

Specification for

Cable glands and sealing boxes for association with apparatus for use at mines and quarries

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Co-operating organizations

The Mining and Quarrying Requisites Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

- Association of Mining Electrical and Mechanical Engineers
- British Electrical and Allied Manufacturers' Association*
- British Steel Industry
- Council of Underground Machinery Manufacturers*
- Department of Trade and Industry*
- Engineering Equipment Users' Association
- Federation of Manufacturers of Construction Equipment and Cranes
- Institute of Quarrying
- Institution of Mechanical Engineers
- Institution of Mining Engineers*
- Mechanical Handling Engineers Association
- National Coal Board*

The Government department and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- Electric Cable Makers' Confederation

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Foreword

This British Standard, prepared under the authority of the Mining and Quarrying Requisites Industry Standards Committee, was devised to rationalize the principal features of cable glands and sealing boxes designed primarily for association with electrical apparatus used in mining. This revised edition provides for metric versions of the equipment covered by the earlier issues of BS 542 and, in addition, now gives a more comprehensive coverage to the specification of insulation materials and to the detailed physical properties thereof. Also, there is close alignment with IEC criteria for various electrical features.

Modern techniques have superseded the procedures previously stated for compound filling. Certain sections on jointing and compounding have, therefore, been deleted in order not to restrict advances in jointing techniques.

NOTE The conversions to imperial units quoted for reference in Appendix C are approximate. More accurate conversions should be based on the tables in BS 350, "*Conversion factors and tables*". 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 8, 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 Scope

This British Standard specifies cable sealing boxes provided with cable glands and designed to be filled with solid setting insulating compound and intended for use at mines and quarries in combination with cables of the following types:

- 1) plain lead or aluminium sheathed cables, where such are permissible;
- 2) lead or aluminium sheathed wire-armoured cables;
- 3) wire-armoured cables which are not lead or aluminium sheathed;
- 4) non-armoured flexible cables.

This standard includes cable sealing boxes intended for use with flameproof apparatus but does not apply to boxes designed to be filled with oil.

Appendix A indicates the minimum information which should be given with the enquiry or order.

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

2 Definitions

For the purposes of this British Standard, the following definitions apply:

2.1

cable gland

a device designed to secure the end of the cable to the cable sealing box, by means appropriate to the type of cable, including provision for making electrical connection to the armouring and lead or aluminium sheath of the cable, if any

2.2

cable sealing box

a device designed to receive and protect the end of the cable, with provision for sealing the conductors and the insulating material of the cable with compound and having a cable gland for attaching the cable to the box, together with any terminals provided for connection to the conductors of the cable within the box. The box may form part of, or be detachable from, the apparatus with which it is associated

2.3

detachable cable sealing box

a cable sealing box so designed that it can be detached from associated apparatus without disturbing the sealing

3 Voltages

For the purposes of this British Standard, the following shall be regarded as the preferred standard voltages:

125; 250; 660; 1 100; 3 300; 6 600;
and 11 000 volts.

Cable glands and sealing boxes designed for other than the above preferred standard voltages, subject to their complying with all other relevant requirements specified herein, and by agreement between the purchaser and the manufacturer, shall be deemed to meet the requirements of this standard.

4 Materials

4.1 Glands and sealing box bodies. The material of cable glands shall be either 1) of ferrous metal which is substantially non-corrodible, or 2) of non-ferrous metal. The bodies of sealing boxes shall be of metal.

For underground coal mining use, no aluminium, magnesium or titanium, or alloy containing aluminium and/or magnesium and/or titanium shall be used unless the total content of these three constituents does not exceed 15 % by weight and in which the content of magnesium and titanium together does not exceed 10 % by weight; neither shall any external part be painted or coated with preparations containing, in metallic form, aluminium, magnesium or titanium.

NOTE These limitations have been imposed to avoid the hazards of incendive sparking due to friction between rusted steel or iron and the metals described.

4.2 Terminal nuts and stems. The materials and dimensions of terminal stems for connecting the cable conductors within the cable sealing box to those in the terminal chamber shall be as stated in Table 1.

It is recognized that a terminal stem may be threaded at both ends for terminal nuts, or one end may be increased in diameter and drilled to form a socket.

The dimensions of hexagonal nuts shall comply with the requirements of BS 3692 for the appropriate bolt diameter. For sizes up to and including 12 mm diameter, a normal thickness nut shall be used; for sizes above 12 mm diameter, thin nuts may be used. The nuts shall be of brass.

The class of fit for terminal nuts and stems shall be medium fit, class 6H/6g complying with the requirements of BS 3643.