
Specification for
Insulators of ceramic material
or glass for overhead lines
with a nominal voltage
greater than 1000 V

Part 2. Requirements

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The following BSI references relate to the work on this standard:
Committee reference ELE/70/1 Draft for comment 70/972

Co-operating organizations

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

- | | |
|--|---|
| Associated Offices Technical Committee | Electrical Contractors' Association of Scotland |
| *Association of Consulting Engineers | *Electrical Research Association |
| Association of Manufacturers of Domestic Electrical Appliances | *Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales |
| Association of Mining Electrical and Mechanical Engineers | Electronic Engineering Association |
| Association of Supervisory and Executive Engineers | Engineering Equipment Users' Association |
| British Electrical and Allied Manufacturers' Association | *Institution of Electrical Engineers |
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| British Radio Equipment Manufacturers' Association | Lighting Industry Federation Ltd. |
| British Railways Board | Ministry of Defence |
| British Steel Corporation | National Inspection Council for Electrical Installation Contracting |
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| Department of the Environment | Post Office |
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| *Electric Cable Makers' Confederation | |
| Electrical Contractors' Association | |

The Government department and scientific 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:

- | | |
|---|--|
| Aluminium Federation | Electrical and Electronic Insulation Association |
| Association of Manufacturers Allied to the Electrical and Electronic Industry | Light Metal Founders' Association |
| BEAMA Transmission and Distribution Association | National Association of Malleable Ironfounders |
| British Electro-ceramic Manufacturers' Association | North of Scotland Hydro-Electric Board |
| | Overhead Transmission Line Contractors |



Amendment No. 1
published and effective from 31 October 1983
to BS 137 : Part 2 : 1973

Specification for insulators of ceramic material or
glass for overhead lines with a nominal voltage
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Revised text

AMD 4380
October 1983

Contents

Under the heading 'Appendices', after the appendix B title insert the following new entry:

- 'C. Dimensional and mechanical characteristics of string insulator units of the cap and pin type either with ball and socket couplings or with clevis and tongue couplings'

Under the heading 'Tables' at the end of the title for table 1 insert 'for rigid insulators'.

After the entry for table 3 insert the following new entries:

- '4. Specified values of mechanical and dimensional characteristics for string insulator units with ball and socket couplings
- 5. Specified values of mechanical and dimensional characteristics for string insulator units with clevis and tongue couplings'

AMD 4380
October 1983

Foreword

Insert the following new sentence at the end of paragraph 4.

'Dimensional and mechanical characteristics of string insulator units of the cap and pin type, either with ball and socket couplings or with clevis and tongue couplings, are given in Appendix C. The characteristics are identical with those given in IEC Publication 305.'

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October 1983

Clause 1. Scope

Insert the following new sentence at the end of paragraph 1.

'Dimensional and mechanical characteristics of string insulator units of the cap and pin type, either with ball and socket couplings or with clevis and tongue couplings, are given in Appendix C.'

AMD 4380
October 1983

Clause 5. Mechanical loads

Delete the existing text and substitute the following:

'The minimum failing load of rigid insulators shall be one of those given in Table 1. The specified loads are transverse.'

Table 1. Minimum failing loads

Delete the existing table and table heading and substitute the following:

**Table 1. Minimum failing loads
for rigid insulators**

Minimum failing load	Description
kN	
5	line post insulator
10	line post insulator
10	pin insulator

New appendix C

Insert the following new appendix C after figure 4.

'Appendix C

Dimensional and mechanical characteristics of string insulator units of the cap and pin type either with ball and socket couplings or with clevis and tongue couplings

C1. General

These characteristics normally apply only to string insulator units for use on overhead lines in clean or moderately polluted areas. For use in heavily polluted areas and for insulators for use on direct current systems (see IEC Publication 438*), it may be necessary for certain dimensions to be changed and insulator units having different creepage distances and spacing may be preferred.

NOTE 1. General definitions and methods of test are given in BS 137 : Part 1.

NOTE 2. The ball and socket couplings covered by IEC Publication 120 are included in BS 3288 : Part 2. The 28 mm coupling in IEC Publication 120 is identical with the 28A coupling of BS 3288 : Part 2 but the 28B coupling is commonly used in the United Kingdom.

NOTE 3. There is no British Standard corresponding to IEC Publication 471, which deals with clevis and tongue couplings, but the standard couplings referred to have been approved by the committee concerned.

C2. Mechanical and dimensional characteristics

String insulator units of the cap and pin type are standardized by the following specified characteristics:

- Electromechanical or mechanical failing load
 - Maximum nominal diameter of the insulating part
 - Nominal spacing
 - Minimum nominal creepage distance
 - Standard coupling
- The corresponding values are indicated in tables 4 and 5.

C3. Designation and marking

Insulators are designated in table 4 by the letter U followed by a number indicating the specified electro-mechanical or mechanical failing load in kilonewtons. The letter B which follows specifies a ball and socket coupling and the letter S or L, where applicable, specifies a short or long spacing.

Insulators are designated in table 5 by the letter U followed by a number indicating the specified electro-mechanical or mechanical failing load in kilonewtons. The letter C which follows specifies a clevis and tongue coupling and the letter S or L, where applicable, specifies a short or long spacing.

Clause 8 of BS 137 : Part 1 : 1982 specifies that insulators shall be marked with the specified electro-mechanical or mechanical failing load. This load may be indicated by using the first part of the designation given in the first column of tables 4 and 5. For example, the insulator may be marked U 120 for the units U 120 CS and U 120 CL.

Except for nominal spacing, tolerances for dimensions as indicated in Clause 24 of BS 137 : Part 1 : 1982 are applicable to all nominal values, including maximum nominal diameters. As regards minimum nominal creepage distance values, given in tables 4 and 5, only the negative tolerances shall apply. The tolerances nominal spacing shall be $\pm (0.03 P + 0.3)$ mm where P is the spacing expressed in millimetres.

*For information only.

Table 4. Specified values of mechanical and dimensional characteristics for string insulator units with ball and socket couplings

Designation	Electro-mechanical or mechanical failing load	Maximum nominal diameter of the insulating part <i>D</i>	Nominal spacing <i>P</i>	Minimum nominal creepage distance	Standard coupling according to IEC Publication 120
	kN	mm	mm	mm	
U 40 BS	40	175	100	185	11
U 40 BL	40	175	110	185	11
(U 60 BS)	60	255	127	280	16
(U 60 BL)	60	255	146	280	16
U 70 BS	70	255	127	280	16
U 70 BL	70	255	146	280	16
(U 80 BS)	80	255	127	280	16
(U 80 BL)	80	255	146	280	16
U 100 BS	100	255	127	280	16
U 100 BL	100	255	146	280	16
U 120 BS	120	255	146	280	16
U 120 BL	120	280	170	330	16
U 160 BS	160	280	146	300	20
U 160 BL	160	300	170	330	20
(U 190 BS)	190	300	170	330	24
(U 190 BL)	190	320	195	370	24
U 210 BS	210	300	170	330	20
U 210 BL	210	320	195	370	20
U 300 B	300	320	195	370	24
U 400 BS	400	360	205	525	28
U 400 BL	400	380	220	550	28
U 530 BS	530	380	240	600	32
U 530 BL	530	440	255	640	32

NOTE. Insulators between brackets are non-preferred. Non-preferred insulators U 190 BS and U 190 BL which have a standard coupling larger than those of insulators U 210 BS and U 210 BL have been included in this table because they are commonly used in the U.K. In addition U 125 BL and U 125 BS insulators with 20 mm couplings are also used.



