BRITISH STANDARD AEROSPACE SERIES

BS 3G 210: 1996

Specification for

PTFE insulated equipment wires and cables, single- and multi-core, with silver plated copper conductors (190 °C) or nickel plated copper conductors (260 °C)

ICS 49.060

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ACE/6, Aerospace avionic, electrical and fibre optic technology, upon which the following bodies were represented:

British Airways
British Cable Makers Confederation
British Rubber Manufacturers' Association
Civil Aviation Authority (Airworthiness Division)
Federation of the Electronics Industry
Ministry of Defence
Society of British Aerospace Companies

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Contents

Foreword

This British Standard has been prepared by Technical Committee ACE/6. It specifies requirements and current ratings for a range of PTFE insulated equipment wires and cables that are intended for use in electrical instruments and equipment. It is a revision of BS 2G 210 which is withdrawn.

This revision introduces corrections to Table 17, Table 18 and Table 21 and incorporates AMD 7223, July 1992.

The PTFE insulation is applied either by extrusion or by spiral lapping.

Cables manufactured to this standard are not required to meet the fire resistance requirements of BS 3G 100-3.13, but are required to satisfy the flammability requirements of BS G 230.

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 to iv, pages 1 to 22, 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.

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1 Scope

This British Standard specifies the construction and performance requirements for a range of PTFE insulated cables and wires with either silver plated or nickel plated copper conductors which are suitable for use in electrical instruments and equipment. The continuous current ratings for the cables are given in Annex A.

The following types of cables are specified:

types A and NA	300 V (r.m.s.)	single- or multi-core
types B and NB	600 V (r.m.s.)	
types C and NC	1 000 V (r.m.s.)	
types AS and NAS	300 V (r.m.s.)	single- or multi-core with overall screen
types BS and NBS	600 V (r.m.s.)	
types CS and NCS	1 000 V (r.m.s.)	
types AM and NAM	300 V (r.m.s.)	multi-core with outer jacket
types BM and NBM	600 V (r.m.s.)	
types CM and NCM	1 000 V (r.m.s)	
types BSM and NBSM	600 V (r.m.s.)	single- or multi-core with overall screen and outer jacket
type CSM and NCSM	1 000 V (r.m.s.)	

NOTE 1 Cables with nickel plated conductors are prefixed N.

NOTE 2 The cables are suitable for use where the potential between conductors, or between a conductor and screen, or between a conductor and the equipment structure does not exceed the voltage specified above for each type.

NOTE 3 The cables are suitable for continuous use where the maximum stabilized conductor temperature does not exceed 190 °C (cables having silver plated conductors) or 260 °C (cables having nickel plated conductors). They are suitable for applications not involving continuous flexing at temperatures down to – 75 °C, or, where continuous flexibility is involved, at temperatures down to – 50 °C.

NOTE 4 Although cables having silver plated conductors are suitable for use up to 190 °C, it should be noted that after prolonged use at this temperature the conductor may tarnish, with consequent difficulty in soldering.

NOTE 5 The latest revision of an Aerospace Series standard is indicated by a prefix number.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publications apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited reference applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest edition.

3 Classification

Cables shall be classified according to the number of cores as follows:

— class 1: single-core;

— class 2: two-core;

— class 3: three-core;

— class 4: four-core.

4 Definitions

For the purposes of this standard the definitions given in BS G 230 and BS G 258 apply, together with the following.

4.1
wire

a cable having a solid conductor

5 Construction

5.1 General

The materials and method of construction used for the formation of cables shall be defined and controlled by the manufacturer to the satisfaction of the Approving Authority[1)]. No change shall be made to such materials or processes unless it can be shown to the satisfaction of the Approving Authority that the performance and handling properties of cables have not been degraded.

5.2 Materials

Cables shall be manufactured from unused materials that have been exposed only to processes essential to their manufacture and application.

5.3 Conductors

5.3.1 Copper conductors shall conform to the appropriate requirements of BS G 231 together with **5.3.2** and **5.3.3**, except for tensile strength and elongation at break of conductors after insulation which shall conform to Table 22.

5.3.2 Copper strands shall be either silver plated or nickel plated.

5.3.3 Joints in single strands shall be brazed or hard soldered and there shall be not more than one such joint in any 50 m of strand. Joints in single strands shall not be within 300 mm of any other joint in the same layer.

5.4 Insulation

The insulation shall be PTFE, either extruded or spirally lapped. If spirally lapped, the layers shall be sintered together to give a consolidated dielectric.

5.5 Screen

The screen shall consist of a braid having a coverage of 85 % minimum, and a lay factor of less than 3 when calculated in accordance with Appendix A of BS 2G 230:1991. Braid strands shall be 0.1 mm diameter. There shall be no joints in the complete screen. Where breaks in individual strands occur, the ends shall be brazed or tucked into the weave ensuring that the cut end is on the outside of the screen. There shall be not more than one such break in any 300 mm length of cable or in any 10 m length of individual strand. Strands from which the braid is constructed shall be either silver plated or nickel plated and shall conform to the appropriate requirements of BS G 231 before braiding.

5.6 Jacket

The jacket shall be manufactured from PTFE and shall have a minimum thickness of 0.25 m. It shall be applied by either extrusion or spiral lapping. If spirally lapped the layers shall be sintered.

NOTE The type of jacket required should be stated by the purchaser in his enquiry or order.

[1)] Approving Authorities are as follows:

a) for UK civil aviation products, the Civil Aviation Authority (or their accredited representatives); or

b) for UK military products, information is available from the Procurement Executive, Ministry of Defence, Directorate General of Defence Quality Assurance, Directorate of Standardisation.

5.7 Mass and dimensions

NOTE Cables are available in the following sizes.

Types A and NA	Sizes 32 to 20	single- and multi-core. Multi-core only available with stranded conductors
Types B and NB	Sizes 32 to 18	
Types C and NC	Sizes 32 to 10	
Types AS and NAS	Sizes 32 to 20	single- and multi-core. Available only with stranded conductors
Types BS and NBS	Sizes 32 to 18	
Types CS and NCS	Sizes 32 to 10	
Types AM and NAM	Sizes 32 to 20	multi-core only. Available only with stranded conductors
Types BM and NBM	Sizes 32 to 18	
Types CM and NCM	Sizes 32 to 18	
Types BSM and NBSM	Sizes 32 to 18	single- and multi-core. Available only with stranded conductors
Types CSM and NCSM	Sizes 32 to 10	single-core only. Available only with stranded conductors
Types CSM and NCSM	Sizes 32 to 18	multi-core only. Available only with stranded conductors

5.7.1 *General*

The mass and dimensions of the cables shall conform to Table 1 to Table 14, as appropriate.

5.7.2 *Single-core cables*

Single-core cable types AS, BS and CS shall consist of single-core cable type A, B or C with screen. Single-core cable types BSM and CSM shall consist of single-core cable type B or C with screen and outer jacket.

5.7.3 *Multi-core cables*

The cables shall consist of two or more single-core cables conforming to **5.7.1** and **5.7.2**, twisted together with a lay of approximately 12 times the diameter over the laid up core. Multi-core cable types A, B and C shall consist of twisted assemblies of single-core cable types A, B or C with no further finish. Types AS, BS and CS shall consist of twisted assemblies of single-core cable type A, B or C with overall screen. Types AM, BM and CM shall consist of twisted assemblies of single-core cable type A, B or C with outer jacket. Types BSM and CSM shall consist of twisted assemblies of single-core cable type B or C with overall screen and outer jacket.

5.8 Colour

5.8.1 *Single-core cable*

5.8.1.1 *Single colour*

For class 1 cables of all types, the colour of the PTFE insulation shall conform to Table 15. The colours shall match those shown in BS 6746C, and shall not be changed by any of the tests to which the cable is subjected.

NOTE Cables may be coloured by the use of an appropriately coloured extrusion compound or tape, or by the application of a coloured PTFE finishing coat over natural PTFE insulation.

5.8.1.2 *Bi-colour*

Bi-colouring shall conform to Table 16 and shall be in the form of non-conductive spiral marking obtained by the use of differently coloured tapes, or by dual extrusion, or by the application of stripes in PTFE printing ink on the base colour. The first colour in each pair listed in Table 16 shall be the base colour and shall occupy not less than 70 % of the surface area. The cable shall be readily identifiable by viewing any 12 mm length from any direction.

NOTE The purchaser should state in his enquiry or order whether bi-colouring is required.

5.8.2 ***Multi-core cable***

5.8.2.1 For all types of multi-core cable of classes 2, 3 or 4, the insulation shall be colour coded as shown below, using any of the methods listed in **5.8.1.1**.

— two-core: red, blue;

— three-core: red, blue, yellow;

— four-core: red, blue, yellow, green.

5.8.2.2 Jackets of types AM, NAM, BM, NBM, CM, NCM, BSM, NBSM, CSM and NCSM shall be white or another colour listed in Table 15, in accordance with **5.8.1.1**.

NOTE The purchaser should state in his enquiry or order if a colour other than white is required.

6 Designation

The designation of the cables for the purposes of drawing references and orders shall be as follows.

Single core cables and wires

XGXXX	XXXX	XX	X	XX	X
Specification number	Construction (type)	Size	Number of strands A = 1 B = 7 C = 19 D = 37	Colour code (see Table 15 and Table 16	Insulation E = extruded L = lapped

For example, 3G210BSM20C92E is a 600 V single-core, screened and jacketed cable with a 19 strand, size 20 conductor. The extruded core is coloured white/red.

Multi-core cables

XGXXX	XXXX	XX	X	XX	X
Specification number	Construction (type)	Size	Number of strands A = 1 B = 7 C = 19 D = 37	Colour (jacket, see Table 15)	Insulation E = extruded L = lapped

For example, 3G2103BSM22B9E is a 600 V, 3-core screened and jacketed cable with 7 strand, size 22 conductors. The core insulation (red/blue/yellow) is extruded and the jacket colour is white.

7 Packing and labelling

The cables shall be packed and labelled in accordance with BS G 230.

8 Tests

Cables shall be tested in accordance with BS G 230 as specified in Table 17 or Table 18 as applicable. Specific requirements of this standard are given against the appropriate test. The application of each test for qualification approval, production quality testing, inspection lot testing and production routine testing shall be as given in Table 19.

NOTE For qualification approval testing, two specimens, one of the smallest size and one of the largest size for which qualification approval is sought, should be selected from the following groups and may be considered as proving the requirements for all sizes within that group (it is permissible, for example, to submit the smallest size in a single colour and the largest in a bi-colour if approval is sought for both single-coloured and bi-coloured cables):

— group 1 types A and NA class 1, single colour, bi-colour;

— group 2 types B and NB class 1, single colour, bi-colour;

— group 3 types C and NC class 1, single colour, bi-colour;

— group 4 types AS and NAS classes 1 to 4;
— group 5 types BS and NBS classes 1 to 4;
— group 6 types CS and NCS classes 1 to 4;
— group 7 types AM and NAM classes 2 to 4;
— group 8 types BM and NBM classes 2 to 4;
— group 9 types CM and NCM classes 2 to 4;
— group 10 types BSM and NBSM classes 1 to 4;
— group 11 types CSM and NCSM classes 1 to 4.

9 Reference samples

Long term storage samples shall be identified and respooled or coiled for storage in clean, dry, temperate conditions. Such samples, which shall be representative of the size range, shall not constitute part of the type testing, but shall be retained for reference purposes for the construction as initially approved.

Table 1 — Single-core (cables and wires), unscreened types A and NA 300 V (silver or nickel plated copper conductors)

Size	Number of strands	Nominal diameter of strands	Nominal diameter of conductor	Area	Circular mil area[a]	Insulation radial thickness		Overall diameter		Mass per unit length (max.)
						Min.	Nominal	Min.	Max.	
		mm	mm	mm^2		mm	mm	mm	mm	kg/km
30	1	0.250	0.250	0.0491	97	0.10	0.15	0.45	0.60	0.96
28	1	0.320	0.320	0.0804	159	0.10	0.15	0.52	0.67	1.32
26	1	0.400	0.400	0.1257	248	0.10	0.15	0.60	0.75	1.83
32	7	0.080	0.240	0.0352	69	0.10	0.15	0.44	0.59	0.84
30	7	0.100	0.300	0.0550	109	0.10	0.15	0.50	0.65	1.10
28	7	0.120	0.360	0.0792	156	0.10	0.15	0.56	0.71	1.40
26	7	0.150	0.450	0.1237	244	0.10	0.15	0.65	0.80	1.96
24	7	0.200	0.600	0.2199	434	0.10	0.15	0.80	0.95	3.04
26	19	0.100	0.500	0.1492	295	0.10	0.15	0.70	0.85	2.26
24	19	0.120	0.600	0.2149	424	0.10	0.15	0.80	0.95	2.99
22	19	0.150	0.750	0.3358	663	0.10	0.15	0.95	1.10	4.41
20	19	0.200	1.000	0.5969	1 178	0.10	0.15	1.20	1.35	7.19

[a] The circular mil area (CMA) is equal to 1550.003 D^2N where D is the diameter (in mm) of the individual strands of the conductor and N is the number of strands in the complete conductor.

Table 2 — Single-core (cables and wires), unscreened types B and NB 600 V (silver or nickel plated copper conductors)

Size	Number of strands	Nominal diameter of strands	Nominal diameter of conductor	Area	Circular mil area[a]	Insulation radial thickness		Overall diameter		Mass per unit length (max.)
						Min.	Nominal	Min.	Max.	
		mm	mm	mm^2		mm	mm	mm	mm	kg/km
26	1	0.400	0.400	0.1257	248	0.20	0.25	0.80	1.00	2.56
23	1	0.600	0.600	0.2827	558	0.20	0.25	1.00	1.20	4.38
32	7	0.080	0.240	0.0352	69	0.20	0.25	0.65	0.84	1.44
30	7	0.100	0.300	0.0550	109	0.20	0.25	0.70	0.90	1.75
28	7	0.120	0.360	0.0792	156	0.20	0.25	0.76	0.96	2.10
26	7	0.150	0.450	0.1237	244	0.20	0.25	0.85	1.05	2.74
24	7	0.200	0.600	0.2199	434	0.20	0.25	1.00	1.20	3.95
26	19	0.100	0.500	0.1492	295	0.20	0.25	0.90	1.10	3.09
24	19	0.120	0.600	0.2149	424	0.20	0.25	1.00	1.20	3.89
22	19	0.150	0.750	0.3358	663	0.20	0.25	1.15	1.35	5.44
20	19	0.200	1.000	0.5969	1 178	0.20	0.25	1.40	1.60	8.43
18	19	0.250	1.250	0.9327	1 841	0.20	0.25	1.65	1.85	12.11

[a] The circular mil area (CMA) is equal to 1550.003 D^2N where D is the diameter (in mm) of the individual strands of the conductor and N is the number of strands in the complete conductor.

Table 3 — Single-core (cables and wires), unscreened types C and NC 1 000 V (silver or nickel plated copper conductors)

Size	Number of strands	Nominal diameter of strands	Nominal diameter of conductor	Area	Circular mil area[a]	Insulation radial thickness		Overall diameter		Mass per unit length (max.)
						Min.	Nominal	Min.	Max.	
		mm	mm	mm^2		mm	mm	mm	mm	kg/km
19	1	0.900	0.900	0.6362	1 256	0.33	0.40	1.56	1.82	9.94
32	7	0.080	0.240	0.0352	69	0.33	0.40	0.90	1.16	2.52
30	7	0.100	0.300	0.0550	109	0.33	0.40	0.96	1.22	2.90
28	7	0.120	0.360	0.0792	156	0.33	0.40	1.02	1.28	3.31
26	7	0.150	0.450	0.1237	244	0.33	0.40	1.11	1.37	4.04
24	7	0.200	0.600	0.2199	434	0.33	0.40	1.26	1.52	5.42
26	19	0.100	0.500	0.1492	295	0.33	0.40	1.16	1.42	4.45
24	19	0.120	0.600	0.2149	424	0.33	0.40	1.26	1.52	5.36
22	19	0.150	0.750	0.3358	663	0.33	0.40	1.41	1.67	7.08
20	19	0.200	1.000	0.5969	1 178	0.33	0.40	1.66	1.92	10.33
18	19	0.250	1.250	0.9327	1 841	0.33	0.40	1.91	2.17	14.30
16	19	0.300	1.500	1.3430	2 651	0.33	0.40	2.16	2.46	19.25
14	19	0.335	1.675	1.6747	3 305	0.33	0.40	2.34	2.74	23.90
12	19	0.450	2.250	3.0218	5 964	0.33	0.40	2.91	3.31	38.50
10	37	0.400	2.800	4.6496	9 176	0.33	0.43	3.46	3.86	56.00

[a] The circular mil area (CMA) is equal to 1550.003 D^2N where D is the diameter (in mm) of the individual strands of the conductor and N is the number of strands in the complete conductor

Table 4 — Multi-core (cables and wires), twisted only types A and NA 300 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	0.88	1.18	1.75	0.95	1.27	2.62	1.06	1.43	3.49
30	7/0.100	1.00	1.30	2.29	1.08	1.40	3.43	1.21	1.57	4.58
28	7/0.120	1.12	1.42	2.91	1.21	1.53	4.37	1.35	1.71	5.82
26	7/0.150	1.30	1.60	4.08	1.40	1.73	6.12	1.57	1.94	8.15
24	7/0.200	1.60	1.90	6.32	1.73	2.05	9.49	1.94	2.30	12.65
26	19/0.100	1.40	1.70	4.70	1.51	1.84	7.05	1.69	2.06	9.40
24	19/0.120	1.60	1.90	6.22	1.73	2.05	9.33	1.94	2.30	12.44
22	19/0.150	1.90	2.20	9.17	2.05	2.38	13.76	2.30	2.66	18.35
20	19/0.200	2.40	2.70	14.96	2.59	2.92	22.43	2.90	3.27	29.91

Table 5 — Multi-core cables, twisted only types B and NB 600 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.28	1.68	3.00	1.38	1.81	4.49	1.55	2.03	5.99
30	7/0.100	1.40	1.80	3.64	1.51	1.94	5.46	1.69	2.18	7.28
28	7/0.120	1.52	1.92	4.37	1.64	2.07	6.55	1.83	2.31	8.74
26	7/0.150	1.70	2.10	5.70	1.84	2.27	8.55	2.06	2.54	11.40
24	7/0.200	2.00	2.40	8.22	2.16	2.59	12.32	2.42	2.90	16.43
26	19/0.100	1.80	2.20	6.43	1.94	2.38	9.64	2.18	2.66	12.86
24	19/0.120	2.00	2.40	8.09	2.16	2.59	12.14	2.42	2.90	16.18
22	19/0.150	2.30	2.70	11.32	2.48	2.92	16.97	2.78	3.27	22.63
20	19/0.200	2.80	3.20	17.53	3.02	3.46	26.30	3.39	3.87	35.07
18	19/0.250	3.30	3.70	25.19	3.56	4.00	37.80	3.99	4.48	50.40

Table 6 — Multi-core cables, twisted only types C and NC 1 000 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.80	2.32	5.24	1.94	2.51	7.86	2.18	2.81	10.48
30	7/0.100	1.92	2.44	6.03	2.07	2.64	9.05	2.32	2.95	12.06
28	7/0.120	2.04	2.56	6.89	2.20	2.77	10.33	2.46	3.08	13.77
26	7/0.150	2.22	2.74	8.40	2.40	2.96	12.61	2.69	3.32	16.81
24	7/0.200	2.52	3.04	11.27	2.72	3.28	16.91	3.05	3.68	22.55
26	19/0.100	2.32	2.84	9.26	2.51	3.07	13.88	2.81	3.44	18.51
24	19/0.120	2.52	3.04	11.15	2.72	3.28	16.72	3.05	3.68	22.30
22	19/0.150	2.82	3.34	14.73	3.05	3.61	22.10	3.41	4.04	29.50
20	19/0.200	3.32	3.84	21.50	3.59	4.15	32.23	4.02	4.65	43.00
18	19/0.250	3.82	4.34	29.75	4.13	4.69	44.62	4.62	5.25	59.50
16	19/0.300	4.32	4.92	40.04	4.67	5.31	60.06	5.23	5.95	80.08
14	19/0.335	4.68	5.48	49.71	5.05	5.92	74.60	5.66	6.63	99.50
12	19/0.450	5.82	6.62	80.10	6.29	7.15	120.10	7.04	8.01	160.20
10	37/0.400	6.92	7.72	116.50	7.47	8.34	175.00	8.37	9.34	233.00

Table 7 — Single- and multi-core cables, screened types AS and NAS 300 V (silver or nickel plated copper conductors and screens)

Size	Stranding	Single-core			Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	0.89	1.04	3.39	1.33	1.63	6.31	1.40	1.72	7.56	1.51	1.88	8.90
30	7/0.100	0.95	1.10	4.00	1.45	1.75	7.13	1.53	1.85	8.77	1.66	2.02	10.31
28	7/0.120	1.01	1.16	4.30	1.57	1.87	8.32	1.66	1.98	10.05	1.80	2.16	12.19
26	7/0.150	1.10	1.25	5.19	1.75	2.05	10.01	1.85	2.18	12.62	2.02	2.39	15.03
24	7/0.200	1.25	1.40	6.99	2.05	2.35	13.13	2.18	2.50	16.87	2.39	2.75	20.66
26	19/0.100	1.15	1.30	5.82	1.85	2.15	11.01	1.96	2.29	13.61	2.14	2.51	16.78
24	19/0.120	1.25	1.40	6.94	2.05	2.35	13.03	2.18	2.50	16.71	2.39	2.75	20.71
22	19/0.150	1.40	1.55	8.79	2.35	2.65	17.13	2.50	2.83	22.04	2.75	3.11	27.65
20	19/0.200	1.65	1.80	12.36	2.85	3.15	24.38	3.04	3.37	32.45	3.35	3.72	40.97

Table 8 — Single- and multi-core cables, screened types BS and NBS 600 V (silver or nickel plated copper conductors and screens)

Size	Stranding	Single-core			Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.09	1.29	5.00	1.73	2.13	9.20	1.83	2.26	10.90	2.00	2.48	13.31
30	7/0.100	1.15	1.35	5.44	1.85	2.25	10.05	1.96	2.39	12.34	2.14	2.63	15.19
28	7/0.120	1.21	1.41	6.06	1.97	2.37	11.18	2.09	2.52	13.99	2.28	2.76	16.75
26	7/0.150	1.30	1.50	6.95	2.15	2.55	13.21	2.29	2.72	16.45	2.51	2.99	20.42
24	7/0.200	1.45	1.65	8.56	2.45	2.85	16.58	2.61	3.04	21.55	2.87	3.35	26.27
26	19/0.100	1.35	1.55	7.47	2.25	2.65	14.23	2.39	2.83	17.92	2.63	3.11	22.16
24	19/0.120	1.45	1.65	8.50	2.45	2.85	16.44	2.61	3.04	21.37	2.87	3.35	26.02
22	19/0.150	1.60	1.80	10.61	2.75	3.15	20.74	2.93	3.37	26.99	3.23	3.72	33.69
20	19/0.200	1.85	2.05	14.36	3.25	3.65	28.52	3.47	3.91	38.11	3.84	4.32	47.97
18	19/0.250	2.10	2.30	18.67	3.75	4.15	37.69	4.01	4.45	51.30	4.44	4.93	65.30

Table 9 — Single- and multi-core cables, screened types CS 1 000 V and NCS 1 000 V (silver or nickel plated copper conductors and screens)

Size	Stranding	Single-core			Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.35	1.61	7.08	2.25	2.77	13.32	2.39	2.96	16.82	2.63	3.26	20.09
30	7/0.100	1.41	1.67	7.51	2.37	2.89	14.55	2.52	3.09	18.35	2.77	3.40	22.08
28	7/0.120	1.47	1.73	8.25	2.49	3.01	15.97	2.65	3.22	19.88	2.91	3.54	24.58
26	7/0.150	1.56	1.82	9.21	2.67	3.19	17.88	2.85	3.41	22.83	3.14	3.77	28.02
24	7/0.200	1.71	1.97	11.10	2.97	3.49	21.95	3.17	3.73	28.04	3.50	4.13	34.85
26	19/0.100	1.61	1.87	9.81	2.77	3.29	18.95	2.96	3.52	24.69	3.26	3.89	30.11
24	19/0.120	1.71	1.97	11.04	2.97	3.49	21.83	3.17	3.73	27.85	3.50	4.13	34.60
22	19/0.150	1.86	2.12	13.23	3.27	3.79	26.03	3.50	4.06	34.30	3.86	4.49	43.10
20	19/0.200	2.11	2.37	17.41	3.77	4.29	34.40	4.04	4.60	46.53	4.47	5.10	58.93
18	19/0.250	2.36	2.62	22.21	4.27	4.79	44.25	4.58	5.14	60.72	5.07	5.70	76.70
16	19/0.300	2.61	2.91	28.22	4.77	5.37	56.54	5.12	5.76	77.76	5.68	6.40	99.58
14	19/0.335	2.79	3.19	33.56	5.13	5.93	68.41	5.50	6.37	94.10	6.11	7.08	121.30
12	19/0.450	3.36	3.76	49.80	6.27	7.07	101.90	6.74	7.60	144.30	7.49	8.46	210.00
10	37/0.400	3.91	4.31	69.00	7.37	8.17	142.60	7.92	8.79	203.20	8.82	9.79	302.00

Table 10 — Multi-core cables, sheathed types AM and NAM 300 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.28	1.78	4.75	1.35	1.87	5.80	1.46	2.03	7.04
30	7/0.100	1.40	1.90	5.53	1.48	2.00	6.87	1.61	2.17	8.37
28	7/0.120	1.52	2.02	6.40	1.61	2.13	8.08	1.75	2.31	9.89
26	7/0.150	1.70	2.20	7.93	1.80	2.33	10.23	1.97	2.54	12.75
24	7/0.200	2.00	2.50	10.78	2.13	2.65	14.25	2.34	2.90	18.00
26	19/0.100	1.80	2.30	8.75	1.91	2.44	11.39	2.09	2.66	14.25
24	19/0.120	2.00	2.50	10.68	2.13	2.65	14.09	2.34	2.90	17.79
22	19/0.150	2.30	2.80	14.24	2.45	2.98	19.19	2.70	3.26	24.44
20	19/0.200	2.80	3.30	21.00	2.99	3.52	28.96	3.30	3.87	37.36

Table 11 — Multi-core cables, sheathed types BM and NBM 600 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.68	2.28	7.01	1.78	2.41	8.77	1.95	2.63	10.78
30	7/0.100	1.80	2.40	7.90	1.91	2.54	10.00	2.09	2.78	12.38
28	7/0.120	1.92	2.52	8.87	2.04	2.67	11.35	2.23	2.92	14.13
26	7/0.150	2.10	2.70	10.56	2.24	2.87	13.76	2.46	3.14	17.24
24	7/0.200	2.40	3.00	13.69	2.56	3.19	18.18	2.82	3.50	23.01
26	19/0.100	2.20	2.80	11.50	2.34	2.98	15.07	2.58	3.26	18.95
24	19/0.120	2.40	3.00	13.56	2.56	3.19	18.00	2.82	3.50	22.76
22	19/0.150	2.70	3.30	17.40	2.88	3.52	22.52	3.18	3.87	30.08
20	19/0.200	3.20	3.80	24.62	3.42	4.06	33.92	3.79	4.47	43.65
18	19/0.250	3.70	4.30	33.30	3.96	4.60	46.51	4.39	5.08	60.39

Table 12 — Multi-core cables, sheathed types CM and NCM 1 000 V (silver or nickel plated copper conductors)

Size	Stranding	Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	2.20	2.92	10.55	2.34	3.11	13.55	2.58	3.41	16.88
30	7/0.100	2.32	3.04	11.58	2.47	3.24	15.01	2.72	3.55	18.75
28	7/0.120	2.44	3.16	12.69	2.60	3.37	16.55	2.86	3.69	20.74
26	7/0.150	2.62	3.34	14.56	2.80	3.56	19.22	3.09	3.92	24.37
24	7/0.200	2.92	3.64	18.04	3.12	3.88	24.16	3.45	4.28	30.86
26	19/0.100	2.72	3.44	15.62	2.91	3.67	20.71	3.21	4.04	26.32
24	19/0.120	2.92	3.64	17.92	3.12	3.88	23.97	3.45	4.28	30.61
22	19/0.150	3.22	3.94	22.11	3.45	4.21	30.00	3.81	4.64	38.43
20	19/0.200	3.72	4.44	29.90	3.99	4.75	41.25	4.42	5.25	53.34
18	19/0.250	4.22	4.94	39.20	4.53	5.29	54.73	5.02	5.85	71.10

Table 13 — Single- and multi-core cables, screened and sheathed types BSM and NBSM 600 V (silver or nickel plated copper conductors)

Size	Stranding	Single-core			Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.49	1.89	8.22	2.13	2.73	14.12	2.23	2.86	16.09	2.40	3.08	18.94
30	7/0.100	1.55	1.95	8.78	2.25	2.85	15.22	2.36	2.99	17.79	2.54	3.23	21.13
28	7/0.120	1.61	2.01	9.53	2.37	2.97	16.59	2.49	3.12	19.70	2.68	3.37	22.97
26	7/0.150	1.70	2.10	10.60	2.55	3.15	18.99	2.69	3.32	22.57	2.91	3.59	27.09
24	7/0.200	1.85	2.25	12.51	2.85	3.45	22.96	3.01	3.64	28.32	3.27	3.95	33.67
26	19/0.100	1.75	2.15	11.22	2.65	3.25	20.21	2.79	3.43	24.26	3.03	3.71	29.07
24	19/0.120	1.85	2.25	12.45	2.85	3.45	22.82	3.01	3.64	28.14	3.27	3.95	33.42
22	19/0.150	2.00	2.40	14.87	3.15	3.75	27.73	3.33	3.97	34.43	3.63	4.32	41.84
20	19/0.200	2.25	2.65	19.12	3.65	4.25	36.52	3.87	4.51	46.64	4.24	4.92	57.33
18	19/0.250	2.50	2.90	23.94	4.15	4.75	46.71	4.41	5.05	60.93	4.84	5.53	75.90

Table 14 — Single- and multi-core cables, screened and sheathed types CSM and NCSM 1 000 V (silver or nickel plated copper conductors)

Size	Stranding	Single-core			Two-core			Three-core			Four-core		
		Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)	Overall diameter		Mass per unit length (max.)
		Min.	Max.		Min.	Max.		Min.	Max.		Min.	Max.	
		mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km	mm	mm	kg/km
32	7/0.080	1.75	2.21	10.95	2.65	3.37	19.54	2.79	3.56	23.43	3.03	3.86	27.30
30	7/0.100	1.81	2.27	11.50	2.77	3.49	21.01	2.92	3.69	25.22	3.17	4.00	29.58
28	7/0.120	1.87	2.33	12.37	2.89	3.61	22.68	3.05	3.82	27.01	3.31	4.15	32.38
26	7/0.150	1.96	2.42	13.51	3.07	3.79	24.95	3.25	4.01	30.35	3.54	4.37	36.27
24	7/0.200	2.11	2.57	15.70	3.37	4.09	29.63	3.57	4.33	36.21	3.90	4.73	43.83
26	19/0.100	2.01	2.47	14.21	3.17	3.89	26.22	3.36	4.12	32.43	3.66	4.49	38.60
24	19/0.120	2.11	2.57	15.64	3.37	4.09	29.51	3.57	4.33	36.02	3.90	4.73	43.58
22	19/0.150	2.26	2.72	18.13	3.67	4.39	34.32	3.90	4.66	43.13	4.26	5.09	52.81
20	19/0.200	2.51	2.97	22.82	4.17	4.89	43.70	4.44	5.20	56.46	4.87	5.70	69.87
18	19/0.250	2.76	3.22	28.13	4.67	5.39	54.56	4.98	5.74	71.74	5.47	6.30	88.86
16	19/0.300	3.01	3.51	34.73	—	—	—	—	—	—	—	—	—
14	19/0.335	3.19	3.79	40.63	—	—	—	—	—	—	—	—	—
12	19/0.450	3.76	4.36	58.03	—	—	—	—	—	—	—	—	—
10	37/0.400	4.31	4.91	78.34	—	—	—	—	—	—	—	—	—

Table 15 — Single colours of PTFE insulation

Colour	Code no.	Colour	Code no.
Black	0	Blue	6
Brown	1	Violet	7
Red	2	Grey	8
Orange	3	White	9
Yellow	4	Pink	P
Green	5		

Table 16 — Bi-colour combinations of PTFE insulation

Colour		Code no.	Colour		Code no.
White/	Grey	98	Black/	Orange	03
	Red	92		Brown	01
	Blue	96		Yellow	04
	Green	95	Pink/	Red	P2
	Black	90		Blue	P6
	Orange	93		Green	P5
	Brown	91		Black	P0
	Yellow	94		White	P9
Green/	Black	50		Orange	P3
	Orange	53		Brown	P1
	Brown	51		Yellow	P4
	Yellow	54	Red/	Blue	26
Violet/	Red	72		Green	25
	Blue	76		Black	20
	Green	75		Orange	23
	Black	70		Brown	21
	White	79		Yellow	24
	Orange	73	Orange/	Brown	31
	Brown	71		Yellow	34
	Yellow	74	Blue/	Green	65
Grey/	Yellow	84		Black	60
	Blue	86		Orange	63
	Green	85		Brown	61
	Black	80		Yellow	64
	Orange	83	Brown/	Yellow	14
	Brown	81			
	Red	82			

Table 17 — Tests and requirements for cable types A, B, C, AS, BS, CS and NA, NB, NC, NAS, NBS and NCS

BS G 230 test no.	Test	Specific requirements of this standard
1	Appearance of finished cable	Wires and cables shall not be marked
2	Mass per unit length of finished cable	Maximum values shall be as given in Table 1 to Table 9
3	Conductor composition	Number and diameter of strands shall be as given in Table 1 to Table 3
4	Visual examination of strands	As BS G 230
5	Insulation thickness and concentricity	Minimum values shall be as given in Table 1 to Table 3
6	Core and cable outer diameter	Minimum and maximum values shall be as given in Table 1 to Table 9
7	Tensile strength and elongation at break of copper conductors	As BS G 230
9	Strand plating continuity	As BS G 230
10	Strand plating adherence	For solid conductors use three specimens taken from the same sample
11	Strand plating thickness	As BS G 230
12	Electrical resistance of conductor	Maximum values shall be as given in Table 20
14	Solderability (only applicable to silver plated copper conductors)	
14(a)	Method 1; or	Solder bath temperature 235 °C, non-activated flux, 0.5 s wetting time
14(b)	Method 2	As BS G 230
15	Conductor strand adhesion	As BS G 230
16	High voltage	
16(a)	Immersion	Types A, NA, AS, NAS (750 ± 37) V r.m.s. Types B, NB, BS, NBS (1 200 ± 60) V r.m.s. Types C, NC, CS, NCS (2 000 ± 100) V r.m.s.
16(b)[a]	Dry spark (after insulation)	Types A, NA, AS, NAS (2 000 ± 100) V r.m.s. Types B, NB, BS, NBS (3 400 ± 170) V r.m.s. Types C, NC, CS, NCS (6 000 ± 300) V r.m.s.
16(c)[a]	Dry impulse (after insulation)	Types A, NA, AS, NAS (4 500 ± 225) V peak Types B, NB, BS, NBS (7 000 ± 350) V peak Types C, NC, CS, NCS (12 000 ± 600) V peak
16(d)	Voltage test on completed cable	Types A, NA, AS, NAS (750 ± 37) V r.m.s. Types B, NB, BS, NBS (1 200 ± 60) V r.m.s. Types C, NC, CS, NCS (2 000 ± 1 00) V r.m.s.
17	Insulation resistance	1 000 MΩ for 1 km at (20 ± 2) °C 1 MΩ for 1 km at (95 ± 2) °C
19	Accelerated ageing (after insulation)	Test temperature: (275 ± 2) °C Time: 168 h Mandrel diameter 10 times maximum specified cable diameter. Force shall be that suitable to maintain the cable in contact with the mandrel.
22	Delamination and shrinkage	Five cycles from room temperature to (275 ± 2) °C holding the top temperature for 1 h and allowing the cable to return to room temperature between cycles. Total length of conductor exposed (i.e. sum of both ends) shall not exceed 3 mm.
25	Cold bend. (Screen removed from types AS, NAS, BS, NBS, CS and NCS)	Mandrel diameter 10 times maximum specified cable diameter. Tension shall be as given in Table 21. Test temperature: (– 50 ± 2) °C Time: 6 h
28	Flammability Method 1 or method 2	Five specimens, 15 s exposure to flame
31	Overload resistance	T_1 = 260 °C T_2 = 400 °C
32	Delamination	As test 32 of BS G 230 except specimen initially fitted to torsion clamps and only aged for 2 h at 275 °C after which time, and whilst still at 275 °C, the test is then carried out.
35	Climatic	*Humidity:* Carry out the test in accordance with clause **2** c), category A of BS G 229. Prepare the specimens by winding at least six turns on a mandrel of the diameter specified for test 19. On removal from the chamber unwind the cable from the mandrel. It shall show no sign, to normal vision, of deterioration, and the identification where applicable shall remain legible. The specimen shall then be subjected to the immersion test [test 16(a)] except that the specimen length may be reduced.

[a] Either test 16(b) or 16(c) may be carried out.

Table 18 — Tests and requirements for cable types AM, BSM, CM, CSM and NAM, NBM, NBSM, NCM, NCSM

BS G 230 test no.	Test	Specific requirements of this standard
1	Appearance of finished cable	Wires and cables shall not be marked
2	Mass per unit length of finished cable	Maximum values shall be as given in Table 10 to Table 14
5	Insulation thickness and concentricity	Minimum jacket thickness shall be 0.25 mm. Concentricity test not applicable to jackets.
6	Cable outer diameter	Minimum and maximum values shall be as given in Table 10 to Table 14.
12	Electrical resistance of conductors	Maximum values shall be as given in Table 20
16	High voltage	
16(a)	Dry spark. (Types BSM, NBSM, CSM and NCSM only)	(1 000 ± 30) V r.m.s. on jacket
16(d)	Voltage test on completed cable	Types AM, NAM : (750 ± 37) V r.m.s. Types BM, NBM, BSM, NBSM : (1 200 ± 60) V r.m.s Types CM, NCS, CSM, NCSM : (2 000 ± 100) V r.m.s
19	Accelerated ageing	Test temperature: (275 ± 2) °C Time: 168 h Mandrel diameter 10 times maximum specified cable diameter. Force shall be that suitable to maintain the cable in contact with the mandrel.
22	Delamination and shrinkage	Five cycles from room temperature to (275 ± 2) °C, holding the top temperature for 1 h and allowing the cable to return to room temperature between cycles. Total length of conductor exposed (i.e. sum of both ends) shall not exceed 6 mm.
25	Cold bend	Mandrel diameter 10 times maximum specified cable diameter. Tension shall be as given in Table 21 Test temperature: (– 50 ± 2) °C Time: 6 h
28	Flammability Method 1 or method 2	5 specimens, 15 s exposure to flame
35	Climatic	*Humidity*: Carry out the test in accordance with clause **2** c) category A of BS G 229. Prepare the specimens by winding at least six turns on a mandrel of the diameter specified for test 19. On removal fro the chamber unwind the cable from the mandrel. It shall show no sign, to normal vision, of deterioration and the identification where applicable shall remain legible. The specimen shall then be subjected to the immersion test [test 16(a)] except that the specimen length may be reduced

Table 19 — Test application

Test number	Test	Number of specimens per cable size	Qualification approval test	Production quality test	Inspection lot test	Production routine test
1	Appearance of finished cable	2	×			×
2	Mass per unit length of finished cable	1	×			×
3	Conductor composition	1	×			×
4	Visual examination of strands	1	×			×
5	Insulation thickness and concentricity		×		×	
6	Core and cable outer diameters		×			×
7	Tensile strength and elongation at break of copper conductors	2	×		×	
9	Strand plating continuity	1	×	×		
10	Strand plating adherence	1	×		×	
11	Strand plating thickness	1	×		×	
12	Electrical resistance of conductor	1	×			×
14	Solderability					
14(a)	Method 1, or	5	×		×	
14(b)	Method 2	1	×		×	
15	Conductor strand adhesion	1	×		×	
16	High voltage					
16(a)	Immersion	3	×		×	
16(b)[a]	Dry spark		×			×
16(c)[a]	Dry impulse		×			×
16(d)	Screened and multi-core cables voltage test on completed cable		×			×
17	Insulation resistance	3	×		×	
19	Accelerated ageing	1	×		×	
22	Delamination and shrinkage	2	×		×	
25	Cold bend	1	×	×		
28	Flammability					
	Method 1 or method 2	5	×	×		
31	Overload resistance	1	×			
32	Delamination	1	×			
35	Climatic	1	×			

[a] Either test 16(b) or 16(c) may be carried out.

Table 20 — Calculation of maximum resistance values of conductors

Size	No. of strands	Diameter	Tolerance	Stranding factor K_2[a]	Nickel plating factor K_4[a]	Silver plating factor K_4[a]	Uninsulated				Insulated			
							Maximum resistance Ω/km		Stretch factor	Lay up factor	Maximum resistance at 20 °C Ω/km			
											Silver plated		Nickel plated	
		mm	mm				Silver plated	Nickel plated			Single-core	Multi-core	Single-core	Multi-core
30	1	0.250	± 0.004	1.00	1.0270	1	363.00	373.00	1.04	1.04	377.00	392.00	387.00	403.00
28	1	0.320	± 0.004	1.00	1.0215	1	220.00	225.00	1.04	1.04	229.00	238.00	234.00	234.00
26	1	0.400	± 0.004	1.00	1.0170	1	140.00	142.00	1.04	1.04	146.00	151.00	148.00	154.00
23	1	0.600	± 0.004	1.00	1.0110	1	61.80	62.50	1.04	1.04	64.30	66.90	65.00	67.60
19	1	0.900	± 0.004	1.00	1.0040	1	27.30	27.50	1.04	1.04	28.50	29.60	28.60	29.70
32	7	0.080	± 0.002	1.04	1.0850	1	536.00	582.00	1.04	1.04	558.00	580.00	605.00	630.00
30	7	0.100	± 0.002	1.04	1.0680	1	340.00	363.00	1.04	1.04	353.00	367.00	377.00	392.00
28	7	0.120	± 0.002	1.04	1.0560	1	234.00	247.00	1.04	1.04	244.00	253.00	258.00	268.00
26	7	0.150	± 0.004	1.04	1.0450	1	153.00	160.00	1.04	1.04	159.00	165.00	166.00	173.00
24	7	0.200	± 0.004	1.04	1.0330	1	84.90	87.70	1.04	1.04	88.30	91.80	91.20	94.90
26	19	0.100	± 0.002	1.04	1.0684	1	125.00	134.00	1.04	1.04	130.00	135.00	139.00	144.00
24	19	0.120	± 0.002	1.04	1.0560	1	86.30	91.20	1.04	1.04	89.80	93.30	94.90	98.70
22	19	0.150	± 0.004	1.04	1.0450	1	56.40	58.90	1.04	1.04	58.60	61.00	61.30	63.70
20	19	0.200	± 0.004	1.04	1.0330	1	31.30	32.30	1.04	1.04	32.50	33.80	33.60	34.90
18	19	0.250	± 0.004	1.04	1.0270	1	19.90	20.40	1.04	1.04	20.60	21.50	21.20	22.10
16	19	0.300	± 0.004	1.04	1.0225	1	13.70	14.00	1.04	1.04	14.30	14.80	14.60	15.20
14	19	0.335	± 0.004	1.04	1.0200	1	11.00	11.20	1.04	1.04	11.40	11.90	11.60	12.10
12	19	0.450	± 0.004	1.04	1.0160	1	6.04	6.14	1.04	1.04	6.28	6.53	6.38	6.64
10	37	0.400	± 0.004	1.04	1.0170	1	3.93	4.00	1.02	1.04	4.01	4.17	4.08	4.24

[a] See Annex D of BS 2G 230:1991.

Table 21 — Tension for cold bend test (test 25)

Size	Tension N
32	5
30	5
28	5
26	5
24	10
23	15
22	20
20	20
19	20
18	30
16	30
14	30
12	30
10	30

Table 22 — Tensile strength and elongation at break of copper conductor after insulation

Strand diameter	Tensile strength		Elongation (min.)
	min.	max.	
mm	N/mm^2	N/mm^2	%
0.08 to 0.12	220	300	9
0.15 to 0.45	220	300	10
0.60 to 0.90	220	300	15

Annex A (informative)
Maximum long term current ratings

A.1 The maximum long term current ratings of the cables specified in this standard are given in Table A.1.

A.2 These current ratings are based on a temperature rise of 40 °C and allow for an ambient temperature of up to 150 °C (cables with silver plated copper conductors) or up to 220 °C (cables with nickel plated copper conductors). The maximum permissible conductor temperatures are 190 °C and 260 °C respectively.

A.3 If the ambient temperature is continuously in excess of the values given in **A.2**, the current rating should be multiplied by the factor k which is given by the equation

$$k = \sqrt{\frac{T-t}{40}}$$

where

T is the maximum permissible conductor temperature;

t is the ambient temperature.

Table A.1 — Maximum long term current ratings

Size	Conductor stranding	Single-core cable (in free air)	Two-core cable (in free air)	Three-core cable (in free air)	Four-core cable (in free air)
		A	A	A	A
30	1/0.250	2.0	—	—	—
28	1/0.315	3.0	—	—	—
26	1/0.400	4.0	—	—	—
23	1/0.600	7.0	—	—	—
19	1/0.900	12.0	—	—	—
32	7/0.080	1.5	1.0	1.0	1.0
30	7/0.100	2.0	1.5	1.5	1.5
28	7/0.120	3.0	2.5	2.0	2.0
26	7/0.150	4.0	3.0	3.0	2.5
24	7/0.200	6.0	5.0	4.0	4.0
26	19/0.100	5.0	4.0	3.5	3.0
24	19/0.120	6.0	5.0	4.0	4.0
22	19/0.150	8.0	6.5	5.5	5.0
20	19/0.200	11.0	9.0	7.5	7.0
18	19/0.250	15.0	12.0	10.5	9.5
16	19/0.300	20.0	—	—	—
14	19/0.335	23.0	—	—	—
12	19/0.450	35.0	—	—	—
10	37/0.400	47.0	—	—	—

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List of references

Normative references

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BS G 258:1995, *Glossary of terms for electric cables and cable harnesses.*

Informative references

BS 3G 100, *Specification for general requirements for equipment for use on aircraft*[2)].

BS 3G 100-2, *All equipment.*

BS 3G 100-2.3, *Environmental conditions.*

BS 3G 100-2.3.13:1973 (1983), *Resistance to fire in designated fire zones.*

[2)] Referred to in the foreword only.

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