

Electrical apparatus with protection by enclosure for use in the presence of combustible dusts —

Part 1: Specification for apparatus

UDC 621.3-758.31

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Electrotechnical Engineering Standards Committee (GEL/-) to Technical Committee GEL/114 upon which the following bodies were represented:

- Association of British Mining Equipment Companies
- Association of Consulting Engineers
- Association of Supervisory and Executive Engineers BEAMA Ltd.
- British Electrical Systems Association (BEAMA Ltd.)
- British Gas Corporation
- British Industrial Truck Association
- Chief and Assistant Chief Fire Officers' Association
- Civil Aviation Authority (Airworthiness Division)
- Council for Electrical Equipment for Flammable Atmospheres (BEAMA Ltd.)
- Department of the Environment (Property Services Agency)
- Department of Transport (Marine Directorate)
- Electrical Contractors' Association
- Energy Industries Council
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- ERA Technology Ltd.
- Fire Offices Committee
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- GAMBICA (BEAMA Ltd.)
- Health and Safety Executive
- Lighting Industry Federation Ltd.
- Ministry of Defence
- National Coal Board
- Rotating Electrical Machines Association (BEAMA Ltd.)
- Sira Limited
- Trades Union Congress

The following body was also represented in the drafting of the standard, through sub-committees and panels:

Department of the Environment (Building Research Establishment, Fire Research Station)

This British Standard, having been prepared under the direction of the General Electrotechnical Engineering Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 September 1985

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 Maximum surface temperature of enclosures	1
4 Design and construction of enclosures	2
5 Materials used for cementing and sealing	3
6 Electrical connections	4
7 Cable and conduit entries	4
8 Supplementary requirements for specific electrical apparatus	5
9 Marking	5
10 Instructions for use and maintenance	6
Appendix A Order of testing and documentation	7
Appendix B Determination of maximum surface temperature of enclosures	7
Appendix C Impact test	7
Appendix D Drop test	9
Appendix E Thermal shock test	9
Appendix F Method of determining clamping of non-armoured cable in cable entry	9
Appendix G Method of determining clamping of armoured cable in cable entry	9
Appendix H Preconditioning for enclosures and parts of enclosures made of plastics materials	10
Figure 1 — Typical impact test apparatus	8
Table 1 — Impact test data	8
Publications referred to	Inside back cover

Foreword

This Part of BS 6467 has been prepared under the direction of the General Electrotechnical Engineering Standards Committee.

At the present time, there is no other existing British, European or International Standard for this subject. In the drafting of this Part, account has been taken of the work which has been done in Subcommittee 31H of the International Electrotechnical Commission (IEC).

This Part specifies requirements for electrical apparatus based on the maximum surface temperature of the enclosure and on the restriction of dust ingress to the enclosure by the use of “dust-tight” or “dust-protected” enclosures.

BS 6467-2¹⁾ will be the guide to selection, installation and maintenance of electrical apparatus with protection by enclosure.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ In preparation.

1 Scope

This Part of BS 6467 specifies requirements for design and construction and methods of test for electrical apparatus with protection by enclosure for use where combustible dust, but not dust from materials regarded as “explosives”, may be present in quantities which could lead to a fire or explosion hazard. It does not apply to electrical apparatus for use in mines susceptible to firedamp nor does it take account of any risk because of an emission of flammable gas from the dust.

This standard is generally applicable to apparatus suitable for use and storage at ambient temperatures between $-20\text{ }^{\circ}\text{C}$ and $+40\text{ }^{\circ}\text{C}$ inclusive. It is also applicable to apparatus for use in specific applications at different ambient temperatures.

NOTE 1 This standard does not imply any removal of, or lowering of, the requirements of any other British Standard with which the electrical apparatus is claimed to comply.

NOTE 2 The order of testing and the documentation required are stated in appendix A.

NOTE 3 Requirements for electrical apparatus for use in explosive gas atmospheres are specified in BS 5501 and the earlier BS 4683, both of which have Parts devoted to specific types of protection.

NOTE 4 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 6467 the following definitions apply.

2.1 dust

small solid particles that settle out under their own weight but that may remain suspended for some time

NOTE This definition includes what are defined in BS 6069-2 as “dust” and “grit”.

2.2 combustible dust

dust that is combustible or ignitable in mixtures with air

NOTE 1 Most combustible dusts form explosible mixtures with air only between certain concentration limits.

NOTE 2 Although a mixture which is above the upper concentration limit is not an explosible mixture it can become so by dilution.

NOTE 3 Combustible dusts are capable of being ignited by external ignition sources and will continue to burn at atmospheric temperatures but they will only spontaneously ignite above a certain temperature.

2.3 enclosure

generic term for the means of protection of the electrical apparatus against the ingress of dust

2.4 dust-tight enclosure

an enclosure capable of excluding all observable dust particles

2.5 dust-protected enclosure

an enclosure to which the ingress of dust is not totally prevented but where the quantity of dust entering is not sufficient to interfere with the satisfactory operation of the apparatus

2.6 maximum surface temperature of the enclosure

the highest temperature that is attained, under the most adverse electrical conditions (but within the specified tolerances) by any part of the external surface of the enclosure of an electrical apparatus, that would be able to produce an ignition of the surrounding atmosphere

NOTE 1 The most adverse electrical conditions include overloads and recognized abnormal conditions that may be specified in a British Standard giving specific requirements for the electrical apparatus concerned.

NOTE 2 The maximum surface temperature of the enclosure for any apparatus is stated for the maximum permissible ambient temperature at which compliance with this Part of BS 6467 is claimed.

NOTE 3 To allow for variations between production samples and that sample submitted for type test, a higher value is required to be marked (see clause 3) than the maximum value measured during the test when this is linearly corrected for ambient temperature.

2.7 free dust

dust that does not adhere permanently to any surface within the enclosure

2.8 portable electrical apparatus

apparatus that can either be moved while in operation or that can easily be moved, from one place to another ready for use, while connected to the supply

3 Maximum surface temperature of enclosures

The maximum surface temperature shall be given and marked as being at least 10 K above the temperature determined in accordance with appendix B.

Where the apparatus is designed for a maximum ambient temperature other than $40\text{ }^{\circ}\text{C}$, that temperature shall also be used for deriving the maximum surface temperature of the enclosure and shall be marked on the apparatus.