

PLAHVATUSOHTLIKUD KESKKONNAD. OSA 30-1:
ELEKTRILINE TAKISTUS-JOONKUUMUTUS. ÜLD- JA
KATSETUSNÕUDED

Explosive atmospheres - Part 30-1: Electrical resistance
trace heating - General and testing requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60079-30-1:2017 sisaldab Euroopa standardi EN 60079-30-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 60079-30-1:2017 consists of the English text of the European standard EN 60079-30-1:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 07.04.2017.	Date of Availability of the European standard is 07.04.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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ICS 29.260.20

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

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English Version

**Explosive atmospheres - Part 30-1: Electrical resistance trace
heating - General and testing requirements
(IEC/IEEE 60079-30-1:2015 , modified)**

Atmosphères explosives - Partie 30-1: Traçage par
résistance électrique - Exigences générales et d'essai
(IEC/IEEE 60079-30-1:2015 , modifiée)

Explosionsgefährdeter Bereiche - Teil 30-1: Elektrische
Widerstands-Begleitheizungen - Allgemeine Anforderungen
und Prüfanforderungen
(IEC/IEEE 60079-30-1:2015 , modifiziert)

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

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European foreword

This document (EN 60079-30-1:2017) consists of the text of IEC/IEEE 60079-30-1:2015 prepared by IEC/TC 31 "Equipment for explosive atmospheres" in collaboration with IEEE Standards Association (IEEE-SA), together with the common modifications prepared by CLC/TC 31 "Electrical apparatus for potentially explosive atmospheres".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2018-03-06
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-03-06

This document supersedes EN 60079-30-1:2007.

The State of the Art is included in Annex ZY "Significant changes between this European Standard and EN 60079-30-1:2007".

For the significant changes with respect to EN 60079-30-1:2007, see Annex ZY.

Annexes which are additional to those in IEC/IEEE 60079-30-1:2015 are prefixed "Z".

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.

COMMON MODIFICATIONS

Note The Division method of area classification of IEC/IEEE 60079-30-1:2015 is not applicable for a European Standard, because a correlation with the Equipment Categories according to the European Directive 2014/34/EU is not possible. Consequently requirements for Divisions 1 and 2 are excluded from this standard.

European foreword

Delete bullet point:

“the addition of annexes covering requirements for Divisions 1 and 2;”

Delete entries in Table of Changes:

“Addition of requirements for the Division method of area classification that may be applied by some users.”

“Addition of annex for the Division method of area classification that may be applied by some users.”

Introduction

Delete sentence:

“This standard also contains the minimum requirements for users applying the Division method of area classification.”

1 Scope

Delete sentence:

“Annexes D and E outline the application of this standard for those users applying the Division method of area classification.”

4.5.1 General

Delete sentence:

“Requirements for equipment for use in facilities using the Division method of area classification are given in Annex D.”

6.1 Product markings for trace heaters

Delete sentence:

“f) For marking trace heaters for use with the Division method of area classification, see D.6.”

Annex D

Delete entire Annex D.

Annex E

Delete entire Annex E.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-151	2001	International Electrotechnical Vocabulary - Part 151: Electrical and magnetic devices	-	-
IEC 60050-426	2008	International Electrotechnical Vocabulary - Part 426: Equipment for explosive atmospheres	-	-
IEC 60079-0	2011	Explosive atmospheres - Part 0: Equipment – General requirements	EN 60079-0 + A11	2012 2013
IEC 60695-11-3	-	Fire hazard testing - Part 11-3: Test flames – 500 W flames - Apparatus and confirmational test methods	EN 60695-11-3	-
ISO 4582	-	Plastics - Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources	-	-
ISO 4892-1	-	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance	EN 4892-1	-
ISO 4892-2	-	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps	EN 4892-2	-
ASTM D5025	-	Standard specification for laboratory burner used for small-scale burning tests on plastic materials	-	-
ASTM G155	-	Standard practice for operating xenon arc light apparatus for exposure of nonmetallic materials	-	-

Annex ZY (informative)

Significant changes between this European Standard and EN 60079-30-1:2007

The significant changes with respect to EN 60079-30-1:2007 are as listed below.

Significant Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Addition of clarification for the exclusion of EPLs Ga and Da	1	X		
Addition of table specifying the application or exclusion of specific clauses of IEC 60079-0 Edition 6	1	X		
For stabilized designs, a clarification for the need for verification by testing and the addition of a table for the specific requirements	4.5.2	X		
For controlled designs, a clarification for the need for verification by testing and the addition of a table for the specific requirements	4.5.3	X		
For controlled designs, clarifications and additions on the separate requirements for Gb/Db and Gc/Dc	4.5.3		X	
The requirements for calibration of the flammability test fixture are replaced with equivalent requirements for the energy levels of the test gases	5.1.4	X		
Addition of a minimum temperature impact test	5.1.5			C1
For thermal stability, the addition of a bending requirement on a mandrel	5.1.11			C1
The replacement of the thermal safety procedure with a thermal performance procedure	5.1.12			C2
The addition of a second procedure utilizing a plate fixture for the systems method for maximum sheath temperature determination	5.1.13.2			C3
Addition of outdoor exposure test	5.1.16			C4
Requirement changed for the marking of the minimum installation temperature	6.1			C5
Addition of new markings requirements for field assembled components	6.2			C5
Additions and changes to the documentation requirements	7			C5
Addition of Annex	Annex A	X		
Addition of Annex	Annex B	X		
Addition of Annex specifying trace heating design verification methodology, moved from IEC 60079-30-2	Annex C			C6

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 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 item 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 – The requirements for additional mechanical testing have been included for harmonization and for added safety.
- C2 – The requirements for thermal performance have been included to recognize the necessity for thermal stability of products in explosive atmospheres.
- C3 – A second procedure utilizing a plate fixture has been included for sheath temperature determination, which may be used in lieu of the sheath temperature verification part of 5.1.13.4.2.
- C4 – An outdoor exposure test has been added to cover products that may be exposed to sunlight and moisture in the intended application.
- C5 – Additional marking and documentation requirements have been added to provide additional information to the end user.
- C6 – The trace heating design verification methodology has been added to align with the evaluation requirements for the stabilized design and the controlled design methods of maximum sheath temperature determination.

Annex ZZ (informative)

Relationship between this European standard and the essential requirements of Directive 2014/34/EU aimed to be covered

This European standard has been prepared under a Commission's standardization request to provide one voluntary means of conforming to essential of Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZZ.1 – Correspondence between this European standard and Annex II of Directive 2014/34/EU

Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.0.1.	All	
1.0.2.	4, 5, Annex C	
1.0.3.	4, 7.5, 7.6	
1.0.4.	4, 5, Annex C	
1.0.5.	6	In conjunction with EN 60079-0
1.0.6.	7	
1.1.1.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16	
1.1.2.	4.5, 5.1.10, 5.1.12, 5.1.13, 5.1.14, 5.1.15	
1.1.3.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16	
1.2.1.	4, 5, Annex C	
1.2.2.	4.3, 5.1.9, 7	
1.2.3.	Not covered	Not applicable
1.2.4.	4.5, 5.1.8, 5.1.9, 5.1.13, 7	
1.2.5.	4.1, 4.2, 4.3, 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, 5.1.7, 5.1.8, 5.1.9, 5.1.11, 5.1.16, 7	
1.2.6.	Not covered	Not applicable
1.2.7.	4, 5, 7, Annex C	Covered except of avoidance of injury by touching hot surfaces of the trace heaters or work piece for this, refer to EN 60079-30-2.
1.2.8.	4.4	

Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.2.9.	Not covered	
1.3.1.	All	Covered by the principle of the type of protection "60079-30-1": Non-arcing, non-sparking, temperature limited.
1.3.2.	Not covered	
1.3.3.	4.1, 5.1.15, 7	
1.3.4.	Not covered	Electric trace heating is not moving, it is intended to be firmly installed on a workpiece, for which friction does not apply.
1.3.5.	Not covered	
1.4.1.	4, 5, 7, Annex C	Covered except of vibration.
1.4.2.	4, 5	
1.5.1	4.5.3.2	
1.5.2.	4.5.3.2	
1.5.3.	4.5.3.2	
1.5.4.	4.5.3.2, 4.5.3.3	
1.5.5.	Not covered	
1.5.6.	5.1.13.4.2, 5.1.13.4.3, 5.1.13.4.4	
1.5.7.	5.1.13.4.2, 5.1.13.4.3, 5.1.13.4.4, 7.3.4	
1.5.8.	Not covered	
1.6.1.	4.4 a)	
1.6.2.	Not covered	Not applicable, electric trace heating is generally ohmic and cools down when de-energized.
1.6.3.	Not covered	
1.6.4.	4.3, 5.1.9, 7	
1.6.5.	Not covered	
2.0.1.1.	Not covered	
2.0.1.2.	Not covered	
2.0.1.3.	Not covered	
2.0.1.4.	Not covered	
2.0.2.1.	Not covered	
2.0.2.2.	Not covered	
2.0.2.3.	Not covered	
2.1.1.1.	Not covered	
2.1.1.2.	Not covered	
2.1.1.3.	Not covered	
2.1.2.1.	Not covered	
2.1.2.2.	Not covered	
2.1.2.3.	Not covered	
2.2.1.1.	4, 5	
2.2.1.2.	4, 5, Annex C	
2.2.1.3.	4.4, 7.4 c)	
2.2.2.1	4, 5	

Essential Requirements of Directive	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
2.2.2.2.	4, 5, Annex C	
2.2.2.3.	4.3, 5.1.9	
2.2.2.4.	4.4, 7.4 c)	
2.3.1.1.	4, 5	Covered
2.3.1.2.	4, 5, Annex C	Covered
2.3.2.1.	4, 5	Covered
2.3.2.2.	4, 5, Annex C	
2.3.2.3.	4.3, 5.1.9	
3.0.1.	Not covered	
3.0.2.	Not covered	
3.0.3.	Not covered	
3.0.4.	Not covered	
3.1.1.	Not covered	
3.1.2.	Not covered	
3.1.3.	Not covered	
3.1.4.	Not covered	
3.1.5.	Not covered	
3.1.6.	Not covered	
3.1.7.	Not covered	
3.1.8.	Not covered	

WARNING 1: Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2: Other Union legislation may be applicable to the product falling within the scope of this standard.

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INTRODUCTION

IEC/IEEE 60079-30-1 is intended to provide a comprehensive overview of the essential requirements and testing appropriate to electric surface heating equipment used in explosive atmospheres. The requirements of this part of IEC 60079 are considered to be the minimum requirements for equipment protection levels Gb, Gc, Db, and Dc in explosive atmospheres for gases, dusts, and fibres/flyings. While some of this work already exists in national standards or international standards, this standard has collated much of this existing work and considerably added to it. This standard also contains the minimum requirements for users applying the Division method of area classification.