

Plahvatusohtlikud keskkonnad. Osa 10-2: Piirkondade liigitus. Põlevtolmkeskkonnad

Explosive atmospheres - Part 10-2: Classification of areas - Combustible dust atmospheres

EESTI STANDARDI EESSÕNA

See Eesti standard EVS-EN 60079-10-2:2009 sisaldab Euroopa standardi EN 60079-10-2:2009 ingliskeelset teksti.

Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.

Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 31.08.2009.

Standard on kättesaadav Eesti Standardikeskusest.

NATIONAL FOREWORD

This Estonian standard EVS-EN 60079-10-2:2009 consists of the English text of the European standard EN 60079-10-2:2009.

This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.

Date of Availability of the European standard is 31.08.2009.

The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 29.260.20

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

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

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

The right to reproduce and distribute 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 a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English version

**Explosive atmospheres -
Part 10-2: Classification of areas -
Combustible dust atmospheres
(IEC 60079-10-2:2009)**

Atmosphères explosives -
Partie 10-2: Classification des
emplacements -
Atmosphères explosives poussiéreuses
(CEI 60079-10-2:2009)

Explosionsfähige Atmosphäre -
Teil 10-2: Einteilung der Bereiche -
Staubexplosionsgefährdeten Bereiche
(IEC 60079-10-2:2009)

This European Standard was approved by CENELEC on 2009-06-01. 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 31J/166/FDIS, future edition 1 of IEC 60079-10-2, prepared by SC 31J, Classification of hazardous areas and installation requirements, of IEC TC 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60079-10-2 on 2009-06-01.

This European Standard supersedes EN 61241-10:2004.

The significant technical changes with respect to EN 61241-10:2004 are as follows:

- the hazards presented by dust have been clarified;
- dust groups have been introduced;
- Annex D explaining Equipment Protection Levels (EPLs) has been introduced;
- 1 m of usual extent of zone 22 beyond zone 21 has been expanded to 3 m.

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) | 2010-03-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2012-06-01 |

Annexes ZA and ZB have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60079-10-2:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079-1	NOTE	Harmonized as EN 60079-1:2007 (not modified).
IEC 60079-2	NOTE	Harmonized as EN 60079-2:2007 (not modified).
IEC 60079-5	NOTE	Harmonized as EN 60079-5:2007 (not modified).
IEC 60079-6	NOTE	Harmonized as EN 60079-6:2007 (not modified).
IEC 60079-7	NOTE	Harmonized as EN 60079-7:2007 (not modified).
IEC 60079-11	NOTE	Harmonized as EN 60079-11:2007 (not modified).
IEC 60079-14	NOTE	Harmonized as EN 60079-14:2008 (not modified).
IEC 60079-15	NOTE	Harmonized as EN 60079-15:2005 (not modified).
IEC 60079-18	NOTE	Harmonized as EN 60079-18:2004 (not modified).
IEC 60079-26	NOTE	Harmonized as EN 60079-26:2007 (not modified).
IEC 60079-28	NOTE	Harmonized as EN 60079-28:2007 (not modified).

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 60079-0	- ¹⁾	Explosive atmospheres - Part 0: Equipment - General requirements	EN 60079-0	2009 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

Annex ZB (informative)

ATEX Categories and Equipment Protection Levels (EPLs)

This European Standard has been written to incorporate the concept of Equipment Protection Levels (EPLs).

EPLs are analogous to the ATEX Categories, indeed the definitions are identical.

Wherever there is a reference to an EPL in the text it should be equated with the corresponding ATEX Category:

- EPL 'Ga' equates to ATEX Category 1G;
- EPL 'Gb' equates to ATEX Category 2G;
- EPL 'Gc' equates to ATEX Category 3G;
- EPL 'Da' equates to ATEX Category 1D;
- EPL 'Db' equates to ATEX Category 2D;
- EPL 'Dc' equates to ATEX Category 3D.

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	7
4 Area classification	9
4.1 General.....	9
4.2 Area classification procedure for explosive dust atmospheres	10
5 Sources of release	11
5.1 General.....	11
5.2 Dust containment	11
5.3 Identification and gradation of sources of release.....	11
6 Zones.....	12
6.1 General.....	12
6.2 Zones.....	12
6.3 Extent of zones	13
6.3.1 General	13
6.3.2 Zone 20.....	13
6.3.3 Zone 21.....	13
6.3.4 Zone 22.....	14
7 Dust layer hazard	14
8 Documentation	14
8.1 General.....	14
8.2 Drawings, data sheets and tables.....	15
Annex A (informative) Area classification application	17
Annex B (informative) Risk of fire from hot surface ignition of dust layer.....	22
Annex C (informative) Housekeeping	23
Annex D (informative) Introduction of an alternative risk assessment method encompassing 'equipment protection levels' for Ex equipment	25
Bibliography.....	30
Figure 1 – Identification of zones on drawings	16
Figure A.1 – Bag emptying station within a building and without exhaust ventilation	18
Figure A.2 – Bag emptying station with exhaust ventilation	19
Figure A.3 – Cyclone and filter with clean outlet outside building	20
Figure A.4 – Drum tipper within a building without exhaust ventilation.....	21
Table 1 – Designation of zones depending on presence of dust.....	12
Table D.1 – Traditional relationship of EPLs to zones (no additional risk assessment).....	27
Table D.2 – Description of risk of ignition protection provided	28

INTRODUCTION

Dusts, as defined in this standard, are hazardous because when they are dispersed in air by any means, they form potentially explosive atmospheres. Furthermore, layers of dust may ignite and act as ignition sources for an explosive atmosphere.

This part of IEC 60079 gives guidance on the identification and classification of areas where such hazards from dust can arise. It sets out the essential criteria against which the ignition hazards can be assessed and gives guidance on the design and control parameters which can be used in order to reduce such a hazard. General and special criteria are given, with examples, for the procedure used to identify and classify areas.

This standard contains an informative Annex A giving practical examples for classifying areas.

This document is a preview generated by EVS

EXPLOSIVE ATMOSPHERES –

Part 10-2: Classification of areas – Combustible dust atmospheres

1 Scope

This part of IEC 60079 is concerned with the identification and classification of areas where explosive dust atmospheres and combustible dust layers are present, in order to permit the proper assessment of ignition sources in such areas.

In this standard, explosive dust atmospheres and combustible dust layers are treated separately. In Clause 4, area classification for explosive dusts clouds is described, with dust layers acting as one of the possible sources of release. In Clause 7, the hazard of dust layer ignition is described.

The examples in this standard are based on a system of effective housekeeping being implemented in the plant to prevent dust layers from accumulating. Where effective housekeeping is not present, the area classification includes the possible formation of explosive dust clouds from dust layers.

The principles of this standard can also be followed when combustible fibres or flyings may cause a hazard.

This standard is intended to be applied where there can be a risk due to the presence of explosive dust atmospheres or combustible dust layers under normal atmospheric conditions.

It does not apply to

- underground mining areas,
- areas where a risk can arise due to the presence of hybrid mixtures,
- dusts of explosives that do not require atmospheric oxygen for combustion, or to pyrophoric substances,
- catastrophic failures which are beyond the concept of abnormality dealt with in this standard (see Note 1),
- any risk arising from an emission of flammable or toxic gas from the dust.

This standard does not take into account the effects of consequential damage following a fire or an explosion.

NOTE 1 Catastrophic failure in this context is applied, for example, to the rupture of a storage silo or a pneumatic conveyor.

NOTE 2 In any process plant, irrespective of size, there can be numerous sources of ignition apart from those associated with equipment. Appropriate precautions will be necessary to ensure safety in this context, but these are outside the scope of this standard.

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.