

# SLOVENSKI STANDARD

## SIST EN 61241-1:2005

01-april-2005

Nadomešča:

SIST EN 50281-1-1:2000

SIST EN 50281-1-1:2000/A1:2002

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**Električne naprave za uporabo v prisotnosti gorljivega prahu - 1. del: Zaščita z okrovom "tD" (IEC 61241-1:2004)**

Electrical apparatus for use in the presence of combustible dust -- Part 1: Protection by enclosures tD

**iTeh STANDARD PREVIEW**

Elektrische Betriebsmittel zur Verwendung in Bereichen mit brennbarem Staub -- Teil 1: Schutz durch Gehäuse tD

[SIST EN 61241-1:2005](https://standards.itih.ai/catalog/standards/sist/d7924928-3e13-4d32-8c19-0aac27b3e6f0/sist-en-61241-1-2005)

Matériels électriques pour utilisation en présence de poussières combustibles -- Partie 1: Protection par enveloppes tD

**Ta slovenski standard je istoveten z: EN 61241-1:2004**

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**ICS:**

29.260.20	Električni aparati za eksplozivna ozračja	Electrical apparatus for explosive atmospheres
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**SIST EN 61241-1:2005**

**en**

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EUROPEAN STANDARD

**EN 61241-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2004

ICS 29.260.20

English version

**Electrical apparatus for use in the presence of combustible dust**  
**Part 1: Protection by enclosures "tD"**  
(IEC 61241-1:2004)

Matériels électriques pour utilisation  
en présence de poussières combustibles  
Partie 1: Protection par enveloppes "tD"  
(CEI 61241-1:2004)

Elektrische Betriebsmittel zur Verwendung  
in Bereichen mit brennbarem Staub  
Teil 1: Schutz durch Gehäuse "tD"  
(IEC 61241-1:2004)

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This European Standard was approved by CENELEC on 2004-06-01. 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.

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# CENELEC

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 31H/168/FDIS, future edition 1 of IEC 61241-1, prepared by SC 31H, Apparatus for use in the presence of combustible dust, of IEC TC 31, Electrical apparatus for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61241-1 on 2004-06-01.

This part of EN 61241 is to be read in conjunction with EN 61241-0.

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) 2005-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-06-01

Annex ZA has been added by CENELEC.

## Endorsement notice

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The text of the International Standard IEC 61241-1:2004 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 60079-0	NOTE	Harmonized as EN 60079-0:2004 (not modified).
IEC 60079-7	NOTE	Harmonized as EN 60079-7:2003 (not modified).
IEC 60093	NOTE	Harmonized as HD 429 S1:1983 (not modified).
IEC 60192	NOTE	Harmonized as EN 60192:2001 (not modified).
IEC 60216-1	NOTE	Harmonized as EN 60216-1:2001 (not modified).
IEC 60216-2	NOTE	Harmonized as HD 611.2 S1:1992 (not modified).
IEC 60243-1	NOTE	Harmonized as EN 60243-1:1998 (not modified).
IEC 60662	NOTE	Harmonized as EN 60662:1987 (modified).
IEC 60947-3	NOTE	Harmonized as EN 60947-3:1999 (not modified).
ISO 178	NOTE	Harmonized as EN ISO 178:2003 (not modified).
ISO 527	NOTE	Harmonized in EN ISO 527 series (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 Where 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 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
A1	1999		A1	2000
IEC 61241-0	- 1)	Electrical apparatus for use in the presence of combustible dust Part 0: General requirements	-	-

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[SIST EN 61241-1:2005](https://standards.iteh.ai/catalog/standards/sist/d7924928-2e13-4d32-8c19-0aae27b3e6f0/sist-en-61241-1-2005)

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1) To be published.

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**NORME  
INTERNATIONALE  
INTERNATIONAL  
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**CEI  
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**61241-1**

Première édition  
First edition  
2004-05

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**Matériels électriques pour utilisation  
en présence de poussières combustibles –**

**Partie 1:  
Protection par enveloppes «tD»**

**iTeh STANDARD PREVIEW**

**Electrical apparatus for use in the  
presence of combustible dust –**

**SIST EN 61241-1:2005**

<https://standards.iteh.ai/catalog/standards/sist/d7924928-2e13-4d32-8c19-0aae27b3e6f0/sist-en-61241-1-2005>

**Part 1:  
Protection by enclosures "tD"**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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For price, see current catalogue*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL APPARATUS FOR USE IN THE  
PRESENCE OF COMBUSTIBLE DUST –****Part 1: Protection by enclosures “tD”**

## 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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International Standard IEC 61241-1 has been prepared by subcommittee 31H: Apparatus for use in the presence of combustible dust, of IEC technical committee 31: Electrical apparatus for explosive atmospheres.

This first edition of IEC 61241-1 has been compiled from the second edition of IEC 61241-1-1 which, together with the new IEC 61241-0\*, supersedes IEC 61241-1-1.

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

FDIS	Report on voting
31H/168/FDIS	31H/175/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.

\* Being published.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This part of IEC 61241 is to be read in conjunction with IEC 61241-0.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

IEC 61241 consists of the following parts under the general title: *Electrical apparatus for use in the presence of combustible dust*:

- Part 0: General requirements<sup>1</sup>
- Part 1: Protection by enclosures 'tD'
- Part 2: Protection by pressurization 'pD'
- Part 10: Classification of areas where combustible dusts are or may be present
- Part 11: Intrinsically safe apparatus 'iD'<sup>2</sup>
- Part 14: Selection and installation<sup>3</sup>
- Part 17: Inspection and maintenance<sup>4</sup>
- Part 18: Protection by encapsulation 'mD'<sup>3</sup>
- Part 20: Test methods
- Part 20-1: Methods for determining the minimum ignition temperatures of dust
- Part 20-2: Method for determining the electrical resistivity of dust in layers
- Part 20-3: Method for determining minimum ignition energy of dust/air mixtures

NOTE All references in this standard to the IEC 61241 series follows the proposed re-numbering of the dust standards agreed by SC31H and TC31. It may be necessary to alter these numbers if the relevant standards are not yet published.

#### Reference table

Existing standard	New number assigned	Subject	Anticipated date of change
IEC 61241-1-1	IEC 61241-0	General requirements	2003
	IEC 61241-1	Protection by enclosure	2003
IEC 61241-1-2	IEC 61241-14	Selection and installation	2003
IEC 61241-2-1	IEC 61241-20-1	Test methods	2005
IEC 61241-2-2	IEC 61241-20-2	Test methods	2005
IEC 61241-2-3	IEC 61241-20-3	Test methods	2005
IEC 61241-3	IEC 61241-10	Classification	2003
IEC 61241-4	IEC 61241-2	Protection by pressurization	2005
	IEC 61241-11	Protection by intrinsic safety	2005
	IEC 61241-17	Inspection and maintenance	2003
	IEC 61241-18	Protection by encapsulation	2004
	IEC 61241-19	Repair and overhaul	

<sup>1</sup> Being published.

<sup>2</sup> Under consideration.

<sup>3</sup> To be published.

<sup>4</sup> In preparation.

## INTRODUCTION

Many dusts which are generated, processed, handled and stored, are combustible. When ignited they can burn rapidly and with considerable explosive force if mixed with air in the appropriate proportions. It is often necessary to use electrical apparatus in locations where such combustible materials are present, and suitable precautions must therefore be taken to ensure that all such apparatus is adequately protected so as to reduce the likelihood of ignition of the external explosive atmosphere. In electrical apparatus, potential ignition sources include electrical arcs and sparks, hot surfaces, and frictional sparks.

Areas where dusts, flyings and fibres in air occur in dangerous quantities are classified as hazardous and are divided into three zones according to the level of risk.

Generally, electrical safety is ensured by the implementation of one of two considerations, i.e. that electrical apparatus be located where reasonably practicable outside hazardous areas and that electrical apparatus be designed, installed and maintained in accordance with measures recommended for the area in which the apparatus is located.

Combustible dust can be ignited by electrical apparatus in several ways:

- by surfaces of the apparatus that are above the minimum ignition temperature of the dust concerned. The temperature at which a type of dust ignites is a function of the properties of the dust, whether the dust is in a cloud or layer, the thickness of the layer and the geometry of the heat source;
- by arcing or sparking of electrical parts such as switches, contacts, commutators, brushes or the like;
- by discharge of an accumulated electrostatic charge;
- by radiated energy (e.g. electromagnetic radiation);
- by mechanical sparking or frictional sparking or heating associated with the apparatus.

In order to avoid ignition hazards it is necessary that:

- the temperature of surfaces on which dust can be deposited, or which would be in contact with a dust cloud, is kept below the temperature limitation specified in this standard;
- any electrical sparking parts, or parts having a temperature above the temperature limit specified in IEC 61241-14:
  - are contained in an enclosure which adequately prevents the ingress of dust, or
  - the energy of electrical circuits is limited so as to avoid arcs, sparks or temperatures capable of igniting combustible dust;
- any other ignition sources are avoided.

Compliance with this part of IEC 61241 will only provide the required level of safety if the electrical apparatus is operated within its rating and is installed and maintained according to the relevant codes of practice or requirements, for example in respect of protection against over-currents, internal short-circuits, and other electrical faults. In particular, it is essential that the severity and duration of an internal or external fault be limited to values that can be sustained by the electrical apparatus without damage.