Specification for

Binding and identification sleeves for use on electric cables and wires

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/15, upon which the following bodies were represented:

British Ceramic Research Ltd.
British Industrial Ceramic Manufacturers' Association
Department of Trade and Industry (National Measurement Accreditation Service)
EEA (the Association of the Electronics, Telecommunications and Business Equipment Industries)
Electrical and Electronic Insulation Association (BEAMA Ltd.)
Electricity Association
Ministry of Defence
Rotating Electrical Machines Association (BEAMA Ltd.)
Transmission and Distribution Association (BEAMA Ltd.)

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

Adhesive Tape Manufacturers' Association
Association of Electrical Machinery Trades
British Rubber Manufacturers Association Ltd.
Electronic Components Industry Federation

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Foreword

This British Standard has been prepared under the direction of the Cable and Insulation Standards Policy Committee. The sleeves within the field of application of this British Standard are for general purpose use. They are not intended for use as primary insulation. This British Standard supersedes BS 3858 : 1965 which is withdrawn. Flexible sleeving for electrical purposes are within the fields of application of BS 2848, BS 6893 : Part 1 and BS 6893 : Part 2, while elastomeric sleeves for aircraft electric cables and equipment wires are specified in BS 3G 198 : Part 1. It is envisaged that BS 2848 will ultimately be withdrawn and replaced by a Part of BS 6893.

The different wall thicknesses of polychloroprene sleeves of type 1 and type 2 of BS 3858 : 1965 have been incorporated into type 1 of this revision.

WARNING. This standard calls for the use of substances and/or test procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and in no way absolves either the supplier or the user from statutory obligations relating to health and safety at any stage of manufacture or use.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing product surveillance which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes are forwarded by BSI to the Association of Certification bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of association members.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Specification

Introduction

Type 1, 3 and 4 sleeves are subject to stiffening at subzero temperatures, and should not be flexed in use at these temperatures. Sleeves are normally expanded in use, up to twice their nominal bore for types 1, 4 and 5, and one and a half times their nominal bore for type 3 sleeves. Type 1, 3 and 4 sleeves are suitable for use where there may be occasional contamination by mineral lubricating oils and certain hydraulic fluids. Type 5 sleeves have limited resistance to hydrocarbon fluids and should not be used where such contamination is likely. All sleeves are available in a range of colours, and may have characters or legends printed on them for identification purposes.

1 Scope

This British Standard specifies requirements and tests for binding and identification sleeves intended for use on electric cables and insulated wires.

NOTE. These sleeves are not for use as primary insulation

The standard applies to sleeves of the following types:

a) type 1 sleeves are polychloroprene and suitable for temperature ranges of − 65 °C to 70 °C;

b) type 3 sleeves are poly(vinyl chloride) (PVC) and suitable for temperature ranges of − 65 °C to 70 °C;

c) type 4 sleeves are PVC/nitrile and suitable for temperature ranges of − 65 °C to 70 °C;

d) type 5 sleeves are silicone and suitable for temperature ranges of − 65 °C to 150 °C.

2 References

2.1 Normative references

This British Standard incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this British Standard only when incorporated in it by updating or revision.

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 editions.

3 Types

Sleeves shall be one of the following types.

a) Type 1 sleeves are polychloroprene rubber sleeves having increasing wall thicknesses over a range of bore sizes, with fairly wide permissible tolerances on bore sizes.

NOTE 1. These are available in three different wall thickness ranges (a, b and c).

b) Type 3 sleeves are based on poly(vinyl chloride) (PVC) polymers, copolymers, or blends thereof and have wall thicknesses which increase slightly with bore sizes. They shall conform to either type E3 of BS 2571 or type 4 of BS 6746.

NOTE 2. Tolerances on wall thickness and bore are closer than for types 1, 4 and 5.

c) Type 4 sleeves are based on a mixture or copolymer of acrylonitrile-butadiene rubber and PVC and have wall thicknesses which increase with bore size.

NOTE 3. Tolerances on wall and bore sizes are similar to type 1.

d) Type 5 sleeves are silicone rubber and have a range of permissible wall thicknesses for all bore sizes.

NOTE 4. These are available in three different wall thickness ranges (a, b and c).

4 Materials and finishes

The sleeves shall be smooth and free from bubbles, pinholes, creases, and other defects in appearance (see clause **9.1**). Type 1 material shall contain no natural rubber, reclaim, nor ground, vulcanized waste.

NOTE. See BS 7164 : Section 7.1.

5 Colour

The colour shall be one of the following:

- pink;
- orange;
- violet;
- green/yellow stripe;
- black;
- yellow;
- grey;
- brown;
- green;
- white;
- red;
- blue;
- uncoloured transparent (for type 3 only);
- uncoloured translucent (for type 3 and type 5 only).

The colour shall be uniform.

NOTE. Where relevant the colour should be a reasonable match to the equivalent colour in BS 6746C.

Table 1. Dimensions of type 1 sleeves

Dimensions in millimetres

Internal diameter			Wall thickness					
Nominal	Actual		Type 1a		Type 1b		Type 1c	
	min.	max.	min.	max.	min.	max.	min.	max.
0.5	0.4	0.7	0.4	0.6	—	—	—	—
0.8	0.6	0.9	0.4	0.6	—	—	—	—
1.0	0.9	1.2	0.4	0.6	—	—	—	—
1.2	1.0	1.4	0.4	0.6	—	—	0.6	0.8
1.5	1.3	1.8	0.5	0.7	—	—	0.7	0.9
2.0	1.7	2.3	0.5	0.7	—	—	0.7	0.9
2.5	2.1	2.9	0.5	0.7	—	—	0.7	0.9
3.0	2.5	3.5	0.5	0.7	—	—	0.7	0.9
4.0	3.3	4.6	0.5	0.8	0.7	1.0	0.9	1.2
5.0	4.2	5.8	0.5	0.8	0.7	1.0	0.9	1.2
8.0	6.8	9.2	0.5	0.8	0.7	1.1	1.0	1.5
10.0	8.6	11.4	0.5	0.8	0.8	1.2	1.2	1.8
12.0	10.4	13.6	0.5	0.8	0.8	1.3	1.3	1.9
16.0	14.0	18.0	0.5	0.9	0.9	1.5	1.5	2.1
20.0	17.5	22.5	0.5	0.9	0.9	1.5	1.7	2.4
25.0	21.5	28.5	0.5	0.9	0.9	1.5	1.7	2.4

6 Dimensions

Bore sizes of sleeves of types 1, 3, 4 and 5 shall comply with the dimensions shown in tables 1, 2, 3 and 4 respectively.

NOTE. Nominal lengths are 3 mm, 5 mm, 7 mm, 10 mm, 15 mm, 20 mm, 25 mm, 35 mm, 45 mm, 55 mm and 75 mm and the recommended combinations of bore and length are shown in table 5.

Table 2. Dimensions of type 3 sleeves

Dimensions in millimetres

Internal diameter			Wall thickness	
Nominal	Actual			
	min.	max.	min.	max.
0.5	0.4	0.6	0.2	0.4
0.8	0.7	0.9	0.2	0.4
1.0	0.85	1.15	0.2	0.4
1.2	1.05	1.35	0.2	0.4
1.5	1.35	1.65	0.2	0.4
2.0	1.85	2.15	0.2	0.4
2.5	2.35	2.65	0.2	0.4
3.0	2.85	3.15	0.2	0.4
4.0	3.75	4.25	0.2	0.4
5.0	4.75	5.25	0.2	0.4
6.0	5.75	6.25	0.2	0.4
8.0	7.75	8.25	0.4	0.6
10.0	9.5	10.5	0.4	0.6
12.0	11.5	12.5	0.4	0.6
16.0	15.5	16.5	0.4	0.6
20.0	19.5	20.5	0.4	0.6
25.0	24.5	25.5	0.4	0.6

Table 3. Dimensions of type 4 sleeves

Dimensions in millimetres

Internal diameter			Wall thickness	
Nominal	Actual			
	min.	max.	min	max.
0.5	0.4	0.7	0.5	0.7
0.8	0.6	0.9	0.5	0.7
1.0	0.9	1.2	0.5	0.7
1.5	1.3	1.8	0.5	0.7
2.0	1.7	2.3	0.5	0.7
3.0	2.5	3.5	0.8	1.2
4.0	3.3	4.6	0.8	1.2
5.0	4.2	5.8	0.8	1.2
8.0	6.8	9.2	1.0	1.5
10.0	8.6	11.4	1.0	1.8
12.0	10.4	13.6	1.0	1.8
16.0	14.0	18.0	1.0	1.8
20.0	17.5	22.5	1.0	1.8
25.0	21.5	28.5	1.0	1.8

Table 4. Dimensions of type 5 sleeves

Dimensions in millimetres

Internal diameter			Wall thickness					
Nominal	Actual		Type 5a		Type 5b		Type 5c	
	min.	max.	min.	max.	min.	max.	min.	max.
0.5	0.4	0.7	0.4	0.6	0.55	0.85	0.8	1.2
0.8	0.6	0.9	0.4	0.6	0.55	0.85	0.8	1.2
1.0	0.9	1.2	0.4	0.6	0.55	0.85	0.8	1.2
1.5	1.3	1.8	0.4	0.6	0.55	0.85	0.8	1.2
2.0	1.7	2.3	0.4	0.6	0.55	0.85	0.8	1.2
2.5	2.1	2.9	0.4	0.6	0.55	0.85	0.8	1.2
3.0	2.5	3.5	0.4	0.6	0.55	0.85	0.8	1.2
4.0	3.3	4.6	0.4	0.6	0.55	0.85	0.8	1.2
5.0	4.2	5.8	0.4	0.6	0.55	0.85	0.8	1.2
6.0	5.1	6.9	0.4	0.6	0.55	0.85	0.8	1.2
8.0	6.8	9.2	0.4	0.6	0.55	0.85	0.8	1.2
10.0	8.6	11.4	0.4	0.6	0.55	0.85	0.8	1.2
12.0	10.4	13.6	0.4	0.6	0.55	0.85	0.8	1.2
16.0	14.0	18.0	0.4	0.6	0.55	0.85	0.8	1.2

Table 5. Recommended bore and length combinations

Dimensions in millimetres

Nominal internal diameter	Nominal length										
0.5	3	5	7	10	15	20	25	35			
0.8	3	5	7	10	15	20	25	35			
1.0	3	5	7	10	15	20	25	35			
1.2	3	5	7	10	15	20	25	35			
1.5	3	5	7	10	15	20	25	35			
2.0		5	7	10	15	20	25	35	45		
2.5		5	7	10	15	20	25	35	45		
3.0		5	7	10	15	20	25	35	45		
4.0		5	7	10	15	20	25	35	45		
5.0		5	7	10	15	20	25	35	45		
6.0		5	7	10	15	20	25	35	45		
8.0				10	15	20	25	35	45		
10.0				10	15	20	25	35	45		
12.0				10	15	20	25	35	45		
16.0				10	15	20	25	35	45	55	75
20.0				10	15	20	25	35	45	55	75
25.0				10	15	20	25	35	45	55	75

7 Printing

When required, sleeves shall be indelibly printed with a character or legend. Such printing shall not be affected by normal handling.

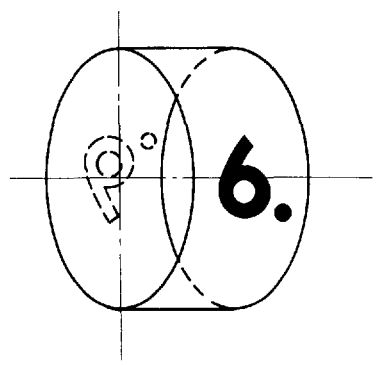
The printing shall be black, blue-black or white to provide sufficient contrast with the sleeve colour.

Where there is a possibility of misinterpretation, the characters shall be either:

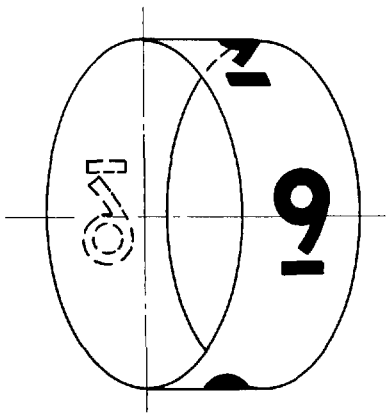
a) followed by a period in the lower right, i.e. A B C M. W. 6. 7 8 9. 0;

b) underlined, i.e. A B C M W 6 7 8 9 0.

The printing shall be longitudinal on the sleeve, figure 1.



5 mm size



20 mm size

Figure 1. Arrangement of characters

The size of characters and the number of times they are printed on each sleeve shall be as shown in table 6. When the sleeves are marked more than once, the printing shall be approximately equally spaced around the sleeve.

Table 6. Size and repetition of characters

Nominal internal diameter of sleeve mm	Nominal height of character mm	Number of times printed around circumference
0.5	1.6 min.	1
0.8 to 1.2	2.0	1
1.5	2.0	2
2.0 to 4.0	2.5	2
5.0 to 6.0	4.5	2
8.0 to 12.0	4.5	4
15.0 to 25.0	6.0	4

If a transparent overlay is used to protect the print it shall be considered as part of the sleeve for the purposes of the appropriate tests.

Where colour coded sleeves are required the colour code shall be as in table 7.

Table 7. Colour codes

Colour of sleeve	Numeral	Colour of sleeve	Numeral
Black	0	Green	5
Brown	1	Blue	6. or 6
Red	2	Violet	7
Orange	3	Grey	8
Yellow	4	White	9. or 9

NOTE. The number and colour relationships are as given in BS 1852 : 1975.

8 Packaging

Boxes or packages containing the sleeves shall be marked with:

a) the number and date of this British Standard[1)] i.e. BS 3858 : 1992;

b) the type (e.g. type 1a);

c) the nominal bore in millimetres;

d) the nominal length in millimetres;

e) the legend when printed;

f) the nominal quantity of the sleeves;

g) the manufacturer or supplier's name.

Unless packed in transparent packets, the outside of the packet shall be marked to show the colour of the sleeves.

[1)] Marking BS 3858 : 1992 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

9 Tests

9.1 Appearance for all types

When tested in accordance with **A.1** the sleeves shall conform to clauses **4** and **5** and where printed clause **7**.

9.2 Dimensions for all types

When measured in accordance with **A.2**, the bore and wall thickness shall comply with clause **6**. In cases of disagreement, an optical method having an accuracy of 0.025 mm or greater shall be used.

9.3 Circumferential extension for types 1, 4 and 5

When tested in accordance with **A.3** at least two rings shall stand each test without breaking.

9.4 Tension set for types 1, 4 and 5

When tested in accordance with **A.4** for both specimens the tension set shall be no more than 25 %.

9.5 Ozone resistance for types 1 and 4

When tested in accordance with **A.5** there shall be no signs of cracking when examined using normally corrected vision.

9.6 Silver staining for types 1, 4 and 5

When tested in accordance with **A.6** no stain shall be darker than the standard shade.

9.7 Proof voltage for types 1, 4 and 5

When tested in accordance with **A.7** there shall be no flashover, tracking, breakdown or erosion of the sleeves.

9.8 Resistance to crystallization for type 1

When tested in accordance with **A.8** there shall be no noticeable increase in stiffness when compared with a sleeve maintained continuously at 20 ± 5 °C.

9.9 Fluid resistance for types 1, 3 and 4

When tested in accordance with **A.9** sleeves shall not crack, split, or fall from the mandrel under their own weight after drying in the oven. Any printing shall remain legible, and the overlay, if any, shall be unaffected.

9.10 Resistance to extremes of temperature for all types

When tested in accordance with **A.10** and examined by normally corrected vision at any period of the test, the sleeves (and overlay where present) shall show no signs of blistering, cracking or splitting. The original colour shall be identifiable, and any printing shall remain and be legible on all three sleeves.

9.11 Colour fastness to light for all types

When tested in accordance with **A.11** colour fastness shall be as follows.

a) Type 1 sleeves shall have a colour fastness of not less than 3.

b) Type 3 sleeves shall have a colour fastness of not less than 6.

c) Type 4 and 5 sleeves shall have a colour fastness of not less than 5.

Any printing shall remain legible at the end of the test.

9.12 Resistance to mould growth for all types

When tested in accordance with **A.12** the extent of mould growth shall not exceed scale 1 on any sleeve.

Annex A (normative)
Tests

A.1 Appearance for all types

Check the sleeves by visual inspection.

A.2 Dimensions for all types

A.2.1 *Bore*

Determine the bore with a plug gauge of length not less than three times the bore diameter or 20 mm whichever is the greater. The gauge shall enter the bore without the use of undue pressure.

NOTE. A lubricant in powder form may assist when some types of sleeves are being measured.

The gauge diameter shall be chosen so as to give the closest possible fit without expanding the sleeve. The accuracy of the measuring instrument shall be 0.05 mm when measuring bore sizes above 1.0 mm and 0.03 mm when measuring bore sizes below 1.0 mm.

A.2.2 *Wall thickness*

Insert a plug gauge or mandrel so that it enters freely but has a diameter not less than 80 % of the bore. Measure the overall diameter using a micrometer having flat anvils approximately 6 mm in diameter. In making this measurement the pressure applied by the micrometer shall be just sufficient to close the sleeving on to the inserted plug gauge or mandrel. Calculate the wall thickness by halving the difference between the plug gauge or mandrel diameter and the overall dimension. The accuracy of the measuring instrument shall be 0.03 mm.

A.3 Circumferential extension for types 1, 4 and 5

Two rings with an approximately square cross section[2], i.e. of width approximately equal to wall thickness, shall be cut from each of three specimen sleeves and conditioned at 20 ± 5 °C for not less than 12 h before testing. Three of the six rings shall be subjected to accelerated ageing for 168 ± 2 h at the temperature given in table A.1 by the oven or cell method described in BS 903 : Part A19 : 1986, followed by a further period of conditioning at 20 ± 5°C for 12 h to 14 h. Each ring shall be rolled up a tapered mandrel having an included angle of 15 ± 1° until the requisite extension is reached, and kept in that position for not less than 10 s. See **9.3**.

Table A.1 Ageing temperature

Type	Ageing temperature °C	Degree of extension	
		Unaged %	Aged %
1	70	500	400
4	70	500	400
5	150	400	300

A.4 Tension set for types 1, 4 and 5

Two specimens shall be used. For sleeving of nominal bore 8 mm or less, lengths of sleeving 120 mm or greater shall be used. Above 8 mm nominal bore, dumbells conforming to BS 903 : Part A29 : 1984 shall be cut longitudinally from the sleeving. Mark each specimen with two lines 50 mm apart, perpendicular to the longitudinal axis of the specimen, and approximately equidistant from each end.

Each specimen shall be extended at a temperature of 20 ± 5 °C until the lines are 200 ± 4 mm apart, taking approximately 10 s, and held in the extended position for 10 ± 0.5 min. They shall then be gently released and allowed to recover freely on a smooth flat surface for 10 ± 0.5 min.

Measure the distance between the lines and calculate the percentage difference from the initial lengths.

A.5 Ozone resistance for types 1 and 4

A specimen sleeve not more than 25 mm in length shall be fitted to a smooth aluminium mandrel with a diameter twice the nominal bore of the sleeve. The assembly shall be exposed to an atmosphere containing 1.0 ± 0.2 ml/m^3 of ozone, at a temperature between 30 °C and 35 °C. The assemblies shall be removed after 22 $^{+2}_{0}$ h and examined.

A.6 Silver staining for types 1, 4 and 5

The specimen shall consist of one or more sleeves, cut to expose a fresh annular surface. A piece of analytical silver foil shall be cleaned and polished with jewellers' rouge and water, then rubbed dry with a clean paper tissue. The specimen shall be placed on the clean foil, with the cut surface in contact with the foil. The foil and specimen shall then be placed in a horizontal position in an air circulating oven maintained at 70 ± 1 °C for 30 ± 2 min. The specimen shall be removed, and the foil examined for staining.

The stain tester[3] shall consist of a rectangular piece of clear photographic film with a strip of the standard shade 3 mm wide across it, equidistant from each end. The diffuse visual density of the photographic film background shall not be greater than 0.050, and the difference in density between the background and the standard shall be 0.015 when determined in accordance with BS 1384 : Part 1 : 1984, BS 1384 : Part 2 : 1986 and BS 1384 : Part 3 : 1985.

[2] Where practical difficulties do not permit a square cross section to be cut, the length may be increased to not more than 2 mm.
[3] For information on the availability of a stain tester write to Customer Information, BSI, Linford Wood, Milton Keynes MK14 6LE.

A.7 Proof voltage for types 1, 4 and 5

Mount a specimen sleeve 35 mm long, cut if necessary from a length of sleeving, on a smooth non-ferrous metal or stainless steel mandrel having a diameter twice the nominal bore of the sleeve and not less than 50 mm long. The length of the sleeve on the mandrel shall be 32 mm to 35 mm. No lubricant other than water shall be used to fit the sleeve. The mandrel shall protrude from each end of the sleeve. The assembly shall then be immersed in water for 24 h at room temperature.

Immediately on removal of the assembly from the water, the surface water shall be wiped off with a clean paper tissue, and a strip of clean aluminium silver or tin foil, 10μm to 30μm thick and 6 mm wide, shall be wrapped around the middle portion of the sleeve making contact over its complete area. The foil shall be retained by two small rubber bands, which pass once around the sleeve. An alternating voltage of frequency 50 Hz to 60 Hz and of approximately sine wave form, with a peak factor between 1.34 and 1.48, shall be applied between the foil and the mandrel as electrodes. The voltage shall be raised to the value specified as rapidly as possible without any overshoot, and maintained for 1 min.

Types 1a and 5a sleeves shall be tested at 1.5 kV. Types 1b, 1c, 4, 5b and 5c sleeves shall be tested at 3.0 kV. The voltage shall either be measured at the electrodes or demonstrated to be not significantly different from that at the electrodes.

A.8 Resistance to crystallization for type 1

Two specimen sleeves shall be maintained at 0 ± 1 °C for 14 days, then allowed to recover for 1 h at 20 ± 5 °C. They shall then be flexed by hand.

A.9 Fluid resistance for types 1, 3 and 4

Two sleeves shall be mounted on smooth non-ferrous metal or stainless steel mandrel of twice the nominal bore, for types 1 and 4 sleeves, and one and a half times the nominal bore for type 3 sleeves. The specimens shall be immersed vertically in a mixture of 70 % (*V*/*V*) (2,2,4-trimethylpentane) and 30 % (*V*/*V*) toluene, for 24 h at 20 ± 5 °C.

NOTE. This is test liquid B of BS 903 : Part A16.

WARNING. Some test fluids may have a flash-point close to or below the temperature of test. Appropriate precautions should be taken during testing. Some test fluids may themselves, or in combination with the test piece, be toxic. Due consideration should be given to this possibility before commencing the test.

After removal from the fluid, allow excess fluid to drain off, then place in a circulating air oven for 2 h at 70 ± 1 °C. Allow to cool to 20 ± 5 °C and examine for deterioration. When printed or overlaid the sleeve shall be lightly rubbed 20 times with a soft dry tissue.

A.10 Resistance to extremes of temperature for all types

Three specimen sleeves not more than 25 mm long shall be mounted on a smooth non-ferrous metal or stainless steel mandrel of twice the nominal bore, for types 1, 4 and 5, and one and a half times the nominal bore for type 3 sleeves. The test assembly shall be conditioned vertically in an air circulating oven at 95 ± 1 °C for types 1, 3 and 4, and 150 ± 2 °C for type 5 for a period of 168 ± 2 h. The specimens shall then immediately be transferred to a cold chamber[4)] maintained at − 65 °C maximum for a further period of 1 h. At the end of the conditioning period the assembly shall be removed and allowed to attain room temperature naturally. Printed sleeves shall be rubbed over the printing 20 times with a soft cloth or paper tissue.

A.11 Colour fastness to light for all types

Sample sleeves shall be exposed to a light source in accordance with BS 2782 : Part 5 : method 540B : 1982. Part of each sleeve shall be protected from the light by means of an opaque sheet. Any printing shall face the light source. Wool reference standards conforming to BS 1006 : B01 shall be similarly exposed and partly protected. The light source may be a carbon arc, xenon discharge lamp, or other suitable light source. The specimen temperature shall not exceed 40 °C. No control of humidity shall be exercised. The samples and standards shall be examined at intervals. The end of the test shall be taken as the point at which the contrast between the exposed and unexposed portions of the test sleeve is equal to grade 4 on the geometric grey scale of BS 1006 : A02 : 1990. The highest numbered wool reference standard, which has faded to not less than the same extent, shall be taken as the colour fastness of the sleeve.

A.12 Resistance to mould growth for all types

Three specimen sleeves shall be tested for mould growth in accordance with the method of BS 2011 : Part 2.1J : 1989 (the 28 day test).

[4)] It is essential that the test assembly is not immersed directly in a freezing mixture of solid carbon dioxide/fluid mixture for this test.

List of references

Normative references

BSI standards publications

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BS 903 :	*Physical testing of rubber*
BS 903 : Part A16 : 1987	*Determination of the effect of liquids*
BS 903 : Part A19 : 1986	*Heat resistance and accelerated ageing tests*
BS 903 : Part A29 : 1984	*Determination of low temperature characteristics by temperature-retraction procedure (TR test)*
BS 1006:	*Methods of tests for colour fastness of textiles and leather*
BS 1006 : B01C : LFS1 : 1982	*Reference standard for no. 1*
BS 1006 : B01C : LFS2 : 1985	*Reference standard for no. 2*
BS 1006 : B01C : LFS3 : 1989	*Reference standard for no. 3*
BS 1006 : B01C : LFS4 : 1990	*Reference standard for no. 4*
BS 1006 : B01C : LFS5 : 1988	*Reference standard for no. 5*
BS 1006 : B01C : LFS6 : 1988	*Reference standard for no. 6*
BS 1006 : B01C : LFS7 : 1985	*Reference standard for no. 7*
BS 1006 : B01C : LFS8 : 1987	*Reference standard for no. 8*
BS 1006 : A02 : 1990	*Grey scale for assessing change in colour (including half steps)*
BS 1384:	*Photographic density measurements*
BS 1384 : Part 1 : 1985	*Guide for terms, symbols and notations*
BS 1384 : Part 2 : 1986	*Specification for geometric conditions for transmission density*
BS 1384 : Part 3 : 1985	*Specification for spectral conditions*
BS 1852 : 1975	*Specification for marking codes for resistors and capacitors*
BS 2011 :	*Environmental testing*
BS 2011 : Part 2.1J : 1989	*Test J and guidance. Mould growth*
BS 2571 : 1990	*Specification for general-purpose flexible PVC compounds for moulding and extrusion*
BS 2782 :	*Methods of testing plastics*
BS 2782 : Part 5 :	*Optical and colour properties, weathering*
BS 2782 : Part 5 : Method 540B : 1982	*Methods of exposure to laboratory light sources, (xenon arc lamp, enclosed carbon arc lamp, open-flame carbon arc lamp, fluorescent table lamps)*
BS 6746 : 1990	*Specification for PVC insulation and sheath of electric cables*
BS 6746C : 1969	*Colour chart for insulation and sheath of electric cables*

Informative references

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BS 2848 : 1973[5)]	*Specification for flexible insulating sleeving for electrical purposes*
BS 5750 :[5)]	*Quality systems*
BS 5750 : Part 0 :	*Principal concepts and applications*
BS 5750 : Section 0.1 : 1987	*Guide to selection and use*
BS 5750 : Section 0.2 : 1987	*Guide to quality management and quality system elements*
BS 5750 : Part 1 : 1987	*Specification for design/development, production, installation and servicing*

[5)] Referred to in the foreword only.

BS 5750 : Part 2 : 1987	*Specification for production and installation*
BS 5750 : Part 3 : 1987	*Specification for final inspection and test*
BS 6893 :	*Flexible insulating sleeving for electrical purposes*
BS 6893 : Part 1 : 1987[5)]	*Specification for general requirements*
BS 6893 : Part 2 : 1987[5)]	*Methods of test*
BS 7164 :	*Chemical tests for raw and vulcanized rubber*
BS 7164 : Part 7 :	*Methods of determination of polymer content*
BS 7164 : Part 7 : Section 7.1 : 1990	*Polyisoprene content*
BS 3G 198 :	*Sleeves for aircraft electric cables and equipment wires*
BS 3G 198 : Part 1 : 1989[5)]	*Specification for elastomeric sleeves for binding and identification*

[5)] Referred to in the foreword only.

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