



BSI Standards Publication

Electric cables — Low voltage energy cables of rated voltages up to and including 450/750 V (U_0/U)

Part 2-42: Cables for general applications — Single core non-sheathed cables with crosslinked EVA insulation

National foreword

This British Standard is the UK implementation of EN 50525-2-42:2011.

In the UK, the BS EN 50525 series of standards contain complex supersession details. The table below best summarizes the relationship between these standards:

Part 1 together with	Supersedes
2-81	BS 638-4:1996
2-41, 2-42	BS 6007: 2006
2-11 (in part), 2-12, 2-21 (in part), 2-71	BS 6500:2000
2-11 (in part), 2-21 (in part), 2-51 (in part), 2-83, 3-21	BS 7919:2001
2-31, 2-51 (in part)	BS 6004:2000
3-41	BS 7211:1998
2-22, 2-72, 2-82, 3-11, 3-31	None

NOTE All British Standards will remain current until they are withdrawn on 31 December 2012. British Standards in bold are only partially superseded, and new editions of BS 6004 and BS 7211 will be introduced on 1 January 2013.

National Annex NA (informative) gives information on the origins and identification of particular cable types.

The UK participation in its preparation was entrusted to Technical Committee GEL/20/17, Electric Cables - Low voltage.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Amendments issued since publication

Date	Text affected
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English version

**Electric cables -
 Low voltage energy cables of rated voltages up to and including 450/750 V
 (U_0/U) -
 Part 2-42: Cables for general applications -
 Single core non-sheathed cables with crosslinked EVA insulation**

Câbles électriques -
 Câbles d'énergie basse tension de tension
 assignée au plus égale à 450/750 V
 (U_0/U) -
 Partie 2-42: Câbles pour applications
 générales -
 Conducteurs isolés en matériau EVA
 réticulé

Kabel und Leitungen -
 Starkstromleitungen mit Nennspannungen
 bis 450/750 V (U_0/U) -
 Teil 2-42: Starkstromleitungen für
 allgemeine Anwendungen -
 Ader- und Verdrahtungsleitungen mit
 vernetzter EVA-Isolierung

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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CENELEC

European Committee for Electrotechnical Standardization
 Comité Européen de Normalisation Electrotechnique
 Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50525-2-42 on 2011-01-17.

This document, which is one of a multipart series, supersedes HD 22.7 S2:1995 + A1:1999 + A2:2004.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2012-01-17
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2014-01-17
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1 Scope

EN 50525-2-42 applies to crosslinked elastomeric insulated single core non-sheathed cables.

The cables are of rated voltages U_0/U up to and including 450/750 V.

NOTE 1 Cables rated 450/750 V may be used at 600/1 000 V when this cable is used in fixed installations with mechanical protection, within switchgear and control gear. See HD 516.

The cables are intended for use in fixed installations within high temperature zones.

The maximum conductor operating temperature for each of the cables in this standard is 110 °C.

NOTE 2 HD 516 contains extensive guidance on the safe use of cables in this standard.

This EN 50525-2-42 should be read in conjunction with EN 50525-1, which specifies general requirements.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE One or more references to the standards below are in respect of a specific sub-division of that standard, for instance a clause, a table, a class or a type. Cross-references to these standards are undated and, at all times, the latest version applies.

EN 50363-1	Insulating, sheathing and covering materials for low voltage energy cables – Part 1: Cross-linked elastomeric insulating compounds
EN 50395	Electrical test methods for low voltage energy cables
EN 50396	Non electrical test methods for low voltage energy cables
EN 50525-1	Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_0/U) – Part 1: General requirements
EN 60228	Conductors of insulated cables (IEC 60228)
EN 60811-1-4	Insulating and sheathing materials of electric and optical cables – Common test methods – Part 1-4: General application – Tests at low temperature (IEC 60811-1-4:1985 + A1:1993 + corr. May 1986)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of EN 50525-1 apply.

4 Heat resistant cables (110 °C)

4.1 Cables for fixed wiring – H07G-U, H07G-R and H07G-K

4.1.1 Construction

4.1.1.1 Conductor

The conductor shall be class 1, class 2 or class 5 according to EN 60228.

A separator of suitable material shall be applied around each conductor if the conductors are plain.

NOTE If the conductors are tinned the use of a separator is optional.

4.1.1.2 Sizes of cable

The sizes of cable shall be:

- class 1 – 1,5 mm² to 10 mm²;
- class 2 – 1,5 mm² to 240 mm²;
- class 5 – 1,5 mm² to 240 mm².

4.1.1.3 Insulation

The insulation shall be a polyolefin cross-linked material of Type EI 3 to EN 50363-1 applied around the conductor.

4.1.1.4 Marking

The cable shall be marked with the CENELEC code H07G-U for cables with class 1 conductor, H07G-R for cables with class 2 conductor or H07G-K for cables with class 5 conductor. The marking shall comply with Clause 6 of EN 50525-1.

4.1.2 Requirements

Each cable shall comply with the appropriate requirements given in EN 50525-1, and the particular requirements of this part.

Testing shall be in accordance with Annex A, and the relevant tests indicated in column 6.

The dimensions of the cables shall conform to Table B.1 for the relevant size.

4.2 Cables for internal wiring – H05G-U and H05G-K

4.2.1 Construction

4.2.1.1 Conductor

The conductor shall be class 1 or class 5, according to EN 60228.

4.2.1.2 Sizes of cable

The sizes of cable shall be:

- class 1 – 0,5 mm² to 1 mm²;

- class 5 – 0,5 mm² to 1 mm².

4.2.1.3 Insulation

The insulation shall be a polyolefin cross-linked material of Type EI 3 to EN 50363-1 applied around the conductor.

4.2.1.4 Marking

The cable shall be marked with the CENELEC code H05G-U for cables with class 1 conductor, or H05G-K for cables with class 5 conductor. The marking shall comply with Clause 6 of EN 50525-1.

4.2.2 Requirements

Each cable shall comply with the appropriate requirements given in EN 50525-1, and the particular requirements of this part.

Testing shall be in accordance with Annex A, and the relevant tests indicated in column 7.

The dimensions of the cables shall conform to Table B.2 for the relevant size.

Annex A
(normative)

Tests for cables to EN 50525-2-42

Table A.1

1	2	3	4	5	6	7
Ref No.	Tests ^a	Category of test	Test method described in		Applicability of test – Subclause	
			EN	Clause	4.1	4.2
					H07G	H05G
1	Electrical tests ^b					
1.1	Resistance of conductors	T, S	50395	5	X	X
1.2.1	Voltage test at 2 500 V	T, S	50395	6	X	-
1.2.2	Voltage test at 2 000 V	T, S	50395	6	-	X
1.3	Insulation resistance at (110 ± 2) °C ^c	T	50395	8.2	X	X
1.4	Absence of faults in insulation	R	50395	10	X	X
2	Constructional and dimensional tests					
2.1	Checking of compliance with constructional provisions	T, S	50525-1	Inspection and manual tests	X	X
2.2	Measurement of thickness of insulation	T, S	50396	4.1	X	X
2.3	Measurement of overall diameter	T, S	50396	4.4	X	X
3	Insulation material tests	T	50363-1 ^d	-	X	X
4	Impact test at - 5 °C	T	60811-1-4	8.5	X	X

^a The order given does not imply a sequence of testing.

^b Particular test conditions and requirements are given in Table 1 of EN 50525-1.

^c Test to be made in air; values based on a specified insulation resistance of 10¹⁰ Ω·cm.

^d This EN includes all the test methods and requirements for the material. Material to be tested is taken from the finished cable.

Annex B (normative)

General data

NOTE 1 The overall dimensions of cables have been calculated in accordance with EN 60719.

NOTE 2 Cables designated “-U” have class 1 conductors, “-R” have class 2 conductors and “-K” have class 5 conductors.

Table B.1 — General data for Types H07G-U, H07G-R and H07G-K

1 Nominal cross-sectional areas of conductor mm ²	2 Class of conductor (EN 60228)	3 Insulation thickness Specified value mm	4		6 Minimum insulation resistance at 110 °C MΩ.km
			5 Mean overall diameter		
			Lower limit mm	Upper limit mm	
1,5	1	0,8	2,8	3,5	0,012
2,5	1	0,9	3,4	4,3	0,011
4	1	1,0	4,0	5,0	0,010
6	1	1,0	4,5	5,6	0,009
10	1	1,2	5,7	7,1	0,008
1,5	2	0,8	2,9	3,7	0,012
2,5	2	0,9	3,5	4,4	0,011
4	2	1,0	4,2	5,2	0,010
6	2	1,0	4,7	5,9	0,008
10	2	1,2	6,0	7,4	0,008
16	2	1,2	6,8	8,5	0,006
25	2	1,4	8,4	10,6	0,006
35	2	1,4	9,4	11,8	0,005
50	2	1,6	10,9	13,7	0,005
70	2	1,6	12,5	15,6	0,004
95	2	1,8	14,5	18,1	0,004
120	2	1,8	15,9	19,9	0,004
150	2	2,0	17,7	22,1	0,004
185	2	2,2	19,7	24,6	0,003
240	2	2,4	22,4	28,0	0,003

Table B.1 — General data for Types H07G-U, H07G-R and H07G-K (continued)

1	2	3	4	5	6
Nominal cross-sectional areas of conductor mm ²	Class of conductor (EN 60228)	Insulation thickness Specified value mm	Mean overall diameter		Minimum insulation resistance at 110 °C MΩ.km
			Lower limit mm	Upper limit mm	
1,5	5	0,8	3,0	3,7	0,012
2,5	5	0,9	3,6	4,5	0,011
4	5	1,0	4,3	5,4	0,010
6	5	1,0	4,8	6,0	0,008
10	5	1,2	6,0	7,6	0,008
16	5	1,2	7,1	8,9	0,006
25	5	1,4	8,8	11,0	0,005
35	5	1,4	10,1	12,6	0,005
50	5	1,6	11,9	14,9	0,004
70	5	1,6	13,6	17,0	0,004
95	5	1,8	15,5	19,3	0,004
120	5	1,8	17,1	21,4	0,003
150	5	2,0	19,0	23,8	0,003
185	5	2,2	21,0	26,3	0,003
240	5	2,4	23,9	29,9	0,003

Table B.2 — General data for Types H05G-U and H05G-K

1	2	3	4	5	6
Nominal cross-sectional area of conductor mm ²	Class of conductor (EN 60228)	Insulation thickness Specified value mm	Mean overall diameter		Minimum insulation resistance at 110 °C MΩ.km
			Lower limit mm	Upper limit mm	
0,5	1	0,6	1,9	2,4	0,015
0,75	1	0,6	2,1	2,6	0,013
1	1	0,6	2,2	2,8	0,012
0,5	5	0,6	2,1	2,6	0,014
0,75	5	0,6	2,2	2,8	0,012
1	5	0,6	2,4	2,9	0,011

Bibliography

- EN 60719 Calculation of the lower and upper limits for the average outer dimensions of cables with circular copper conductors and of rated voltages up to and including 450/750 V
- HD 516 Guide to use of low voltage harmonized cables

National Annex (informative) Origins and identification of the particular cable types

As an aid to users, the table below shows, in respect of BS EN 50525-2-42:

- the identification of the particular cable types from BS 6007 that are now included in BS EN 50525-2-42;
- the location of the cables within BS EN 50525-2-42;
- any applicable United Kingdom and CENELEC cable codings (see also National Informative Annex B to BS EN 50525-1).

Pre-existing BS		Clause in BS EN 50525-2-42	Cable type – Coding	
Number	Table		United Kingdom (if applicable)	CENELEC
BS 6007	3	4.1	–	H07G-U
BS 6007	4	4.1	–	H07G-R
BS 6007	5	4.1	–	H07G-K
BS 6007	6	4.2	–	H05G-U
BS 6007	7	4.2	–	H05G-K

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