

Specification for

Thermosetting insulated cables with limited circuit integrity when affected by fire

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Cables and Insulation Standards Policy Committee (CIL/-) to Technical Committee CIL/20, upon which the following bodies were represented:

Aluminium Federation
 Association of Consulting Engineers
 Association of Manufacturers of Domestic Electrical Appliances
 British Approvals Service for Cables
 British Cable Makers' Confederation
 British Plastics Federation
 British Steel Industry
 Department of the Environment (Property Services Agency)
 Department of Trade and Industry (Consumer Safety Unit, CA Division)
 Electricity Association
 Engineering Equipment and Materials Users' Association
 Institution of Electrical Engineers
 London Regional Transport

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
 British Electrical Systems Association (BEAM Ltd.)
 British Non-Ferrous Metals Federation
 British Steel plc
 Chartered Institution of Building Services Engineers
 Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
 Engineering Industries Association
 ERA Technology Ltd.
 GAMBICA (BEAMA Ltd.)
 Institution of Incorporated Executive Engineers
 Lighting Industry Federation Ltd.
 London Underground Ltd.
 National Association of Lift Makers
 Portable Electric Tool Manufacturers' Association
 Transmission and Distribution Association (BEAMA Ltd.)

This British Standard, having been prepared under the direction of the Cables and Insulation Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on
 15 May 1993

© BSI 1993

The following BSI references relate to the work on this standard:
 Committee reference CIL 20
 Draft for comment 91 20368 DC

ISBN 0 580 21905 4

Amendments issued since publication

Amd. No.	Date	Text affected

Amendment No. 1
published and effective from 15 September 1994
to BS 7629 : 1993

**Specification for thermosetting insulated cables with limited
circuit integrity when affected by fire**

Revised text

Contents

Under the heading 'Tables' delete the entries for tables 2 and 3 and substitute the following entries:

- 2** Dimensions of cables
- 3** *Deleted*

Delete the entry for table 7 and substitute the following:

- 7** *Deleted*
- 8** Minimum transmittance values for smoke generation'

Delete the heading 'Figure' and the existing entry and substitute the following:

'Figures

- 1** Lay up diagram 7-, 12- and 19-core cables
- C.1** Apparatus for test for resistance to impact'

AMD 8269/September 1994

Clause 1 Scope

In paragraph 1, line 6 delete '**16.4 to 16.6**' and substitute '**15.6, 16.4 and 16.5**'.

In paragraph 4 delete sentence 1 and substitute the following:

'This British Standard applies to cables which are 300/500 V, 2-, 3- or 4-core circular cables with an uninsulated circuit protective conductor or multicore cables with 7-, 12- or 19-core with an uninsulated drain wire.'

AMD 8269/September 1994

Clause 5.1

At the end of the clause add the following:

'The drain wire shall be a tinned annealed copper wire with a nominal cross-sectional area of 0.5 mm².'

AMD 8269/September 1994

Clause 5.2

Delete the existing clause and substitute the following:

‘5.2 The class of conductor given in table 2 shall apply to both the insulated conductor and the uninsulated circuit protective conductor.’

AMD 8269/September 1994

Table 1 Schedule of tests

In column 3, against the entry for ‘Insulation: Material’, after ‘BS 7655 : Section 1.2’, insert ‘or BS 7655 : Section 5.1’.

In column 3, against the entry for ‘Sheath: Material’, delete ‘or table 3¹⁾’ and substitute ‘BS 7655 : Section 6.1¹⁾’.

Delete the entire ‘Flame propagation test on a single cable’ entry.

Immediately under ‘Tests under fire conditions’, insert a new entry as follows:

‘Flame propagation test on single cable **15.5** BS 4066 : Part 1 RS’

AMD 8269/September 1994

Clause 6.1 Type

After ‘BS 7655 : Section 1.2’ insert the following:

‘or insulation type EI 5 as specified in BS 7655 : Section 5.1.’

AMD 8269/September 1994

Table 2. Dimensions of 2-, 3- and 4-core cables

Delete the existing table and substitute the following:

Table 2. Dimensions of cables					
Number of cores	Nominal cross-sectional area of conductor mm ²	Class of conductor¹⁾	Radial thickness of insulation mm	Radial thickness of sheath mm	Approximate overall diameter mm
2	1.0	1	0.6	0.9	8.0
	1.5	1,2 or 5	0.7	0.9	8.5
	2.5	1,2 or 5	0.8	1.0	10.5
	4.0	2 or 5	0.8	1.1	12.5
3	1.0	1	0.6	0.9	8.0
	1.5	1,2 or 5	0.7	0.9	9.5
	2.5	1,2 or 5	0.8	1.0	12.0
	4.0	2 or 5	0.8	1.1	13.5
4	1.0	1	0.6	1.0	9.0
	1.5	1,2 or 5	0.7	1.0	10.5
	2.5	1,2 or 5	0.8	1.1	13.0
	4.0	2 or 5	0.8	1.2	15.0
7	1.0	1	0.6	1.0	11.0
	1.5	1	0.7	1.1	12.5
	2.5	2	0.8	1.2	15.0
12	1.5	1	0.7	1.2	16.0
	2.5	2	0.8	1.4	20.0
19	1.5	1	0.7	1.3	19.0
	2.5	2	0.8	1.5	24.0

¹⁾ For classification see BS 6360.

AMD 8269/September 1994

Clause 7 Identification of cores

In paragraph 1, below the entry for '4-core + uninsulated circuit protective conductor', insert a new item as follows:

'7-, 12- and 19-core +
uninsulated drain wire

In each layer, two
adjacent cores shall
be distinctively
coloured red and
blue with all other
cores of the same
colour (excluding
red or blue) as each
other'

AMD 8269/September 1994

Clause 8.1 General

Between paragraph 1 and the note, insert the following:

'The 7-, 12- and 19-core cables shall be laid up as shown in figure 1 and shall have a non-hygroscopic binder tape applied over the laid up cores. A drain wire of nominal cross section 0.5 mm² shall be run over the binder tape.'

AMD 8269/September 1994

Clause 9 Screen

In a), at the end of sentence 1, insert 'or drain wire'.

In b), line 4, after 'conductor' insert 'or drain wire'.

AMD 8269/September 1994

Clause 10.1 Type

In b) Type B, delete the existing text and substitute 'Compound conforming to type LTS 3 of BS 7655 : Section 6.1'.

AMD 8269/September 1994

Table 3. Requirements for type B cable sheaths having low emission of smoke and corrosive gases when affected by fire

Delete the title and the entire table and substitute 'Table 3. *Text deleted*'.

AMD 8269/September 1994

Clause 12 Schedule of tests

In b) Regular sample tests, after 'manufacturer' delete 'or as specified by the purchaser at the time of ordering'.

AMD 8269/September 1994

Clause 14.2.2 Method

In paragraph 1, line 3, after '5000 V' insert 'on each drum length of cable'.

In paragraph 2, line 5, after 'protective conductor' insert 'or drain wire'.

AMD 8269/September 1994

Table 5 Regular sample tests

For the entry 'Test for resistance to fire', in column 2 delete '16.4' and substitute '15.6' and in column 3 delete '1983' and substitute '1994'.

For the entry 'Smoke emission', in column 2 delete '16.7' and substitute '15.7'.

AMD 8269/September 1994

Clause 15.4.2 Method

In paragraph 2 line 1, delete '2 kV' and substitute '2000 V'.

In paragraph 2 line 7, after 'conductor' insert 'or drain wire'.

In paragraph 3 line 3, after 'conductor' insert 'or drain wire'.

In paragraph 3 line 4, delete '1 kV' and substitute '1000 V'.

AMD 8269/September 1994

New clauses 15.6 and 15.7

Immediately after clause 15.5, insert the following new clauses:

'15.6 Test for resistance to fire

The completed cables shall be tested in accordance with D.2 of BS 6387 : 1994 and shall, as a minimum, conform to category B and category S of that standard.

15.7 Test for smoke emission (type B cables)

The completed cable shall be tested, using the apparatus in BS 7622 : Part 1, in accordance with the test procedure given in BS 7622 : Part 2. The cables shall be tested as a flat horizontal unit. The number of cables shall be in accordance with 4.2.1 of BS 7622 : Part 2 : 1993. The smoke generated shall not result in transmittance values lower than those given in table 8.'

Table 8. Minimum transmittance values for smoke generation	
Overall diameter (<i>D</i>) of the cable mm	Minimum transmittance %
$20 < D \leq 40$	60
$10 < D \leq 20$	60
$5 < D \leq 10$	60

AMD 8269/September 1994

Table 6 Type tests

Delete the existing table and substitute the following.

Table 6. Type tests		
Test	Requirement given in clause	Test method
Insulation: material	6.1	BS 6469/ BS 7655 : Section 1.1, BS 7655 : Section 1.2 or BS 7655 : Section 5.1
Insulation: corrosive and acid gas emission ¹⁾	6.5	BS 6425 : Part 1
Tape: corrosive and acid gas emission ¹⁾	8.2	BS 6425 : Part 1
Sheath: material	10.1	BS 6469/ BS 7655 : Section 4.1 or BS 7655 : Section 6.1 ¹⁾
Sheath: corrosive and acid gas emission ¹⁾	10.5	BS 6425 : Part 1
Bending test	16.2	Annex B
Impact test	16.3	Annex C
Test for resistance to fire with water	16.5	D.3 of BS 6387 : 1994
Test for resistance to fire with mechanical shock	16.6	D.4 of BS 6387 : 1994
¹⁾ Type B cables only.		

AMD 8269/September 1994

Clause 16.4 Test for resistance to fire

Delete the title and text and substitute '**16.4** *Text deleted.*'

AMD 8269/September 1994

Clause 16.5 Test for resistance to fire with water

In line 2, delete '1983' and substitute '1994'.

After the existing text, insert the following:

'NOTE. Cables above 20 mm diameter are not yet covered by BS 6387. Reference should be made to the manufacturer.'

AMD 8269/September 1994

Clause 16.6 Test for resistance to fire with mechanical shock

In line 2, delete '1983' and substitute '1994'.

After the existing text, insert the following:

'NOTE. Cables above 20 mm diameter are not yet covered by BS 6387. Reference should be made to the manufacturer.'

AMD 8269/September 1994
