure, General (Pressure pilling for Group IIB) | 15.2.2.4 | X | | |
| Determination of explosion pressure, General (Equipment marked for a single gas) | 15.2.2.5 | X | | |
| Overpressure test, General (Low ambient overpressure tests not required) | 15.2.3 | X | | |

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

| Significant Changes | Clause | Type | | |
|---|-------------------|-----------------------------|-----------|-------------------------|
| | | Minor and editorial changes | Extension | Major technical changes |
| Overpressure test – First method (static) <i>(3 times option when routine batch testing)</i> | 15.2.3.2 | | X | |
| Overpressure test – First method (static) <i>(Adjustment for low ambient due to small size of equipment)</i> | 15.2.3.2 | | X | |
| Overpressure test – Second method (dynamic) <i>(Number of tests to be made)</i> | 15.2.3.3 | X | | |
| Test for non-transmission of an internal ignition <i>(Clarification regarding grease)</i> | 15.3 | X | | |
| Reduction in length of a threaded joint for non-transmission test <i>(ISO 965-1 and 965-3 standards in respect of thread form and quality of fit)</i> | Table 9 | X | | |
| Test factors to increase pressure or test gap <i>(Group IIC adjustments for elevated ambients)</i> | Table 10 | X | | |
| <i>Test for non-transmission of an internal ignition, Groups I, IIA and IIB (Number of tests to be made)</i> | 15.3.2.3 | X | | |
| <i>Test for non-transmission of an internal ignition, Group IIC testing by increased gap (Number of tests to be made)</i> | 15.3.3.2 | X | | |
| <i>Test for non-transmission of an internal ignition, Group IIC (Oxygen enrichment of test gases)</i> | 15.3.3.4 | | X | |
| Thermal tests of enclosures with breathing and draining devices <i>(Temperature class based on external surface temperature after the 10 min test period)</i> | 15.4.3.1 | X | | |
| Tests for “dc” devices <i>(“Enclosed break” devices from IEC 60079-15)</i> | 15.5 | | X | |
| Routine tests, General <i>(Adjustment for low ambient due to small size of equipment)</i> | 16.1.2 | | X | |
| Routine tests, General <i>(Options when second method is chosen)</i> | 16.1.3 | X | | |
| Routine tests, General <i>(Welded joint inspection options)</i> | 16.3 | | X | |
| Routine tests, General <i>(Allowance for batch testing)</i> | 16.6 | | X | |
| Switchgear for Group I <i>(Clarifying need for compliance with EPL Mb types of protection)</i> | 17.2.2, 17.2.3 | X | | |
| Non-metallic enclosures and non-metallic parts of enclosures, General <i>(Exception for cemented joints)</i> | 19.1 | X | | |
| Non-metallic enclosures and non-metallic parts of enclosures, Resistance to tracking and creepage distances <i>(Reference to both IEC 60079-7 and or IEC 60079-15)</i> | 19.2 | | X | |
| Non-metallic enclosures and non-metallic parts of enclosures, Requirements for type tests <i>(Clarification of test sequence)</i> | 19.3 | X | | |

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

| Significant Changes | Clause | Type | | |
|--|---------------------|-----------------------------|-----------|-------------------------|
| | | Minor and editorial changes | Extension | Major technical changes |
| Instructions <i>(Indication that repair of flamepaths is not intended)</i> | 21 | | X | |
| Bushings <i>(Documentation regarding numbers of cores)</i> | C.2.1.4 | X | | |
| Bushings <i>(Criteria for non-transmission test)</i> | C.2.1.4 | X | | |
| Bushings <i>(Evaluation criteria if there is leakage)</i> | C.2.1.4 | | X | |
| Flameproof joints, Threaded joints <i>(Requirement options)</i> | C.2.2.1 | X | | |
| Flameproof joints, Non-threaded joints <i>(Group I application)</i> | C.2.2.2 | | X | |
| Constructional requirements for Ex blanking elements <i>(Relocated from Clause 11)</i> | C.2.3.1 | X | | |
| Constructional requirements for Ex blanking elements <i>(Metric and NPT Ex blanking elements)</i> | C.2.3.2, C.2.3.3 | X | | |
| Constructional requirements for Ex blanking elements <i>(Group I non-threaded construction)</i> | C.2.3.4 | | X | |
| Sealing test, General <i>(Allowance for re-tightening)</i> | C.3.1.1 | X | | |
| Cable glands and conduit sealing devices with sealing ring <i>(Mandrel to be corrosion-resistant metal)</i> | C.3.1.2 | X | | |
| Type tests for Ex blanking elements, Torque test <i>(Test-block to be steel)</i> | C.3.3.1 | X | | |
| Tightening torque values <i>(Addition of < 16 mm thread size)</i> | Table C.1 | | X | |
| Tightening torque values <i>(Addition of NPT thread sizes)</i> | Table C.2 | | X | |
| Ex component enclosure requirements <i>(Markings content)</i> | D.3.8 | | | C4 |
| Ex component enclosure requirements <i>(Certificate content)</i> | D.3.10 | | X | |
| Utilization of an Ex component enclosure certificate to prepare an equipment certificate, Procedure <i>(Devices that can create significant turbulence)</i> | D.4.1 | | X | |
| Acceptable primary cells <i>(Addition of Type B cells)</i> | Table E.1 | | X | |
| Acceptable primary cells <i>(Removal of Type T cells)</i> | Table E.1 | | | C5 |
| Acceptable secondary cells <i>(Addition of Lithium type cells)</i> | Table E.2 | | X | |
| Prevention of excessive temperature and cell damage <i>(Application of IEC 60079-11 requirement)</i> | E.4.1.2 | X | | |
| Prevention of inadvertent charging of a battery by other voltage sources in the enclosure <i>(Construction not requiring additional protection)</i> | E.4.3 | | X | |

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

| Significant Changes | Clause | Type | | |
|---|---------|-----------------------------|-----------|-------------------------|
| | | Minor and editorial changes | Extension | Major technical changes |
| Recharging of secondary cells inside flameproof enclosures (Additional battery options) | E.5.1 | | X | |
| Introduction of an alternative risk assessment method encompassing equipment protection levels' for Ex equipment (Removal of previous Informative Annex) | Annex G | X | | |
| Additional requirements for Flameproof enclosures with an internal source of release (containment system) (Addition of new Normative Annex) | Annex G | | X | |
| Requirements for machines with flameproof "d" enclosures fed from converters (Addition of new Normative Annex) | Annex H | | X | |

Explanation of the Types of Significant 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:

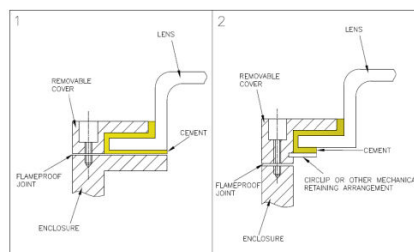
- addition of technical requirements
- increase of technical requirements

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 – Supplemental mechanical means of securing the cemented joint shall not be defeated by the opening of doors or covers that are intended to be opened during installation or maintenance. For example, in the images below for a luminaire incorporating a cemented joint between the lens and the enclosure cover, the construction shown in the second image would be in accordance with this requirement, while the construction shown in the first image would not.



C2 – Addition of material limitations of enclosures of equipment and enclosures of Ex components for external mounting, if constructed of copper or copper alloys, when used in explosive gas atmospheres containing acetylene (12.8).

C3 – Addition of power factor requirement for evaluating the ability of a plug and socket to remain flameproof during the arc-quenching period while opening a test circuit (13.6.4).

C4 – Addition of marking requirements for Ex component enclosures, in addition to the requirements for marking of Ex components given in IEC 60079-0 (D.3.8).

C5 – Removal of Type T cells as acceptable primary cells (Table E.1).

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

Annex ZZ (informative)

Coverage of Essential Requirements of EC Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers only the following essential requirements out of those given in Annex II of the EC Directive 94/9/EC:

- ER 1.0.1, ER 1.0.2 (partly), ER 1.0.3, ER 1.0.4 (partly), ER 1.0.5, ER 1.0.6
- ER 1.1
- ER 1.2.1 (partly), ER 1.2.2 (partly), ER 1.2.3, ER 1.2.6, ER 1.2.7, ER 1.2.8, ER 1.2.9
- ER 1.3.1, ER 1.3.4
- ER 1.4
- ER 1.5
- ER 1.6.4
- ER 2.0
- ER 2.1
- ER 2.2.1
- ER 2.3

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive[s] concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Atmosphères explosives –
Partie 1: Protection du matériel par enveloppes antidéflagrantes «d»**





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

**Atmosphères explosives –
Partie 1: Protection du matériel par enveloppes antidéflagrantes «d»**

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საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

CONTENTS

FOREWORD.....8

1 Scope..... 16

2 Normative references 16

3 Terms and definitions 17

4 Level of protection (equipment protection level, EPL) 19

 4.1 General..... 19

 4.2 Requirements for level of protection “da” 19

 4.3 Requirements for level of protection “db” 20

 4.4 Requirements for level of protection “dc”..... 20

 4.4.1 General 20

 4.4.2 Construction of “dc” devices 20

 4.4.3 Tests for “dc” devices 20

5 Flameproof joints 21

 5.1 General requirements 21

 5.2 Non-threaded joints 22

 5.2.1 Width of joints (*L*) 22

 5.2.2 Gap (*i*)..... 22

 5.2.3 Spigot joints..... 22

 5.2.4 Holes in joint surfaces 23

 5.2.5 Conical joints..... 25

 5.2.6 Joints with partial cylindrical surfaces (not permitted for Group IIC) 25

 5.2.7 Flanged joints for acetylene atmospheres 26

 5.2.8 Serrated joints 26

 5.2.9 Multi-step joints 27

 5.3 Threaded joints 30

 5.4 Gaskets (including O-rings)..... 30

 5.5 Equipment using capillaries 32

6 Sealed joints..... 32

 6.1 Cemented joints 32

 6.1.1 General 32

 6.1.2 Mechanical strength..... 32

 6.1.3 Width of cemented joints 33

 6.2 Fused glass joints 33

 6.2.1 General 33

 6.2.2 Width of fused glass joints 33

7 Operating rods..... 33

8 Supplementary requirements for shafts and bearings..... 34

 8.1 Joints of shafts 34

 8.1.1 General 34

 8.1.2 Cylindrical joints 34

 8.1.3 Labyrinth joints 34

 8.1.4 Joints with floating glands..... 34

 8.2 Bearings 36

 8.2.1 Sleeve bearings..... 36

 8.2.2 Rolling-element bearings 36

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

| | | |
|--------|--|----|
| 9 | Light-transmitting parts | 36 |
| 10 | Breathing and draining devices which form part of a flameproof enclosure | 37 |
| 10.1 | General..... | 37 |
| 10.2 | Openings for breathing or draining | 37 |
| 10.3 | Composition limits..... | 37 |
| 10.4 | Dimensions | 37 |
| 10.5 | Elements with measurable paths..... | 37 |
| 10.6 | Elements with non-measurable paths | 37 |
| 10.7 | Removable devices..... | 38 |
| 10.7.1 | General | 38 |
| 10.7.2 | Mounting arrangements of the elements | 38 |
| 10.8 | Mechanical strength..... | 38 |
| 10.9 | Breathing devices and draining devices when used as Ex components | 38 |
| 10.9.1 | General | 38 |
| 10.9.2 | Mounting arrangements of the elements and components..... | 38 |
| 10.9.3 | Type tests for breathing and draining devices used as Ex components | 38 |
| 10.9.4 | Ex component certificate | 41 |
| 11 | Fasteners and openings | 42 |
| 12 | Materials | 43 |
| 13 | Entries for flameproof enclosures | 44 |
| 13.1 | General..... | 44 |
| 13.2 | Threaded holes | 44 |
| 13.3 | Non-threaded holes (for Group I only) | 44 |
| 13.4 | Cable glands..... | 45 |
| 13.5 | Conduit sealing devices | 45 |
| 13.6 | Plugs and sockets and cable couplers | 46 |
| 13.7 | Bushings..... | 47 |
| 13.8 | Blanking elements..... | 47 |
| 14 | Verification and tests | 47 |
| 15 | Type tests | 48 |
| 15.1 | General..... | 48 |
| 15.2 | Tests of ability of the enclosure to withstand pressure | 49 |
| 15.2.1 | General | 49 |
| 15.2.2 | Determination of explosion pressure (reference pressure) | 49 |
| 15.2.3 | Overpressure test..... | 52 |
| 15.3 | Test for non-transmission of an internal ignition | 53 |
| 15.3.1 | General | 53 |
| 15.3.2 | Electrical equipment of Groups I, IIA and IIB..... | 55 |
| 15.3.3 | Electrical equipment of Group IIC | 56 |
| 15.4 | Tests of flameproof enclosures with breathing and draining devices | 57 |
| 15.4.1 | General | 57 |
| 15.4.2 | Tests of ability of the enclosure to withstand pressure | 57 |
| 15.4.3 | Thermal tests..... | 58 |
| 15.4.4 | Test for non-transmission of an internal ignition..... | 58 |
| 15.5 | Tests for “dc” devices | 59 |
| 15.5.1 | General | 59 |
| 15.5.2 | Preparation of “dc” samples..... | 59 |
| 15.5.3 | Test conditions for “dc” devices | 59 |

| | | |
|--------|--|----|
| 16 | Routine tests | 60 |
| 16.1 | General..... | 60 |
| 16.2 | Enclosures not incorporating a welded construction | 61 |
| 16.3 | Enclosures incorporating a welded construction | 61 |
| 16.4 | Bushings not specific to one flameproof enclosure | 61 |
| 16.5 | Acceptance criteria | 61 |
| 16.6 | Batch testing..... | 61 |
| 17 | Switchgear for Group I..... | 62 |
| 17.1 | General..... | 62 |
| 17.2 | Means of isolation..... | 62 |
| 17.2.1 | General | 62 |
| 17.3 | Doors or covers | 62 |
| 17.3.1 | Quick-acting doors or covers | 62 |
| 17.3.2 | Doors or covers fixed by screws | 62 |
| 17.3.3 | Threaded doors or covers..... | 63 |
| 18 | Lampholders and lamp caps | 63 |
| 18.1 | General..... | 63 |
| 18.2 | Device preventing lamps working loose..... | 63 |
| 18.3 | Holders and caps for lamps with cylindrical caps..... | 63 |
| 18.4 | Holders for lamps with threaded caps | 63 |
| 19 | Non-metallic enclosures and non-metallic parts of enclosures | 63 |
| 19.1 | General..... | 63 |
| 19.2 | Resistance to tracking and creepage distances on internal surfaces of the enclosure walls | 64 |
| 19.3 | Requirements for type tests | 64 |
| 19.4 | Test of erosion by flame..... | 64 |
| 20 | Marking | 64 |
| 20.1 | General..... | 64 |
| 20.2 | Caution and warning markings | 65 |
| 20.3 | Informative markings..... | 65 |
| 21 | Instructions..... | 65 |
| | Annex A (normative) Additional requirements for crimped ribbon elements and multiple screen elements of breathing and draining devices | 66 |
| | Annex B (normative) Additional requirements for elements, with non-measurable paths of breathing and draining devices | 67 |
| | B.1 Sintered metal elements | 67 |
| | B.2 Pressed metal wire elements | 67 |
| | B.3 Metal foam elements..... | 68 |
| | Annex C (normative) Additional requirements for flameproof entry devices | 69 |
| | C.1 General..... | 69 |
| | C.2 Constructional requirements | 69 |
| | C.2.1 Sealing methods..... | 69 |
| | C.2.2 Flameproof joints..... | 70 |
| | C.2.3 Constructional requirements for Ex blanking elements | 71 |
| | C.2.4 Constructional requirements for Ex thread adapters..... | 73 |
| | C.3 Type tests | 73 |
| | C.3.1 Sealing test | 73 |
| | C.3.2 Test of mechanical strength..... | 74 |

| | | |
|---|---|----|
| C.3.3 | Type tests for Ex blanking elements | 75 |
| C.3.4 | Type tests for Ex thread adapters | 76 |
| Annex D (normative) | Empty flameproof enclosures as Ex components..... | 78 |
| D.1 | General..... | 78 |
| D.2 | Introductory remarks | 78 |
| D.3 | Ex component enclosure requirements..... | 78 |
| D.4 | Utilization of an Ex component enclosure certificate to prepare an equipment certificate | 80 |
| D.4.1 | Procedure..... | 80 |
| D.4.2 | Application of the schedule of limitations | 80 |
| Annex E (normative) | Cells and batteries used in flameproof “d” enclosures | 81 |
| E.1 | Introductory remarks | 81 |
| E.2 | Acceptable electrochemical systems | 81 |
| E.3 | General requirements for cells (or batteries) inside flameproof enclosures | 82 |
| E.4 | Arrangement of safety devices | 82 |
| E.4.1 | Prevention of excessive temperature and cell damage..... | 82 |
| E.4.2 | Prevention of cell polarity reversal or reverse charging by another cell in the same battery | 83 |
| E.4.3 | Prevention of inadvertent charging of a battery by other voltage sources in the enclosure | 83 |
| E.5 | Recharging of secondary cells inside flameproof enclosures | 84 |
| E.6 | Rating of protection diodes and reliability of protection devices..... | 85 |
| Annex F (informative) | Mechanical properties for screws and nuts | 86 |
| Annex G (normative) | Additional requirements for flameproof enclosures with an internal source of release (containment system) | 87 |
| G.1 | General..... | 87 |
| G.2 | Release conditions..... | 87 |
| G.2.1 | No release | 87 |
| G.2.2 | Limited release of a gas or vapour | 88 |
| G.2.3 | Limited release of a liquid | 88 |
| G.3 | Design requirements for the containment system | 88 |
| G.3.1 | General design requirements | 88 |
| G.3.2 | Infallible containment system | 88 |
| G.3.3 | Containment system with a limited release | 89 |
| G.4 | Type tests for the containment system | 89 |
| G.4.1 | Overpressure test | 89 |
| G.4.2 | Leakage test for an infallible containment system | 89 |
| G.4.3 | Leakage test for a containment system with a limited release | 90 |
| Annex H (normative) | Requirements for machines with flameproof “d” enclosures fed from converters..... | 91 |
| H.1 | General..... | 91 |
| H.2 | Construction requirements for bearings..... | 91 |
| H.3 | Temperature requirements | 91 |
| Bibliography..... | | 92 |
| Figure 1 – Example of construction for indirect checking of a flanged Group I flameproof joint..... | | 22 |
| Figure 2 – Spigot joints | | 23 |
| Figure 3 – Holes in surfaces of flanged joints, example 1 | | 24 |

Figure 4 – Holes in surfaces of flanged joints, example 2..... 24

Figure 5 – Holes in surfaces of flanged joints, example 3..... 24

Figure 6 – Holes in surfaces of spigot joints, example 1..... 24

Figure 7 – Holes in surfaces of spigot joints, example 2..... 25

Figure 8 – Holes in surfaces of spigot joints, example 3..... 25

Figure 9 – Examples of joint constructions..... 26

Figure 10 – Illustration of the requirements concerning gaskets – Example 1..... 31

Figure 11 – Illustration of the requirements concerning gaskets – Example 2..... 31

Figure 12 – Illustration of the requirements concerning gaskets – Example 3..... 31

Figure 13 – Illustration of the requirements concerning gaskets – Example 4..... 31

Figure 14 – Illustration of the requirements concerning gaskets – Example 5..... 31

Figure 15 – Illustration of the requirements concerning gaskets – Example 6..... 31

Figure 16 – Illustration of the requirements concerning gaskets – Example 7..... 32

Figure 17 – Example of cylindrical joint for shaft of rotating electrical machine 35

Figure 18 – Example of labyrinth joint for shaft of rotating electrical machine..... 35

Figure 19 – Example of joint with floating gland for shaft of rotating electrical machine..... 35

Figure 20 – Joints of shaft glands of rotating electrical machines..... 36

Figure 21 – Component test rig for breathing and draining devices 39

Figure 22 – Example of possible documentation 45

Figure 23 – Example of a regular shaped waveform..... 51

Figure 24 – Example of an irregular shaped waveform..... 51

Figure C.1 – Examples of blanking elements for unused entries..... 72

Figure C.2 – Device for the sealing tests for cable glands..... 74

Figure C.3 – Examples of Ex thread adapters 77

Figure E.1 – Fitting of diode arrangement for three cells in series 83

Figure E.2 – Fitting of blocking diodes to meet E.4.3 (third example) 84

Figure G.1 – Flameproof enclosure with containment system..... 87

Table 1 – Number of non-transmission tests for level of protection “da” 20

Table 2 – Minimum width of joint and maximum gap for enclosures of Groups I, IIA and IIB..... 28

Table 3 – Minimum width of joint and maximum gap for Group IIC enclosures 29

Table 4 – Cylindrical threaded joints 30

Table 5 – Taper threaded joints ^{a, c}..... 30

Table 6 – Conditions for the determination of maximum surface temperature..... 48

Table 7 – Test factors for reduced ambient conditions 50

Table 8 – Relative pressures for small equipment..... 52

Table 9 – Reduction in length of a threaded joint for non-transmission test 54

Table 10 – Test factors to increase pressure or test gap (i_E)..... 54

Table 11 – Minimum distance of obstructions from flameproof “d” flange openings 54

Table 12 – Gas/air mixtures 55

Table 13 – Static pressures 60

Table 14 – Text of caution or warning markings 65

საინფორმაციო ნაწილი. სრული ტექსტის სახანაგად შეიძინეთ სტანდარტი.

| | |
|--|----|
| Table 15 – Text of informative markings..... | 65 |
| Table C.1 – Tightening torque values, metric | 76 |
| Table C.2 – Tightening torque values, NPT..... | 77 |
| Table E.1 – Acceptable primary cells | 81 |
| Table E.2 – Acceptable secondary cells..... | 82 |
| Table F.1 – Mechanical properties for screws and nuts..... | 86 |