

Electrical apparatus for use in the presence of combustible dust —

Part 4: Type of protection “pD”

ICS 29.260.20

National foreword

This British Standard reproduces verbatim IEC 61241-4:2001 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee GEL/31, Electrical apparatus for use in explosive atmospheres, to Subcommittee GEL/31/20, Apparatus for use in the presence of ignitable dust, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

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This British Standard, having been prepared under the direction of the Electrotechnical Sector Policy and Strategy Committee title, was published under the authority of the Standards Policy and Strategy Committee on 6 September 2001

Summary of pages

This document comprises a front cover, an inside front cover, the IEC title page, pages 2 to 23 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 6 September 2001

ISBN 0 580 38218 4

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

61241-4

Première édition
First edition
2001-03

**Matériels électriques destinés à être utilisés
en présence de poussières combustibles –**

**Partie 4:
Type de protection «pD»**

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

**Part 4:
Type of protection "pD"**



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CONTENTS

FOREWORD	4
1 Scope	5
2 Normative references	5
3 Definitions	6
4 Pressurization principle	9
4.1 Protective gas	9
4.2 Automatic disconnection	9
4.3 Cleaning	9
4.4 Discharge of protective gas	9
5 General constructional requirements	9
5.1 Electrical performance of apparatus	9
5.2 Mechanical strength	9
5.3 Apertures	10
5.4 Electrical connections to enclosures	10
5.5 Doors and covers	10
6 Temperature limits	11
7 Safety provisions and safety devices (except for static pressurization)	11
7.1 General	11
7.2 Pressure- or flow-activated devices	12
7.3 Electrical supply	12
7.4 Switching off electrical supply	12
7.5 Failure of pressurization	12
7.6 Level of overpressure	14
7.7 Possible sources of ignition	14
7.8 Enclosed components	14
7.9 Separate enclosures	14
8 Safety provisions and safety devices for static pressurization	15
9 Supply of protective gas	15
9.1 Type of gas	15
9.2 Second source of supply	16
9.3 Temperature	16
10 Verification and tests	16
10.1 General	16
10.2 Type verification and tests	16
10.3 Overpressure test	16
10.4 Minimum overpressure test	17
10.5 Leakage test	17
10.6 Impact test	17
10.7 Routine tests	17

11	Marking.....	18
11.1	Pressurized enclosure.....	18
11.2	Additional marking	18
11.3	Pressurized enclosures protected by static pressurization.....	18
11.4	Any other marking required	18
	Annex A (normative) Ducts for protective gas supply.....	19
	Annex B (normative) Installation requirements for pressurization.....	22
	Figure A.1 – Examples of the static overpressure along the ducts and through a pressurized enclosure	20
	Figure A.2 – Example of the static overpressure in a pressurized electric rotating machine with fan	21
	Table 1 – Requirements on failure of pressurization.....	13
	Table B.1 – Summary of protection requirements for enclosures	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL APPARATUS FOR USE IN THE PRESENCE OF
COMBUSTIBLE DUST –**

Part 4: Type of protection "pD"

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 61241-4 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 bilingual version (2001-07) replaces the English version.

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

FDIS	Report on voting
31H/117/FDIS	31H/127/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annexes A and B form an integral part of this standard.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

ELECTRICAL APPARATUS FOR USE IN THE PRESENCE OF COMBUSTIBLE DUST –

Part 4: Type of protection "pD"

1 Scope

This part of IEC 61241 gives requirements on the design, construction, testing and marking of electrical apparatus for use in combustible dust atmospheres in which a protective gas (air or inert gas), maintained at a pressure above that of the external atmosphere, is used to prevent the entry of dust which might otherwise lead to the formation of a combustible mixture within enclosures which do not contain a source of combustible dust.

This standard contains the specific requirements for construction and testing, including protective requirements that apply to electrical apparatus with type of protection pressurization "pD" intended for use in potentially combustible dust atmospheres.

This standard includes the requirements for the construction of the enclosure and its associated components, including, if any, the inlet and outlet ducts for the protective gas, and for the safety provisions and devices necessary to ensure that pressurization is established and maintained for type of protection pressurization "pD".

Requirements for pressurized enclosures with an internal source of dust release are not included in this standard.

This standard does not cover the requirements for pressurized rooms with or without internal sources of dust release.

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 cover combined gas and dust hazard. Those requirements are under consideration.

The requirements contained in this standard are supplementary to those in IEC 61241-1-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61241. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61241 are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60034-1:1996, *Rotating electrical machines – Part 1: Rating and performance* ¹⁾

¹⁾ There exists a consolidated edition 10.2 (1999) that includes edition 10.0 and its amendments.

IEC 61241 (all parts), *Electrical apparatus for use in the presence of combustible dust*

IEC 61241-1-1:1999, *Electrical apparatus for use in the presence of combustible dust – Part 1-1: Electrical apparatus protected by enclosures and surface temperature limitation – Specification for apparatus*

IEC 61241-1-2:1999, *Electrical apparatus for use in the presence of combustible dust – Part 1-2: Electrical apparatus protected by enclosures and surface temperature limitation – Selection, installation and maintenance*

IEC 61241-3:1997, *Electrical apparatus for use in the presence of combustible dust – Part 3: Classification of areas where combustible dusts are or may be present*

3 Definitions

For the purpose of this part of IEC 61241, the definitions from IEC 61241-1-1 and the following apply.

3.1

type of protection "pD"

technique of applying a protective gas to an enclosure in order to prevent the formation of an explosive dust atmosphere inside the enclosure by maintaining an overpressure against the surrounding atmosphere

3.2

overpressure

pressure above ambient pressure within a pressurized enclosure

3.3

pressurization

technique of guarding against the ingress of the external dust atmosphere, which may be explosive, into an enclosure by maintaining a protective gas therein at a pressure above that of the external atmosphere

3.4

protective gas

air or inert gas used for maintaining an overpressure

NOTE For the purpose of this standard inert gas means nitrogen, carbon dioxide, argon or any gas which, when mixed with oxygen in the ratio of 4:1 as found in air, does not make the ignition and combustible properties, such as combustible limits, more onerous.

3.5

enclosure

all the walls which surround the live parts of electrical apparatus including doors, covers, cable entries, rods, spindles and shafts and which ensure the protection of the electrical apparatus

3.6

pressurized enclosure

enclosure in which protective gas is maintained at a pressure greater than that of the external atmosphere

NOTE The pressurized enclosure may or may not also be the enclosure surrounding the live parts and ensuring the protection in other respects of the electrical apparatus.