

**Plahvatusohtlikud keskkonnad. Osa 31: Seadmete kaitse
tolmsüttimise eest ümbrisega "t"**

Explosive atmospheres - Part 31: Equipment dust ignition
protection by enclosure "t"

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60079-31:2010 sisaldab Euroopa standardi EN 60079-31:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 28.02.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 04.12.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 60079-31:2010 consists of the English text of the European standard EN 60079-31:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 04.12.2009.

The standard is available from Estonian standardisation organisation.

ICS 29.260.20

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute Estonian Standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: +372 605 5050; E-mail: info@evs.ee

English version

**Explosive atmospheres -
Part 31: Equipment dust ignition protection by enclosure "t"**
(IEC 60079-31:2008 + corrigendum 2009)

Atmosphères explosives -
Partie 31: Protection du matériel
contre l'inflammation des poussières
par enveloppe "t"
(CEI 60079-31:2008 + corrigendum 2009)

Explosionsfähige Atmosphäre -
Teil 31: Geräte-Staubexplosionsschutz
durch Gehäuse "t"
(IEC 60079-31:2008 + Corrigendum 2009)

This European Standard was approved by CENELEC on 2009-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 31/765/FDIS, future edition 1 of IEC 60079-31, prepared by IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-31 on 2009-10-01.

This European Standard supersedes EN 61241-1:2004 + corrigendum December 2006.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2010-07-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-10-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 94/9/EC. See Annex ZZ.

CENELEC/TC 31 as the responsible committee has concluded that this edition of EN 60079-31 does not contain substantial changes regarding the ESRs.

The State of the Art is included in Annex ZY “*Significant changes between this European Standard and EN 61241-1:2004*”.

Annexes ZA, ZY and ZZ have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60079-31:2008 + corrigendum March 2009 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 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 60034-1	- ¹⁾	Rotating electrical machines - Part 1: Rating and performance	EN 60034-1	2004 ²⁾
IEC 60079-0	- ¹⁾	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	2009 ²⁾
IEC 60079-7	- ¹⁾	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"	EN 60079-7	2007 ²⁾
IEC 60127	Series	Miniature fuses	EN 60127	Series
IEC 60691	- ¹⁾	Thermal-links - Requirements and application guide	EN 60691	2003 ²⁾
ISO 965-1	- ¹⁾	ISO general-purpose metric screw threads - Tolerances - Part 1: Principles and basic data	-	-
ISO 965-3	- ¹⁾	ISO general-purpose metric screw threads - Tolerances - Part 3: Deviations for constructional threads	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

Annex ZY
(informative)

Significant changes between this European Standard and EN 61241-1:2004

The significant changes with respect to EN 61241-1:2004 are as listed below.

	Type		
	Minor and editorial changes	Extension	Substantial change regarding ESR's ^a
title changed to Equipment dust ignition protection by enclosure "t"	X		
combination and rationalisation of practice A and B into a single practice, and some constructional requirements that may have applied to only one practice now apply to all enclosures		X	
introduction of three levels of protection, "ta", "tb" and "tc"		X	
defined test voltage ranges and overload conditions for thermal tests		X	
introduction of a pressure test prior to the IP test		X	
restrictions on power and voltage levels for level of protection "ta"		X	
introduction of a variant of the IP6X test for level of protection "ta"		X	
compulsory dust layer thermal test for protection level "ta" by surrounding the enclosure with dust to a depth of at least 500 mm on all available surfaces		X	
^a ESR = Essential Health and Safety Requirements (Annex II of Directive 94/9/EC)			

General conclusion on the change of the State of the Art by this standard

CENELEC/TC 31 as the responsible committee has concluded that this edition of EN 60079-31 does not contain substantial changes regarding the ESRs.

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 1.0.4 (partly), ER 1.0.5 (partly)
- ER 1.2.4 (partly)
- ER 1.2.8 (partly)
- ER 1.3.1 (partly)
- ER 2.1.2
- ER 2.2.2
- ER 2.3.2

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

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

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	6
4 Level of protection	6
4.1 General.....	6
4.2 Additional requirements for level of protection “ta”.....	6
4.2.1 Thermal protection	6
5 Construction.....	7
5.1 Joints	7
5.1.1 General	7
5.1.2 Gaskets and seals	7
5.1.3 Cemented joints	8
5.1.4 Operating rods, spindles and shafts.....	8
5.1.5 Windows.....	8
5.2 Cable glands and conduit entries.....	8
5.2.1 Cable glands	8
5.2.2 Conduit entries	8
6 Verification and tests	9
6.1 Type tests	9
6.1.1 Type tests for dust exclusion by enclosures.....	9
6.1.2 Thermal tests	9
6.1.3 Pressure test.....	10
6.2 Routine tests	10
7 Marking	10
Bibliography.....	11
Table 1 – Ingress protection	9
Table 2 – Conditions for the determination of maximum surface temperature.....	9

EXPLOSIVE ATMOSPHERES –

Part 31: Equipment dust ignition protection by enclosure "t"

1 Scope

This part of IEC 60079 is applicable to electrical equipment protected by enclosure and surface temperature limitation for use in explosive dust atmospheres. It specifies requirements for design, construction and testing of electrical equipment.

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 shall take precedence.

This standard does not apply to dusts of explosives, which do not require atmospheric oxygen for combustion, or to pyrophoric substances.

This standard does not apply to electrical equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust.

This standard does not take account of any risk due to an emission of flammable or toxic gas from the dust.

NOTE 1 The application of electrical equipment in atmospheres, which may contain combustible dust as well as explosive gas, whether simultaneously or separately, may require additional protective measures.

NOTE 2 Where the equipment has to meet other environmental conditions, for example, protection against ingress of water and resistance to corrosion, additional methods of protection may be necessary. The method used should not adversely affect the integrity of the enclosure.

2 Normative references

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.

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

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

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

IEC 60127 series, *Miniature fuses*

IEC 60691, *Thermal-links – Requirements and application guide*

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: Deviation for constructional screw threads*