BS 8512:2008

BRITISH STANDARD

Electric cables –

Code of practice for the storage, handling, installation and disposal of cables on wooden drums

ICS 29.060.20

Publishing and copyright information

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 March 2008. It was prepared by Subcommittee GEL/20/17, *Low voltage cables*, under the authority of Technical Committee GEL/20, *Electric cables*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

This is a new standard, which has been written to give sound guidance on how to handle cables supplied on wooden drums between the point of manufacture and the point of installation. The need for such guidance is most apparent when cables are packed, transported, stored and handled in the form of coils wound on to large wooden cable drums, and is primarily intended for stockists, wholesalers, distributors and contractors. The purpose of this new code of practice is to offer codified information to ensure that cable reaches the point of installation in the best possible condition and can be used as part of any health and safety assessment.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

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

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard gives recommendations for the storage and handling of cables for fixed installations, rated up to 1 900/3 300 V, that are packaged on wooden cable drums suitable for storage outdoors.

NOTE The recommendations could also be applied to:

- *cables of higher rated voltages that are packaged on wooden drums; and*
- *cables of similar size, on similar wooden drums, and made to standards and specifications not specifically quoted here.*

This standard does not cover metal drums, cable spools or cable reels, or trailing and reeling cables.

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.

BS 5308 (all parts), *Instrumentation cables*

BS 5467, *Electric cables – Thermosetting insulated, armoured cables for voltages of 600/1 000 V and 1 900/3 300 V*

BS 6004, *Electric cables – PVC insulated, non-armoured cables for voltages up to and including 450/750 V, for electric power, lighting and internal wiring*

BS 6007, *Electric cables – Single core unsheathed heat resisting cables for voltages up to and including 450/750 V, for internal wiring*

BS 6195, *Electric cables – Rubber or silicone rubber insulated flexible cables and cords for coil end leads*

BS 6231, *Electric cables – Single core PVC insulated flexible cables of rated voltage 600/1 000 V for switchgear and controlgear wiring*

BS 6346, *Electric cables – PVC insulated, armoured cables for voltages of 600/1 000 V and 1 900/3 300 V*

BS 6500, *Electric cables – Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments*

BS 6724, *Electric cables – Thermosetting insulated, armoured cables for voltages of 600/1 000 V and 1 900/3 300 V, having low emission of smoke and corrosive gases when affected by fire*

BS 6883, *Elastomer insulated cables for fixed wiring in ships and on mobile and fixed offshore units – Requirements and test methods*

BS 7211, *Electric cables – Thermosetting insulated, non-armoured cables for voltages up to and including 450/750 V, for electric power, lighting and internal wiring, and having low emission of smoke and corrosive gases when affected by fire*

BS 7629 (all parts), *Specification for 300/500 V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire*

BS 7846, *Electric cables – 600/1 000 V armoured fire-resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire*

BS 7889, *Electric cables – Thermosetting insulated, unarmoured cables for a voltage of 600/1 000 V*

BS 7919, *Electric cables – Flexible cables rated up to 450/750V, for use with appliances and equipment intended for industrial and similar environments*

BS 8436, *Electric cables – 300/500 V screened electric cables having low emission of smoke and corrosive gases when affected by fire, for use in walls, partitions and building voids – Multicore cables*

IEC 60050-461, *International Electrotechnical Vocabulary – Part 461: Electric cables*

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in IEC 60050-461 and the following apply.

3.1 cable drum
cylinder with containing flanges, onto which cable is wound during manufacture

3.2 cable spool (reel)
cable drum of small size, usually with flanges made of cardboard, hardboard or plywood

3.3 barrel
cylindrical part of a cable drum or cable spool on which the cable is wound

3.4 lagging
external protective material covering cable wound on a drum

3.5 batten
strip, generally made of wood, which when assembled forms the lagging

3.6 end cap
device placed on the ends of a cable to prevent the ingress of moisture

4 Personal protective equipment

4.1 A risk assessment should be conducted to ascertain the most suitable personal protective equipment, including but not limited to:

- stout gloves;
- protective footwear;
- safety helmets;
- eye protection;
- protective clothing.

NOTE Attention is drawn to the Management of Health and Safety at Work Regulations 1999 [1] and the Personal Protective Equipment at Work Regulations 1992 [2].

4.2 Loose clothing should be avoided.

4.3 Gloves with stapled palms should not be used.

4.4 Gloves used should be designed to protect the wearer from sleeve cuffs being caught in a rolling drum.

5 Storage

5.1 Cables stored at temperatures which are below those recommended for installation by cable guides to use in relevant product standards, or cable manufacturers should not be subjected to any mechanical stress, i.e. shocks, impact, bending and torsion.

5.2 Cable drums should be stored on a flat, firm, even and well-drained surface, in an upright position, using wedges in the heels of the flanges (see Figure 1a). They should not be stored on their side (see Figure 1b) or stacked, i.e. flange on flange.

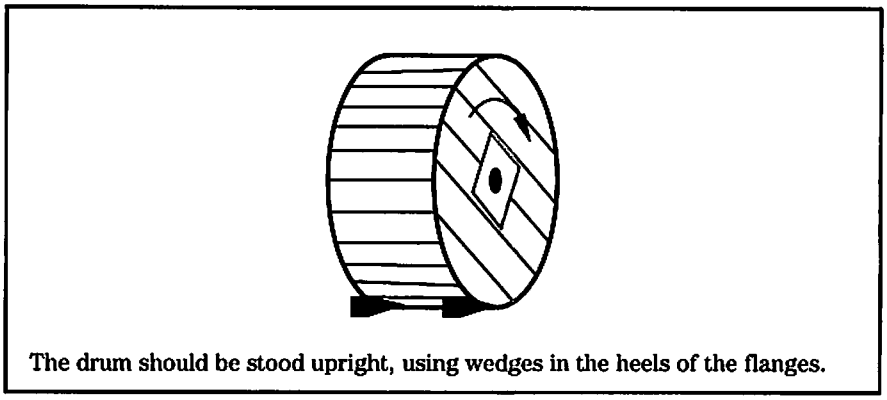
5.3 Cable drums should be stored so that the drum flanges do not touch cable on another drum (see Figure 1c).

5.4 Drums of cable that have been supplied with battens already applied should be left in place. Drums that have been supplied without battens, or drums where battens have been removed, should be assessed as to the likelihood of damage to the cable, taking into account the storage facility or method of transport, and have battens fitted or re-fitted if considered appropriate.

5.5 To protect against UV degradation, all cables in long-term storage should be shielded from direct sunlight or other UV sources by suitable coverings such as black plastic sheeting.

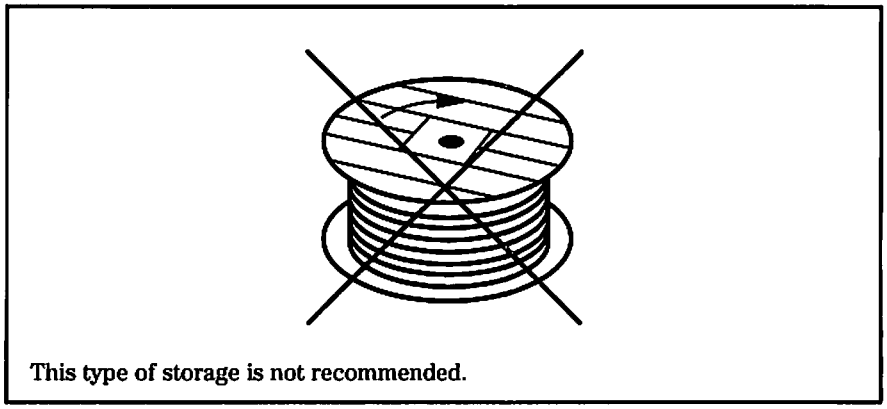
5.6 A regular system of inspection and action should be followed, paying particular attention to drums that have been stored for long periods. If a drum has deteriorated or been damaged, the cable should be rewound onto a replacement drum, and the cable inspected for damage.

Figure 1a **Correct drum storage**



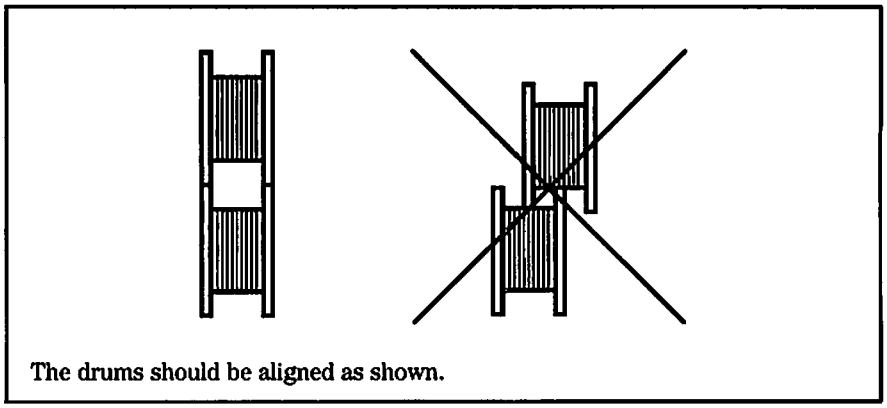
The drum should be stood upright, using wedges in the heels of the flanges.

Figure 1b **Incorrect drum storage**



This type of storage is not recommended.

Figure 1c **Drum storage – view from the top**



The drums should be aligned as shown.

6 Manual handling

6.1 A risk assessment should be carried out for the manual handling of drums.

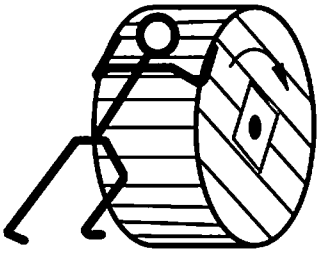
NOTE Attention is drawn to the Manual Handling Regulations 1992 [3], as amended in 2002, which apply to a wide range of manual handling activities including lifting, lowering, pushing, pulling and carrying.

6.2 Cable drums should be rolled only for short distances over flat, solid ground in the direction indicated by the arrow on the flange (see Figure 2), having regard to:

- the mass of the drum;
- the method and direction of rolling;
- the condition of floor/ground including slopes;
- the risk assessment.

Particular care should be taken when drums are full of cable.

Figure 2 **Handling drums**



NOTE Wooden drums frequently have an arrow marked on their flanges to indicate both the direction that cable is to be wound on to them and also the direction in which the drum is to be rolled.

7 Lifting

7.1 Only fork-lift trucks or cranes of sufficient size and weight limit for the drums to be lifted should be used.

7.2 When lifting drums by crane, a spreader beam should be used (see Figure 3). The spreader beam should be of the weight capacity and length specified by the manufacturer for the weight and width of drum. Any slings or hooks should be of the correct weight capacity, as specified by the manufacturer, for the drum to be lifted.

7.3 When lifting drums by fork lift trucks, the cable drum flanges should be at right angles to the forks, and the forks should be longer than the width of the drum (see Figure 4).

NOTE Specially adapted fork lift trucks may use spindle type lifting bars, booms or fork shoes or extensions, for which advice can be sought from the truck supplier.

Figure 3 **Lifting by crane**

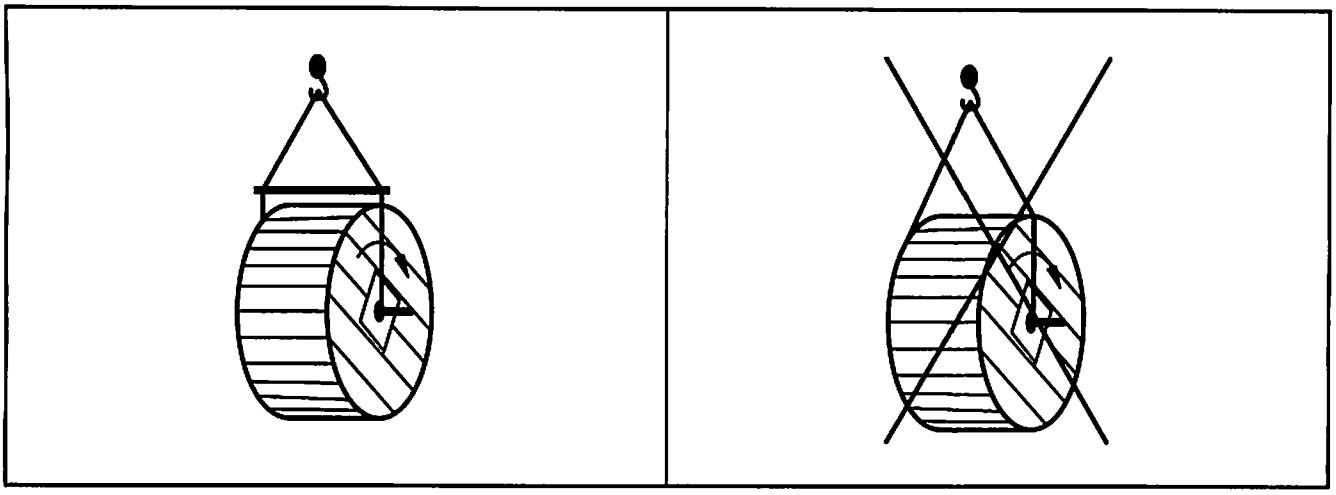
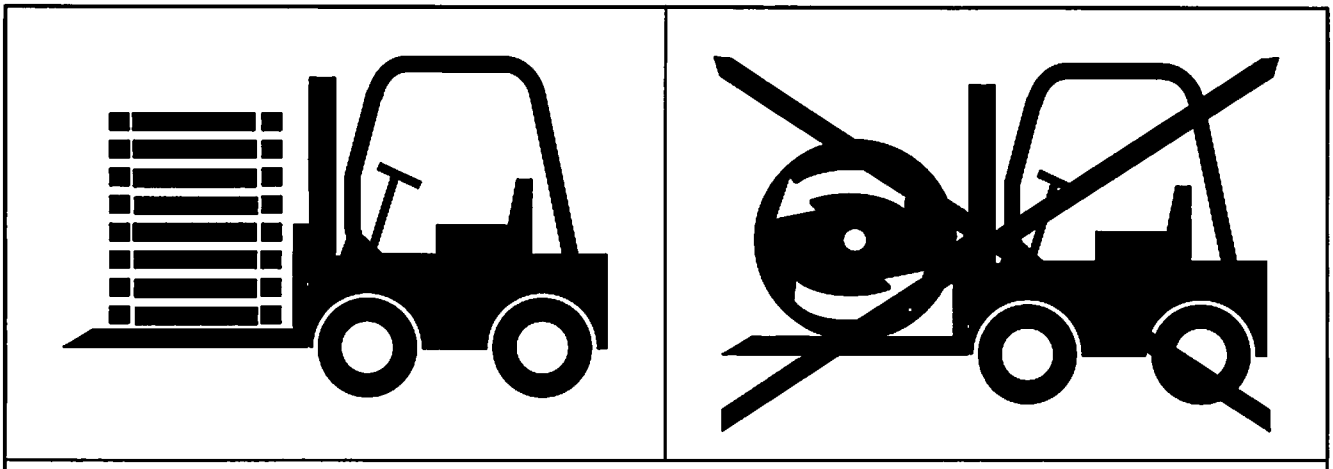


Figure 4 **Lifting by fork lift trucks**

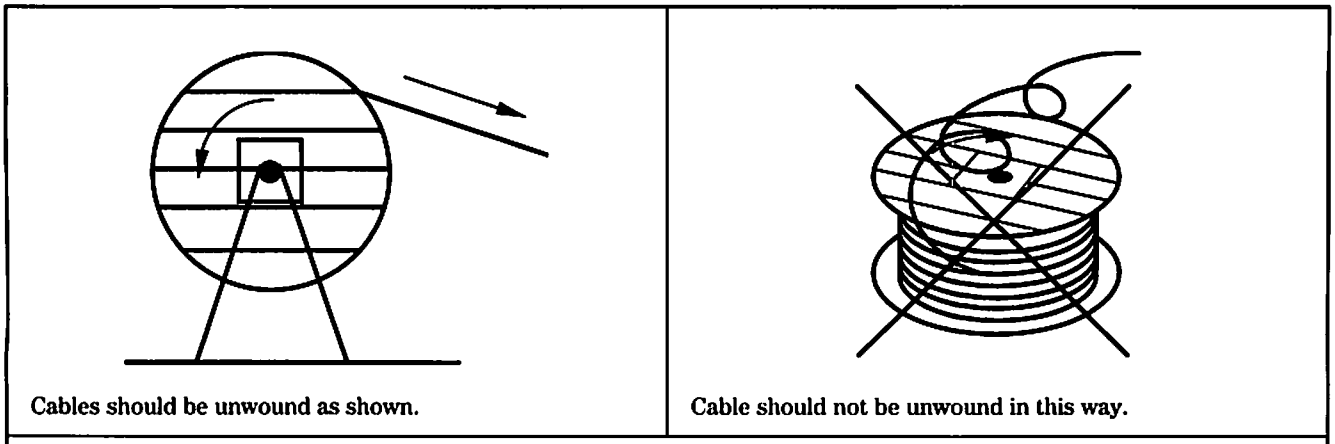


NOTE It is important that drums are correctly positioned on the forks.

8 Unwinding and rewinding

8.1 Unwinding and rewinding of cables should be performed as shown in Figure 5 and Figure 6.

Figure 5 **Unwinding cable**

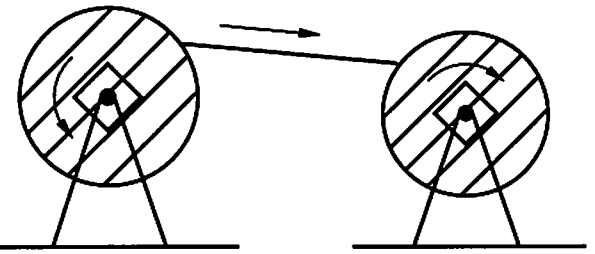


Cables should be unwound as shown.

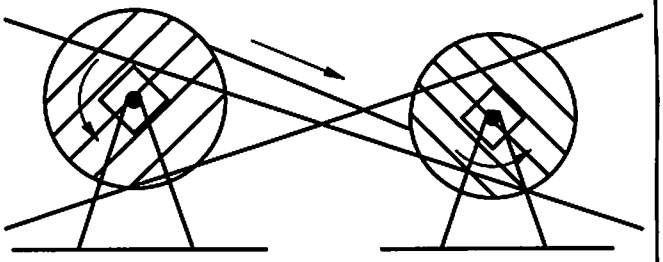
Cable should not be unwound in this way.

NOTE The arrow on the drum flange does not indicate direction of unwinding.

Figure 6 **Rewinding cable**



Cable should be rewound from drum to drum as shown.



Cable should not be rewound in this way.

NOTE The arrow on the drum flange does not indicate direction of unwinding.

8.2 If a cable is to be rewound onto a different drum, then the drum selected should be capable of carrying the weight of the cable and have the appropriate minimum barrel diameter (MBD) which can be obtained from the cable manufacturer. Alternatively, the MBD recommendations given in **8.3** and **8.4** should be followed.

8.3 The recommended MBDs for 600/1 000 V single wire armoured cable (1–5 cores) conforming to BS 5467, BS 6346, BS 6724 and BS 7846, given in Table 1, should be used.

8.4 For cables not covered by Table 1, the MBD should be at least:

a) 25 times the measured overall diameter for single core non-armoured cable with solid conductors; or

b) 20 times the measured overall diameter for all other cable types.

The above MBD values should be applied in accordance with but not limited to the following standards (as relevant): BS 5308, BS 6004, BS 6007, BS 6195, BS 6231, BS 6500, BS 6883, BS 7211, BS 7629, BS 7889, BS 7919 and BS 8436.

8.5 Repeated winding and excessive tension should be avoided as it might cause damage to the cable.

Table 1 **Minimum barrel diameters for 600/1 000 V single wire armoured cables**

Conductor area mm^2 nominal	**Single core cable** MBD (mm)	**2 core cable** MBD (mm)	**3 core cable** MBD (mm)	**4 core cable** MBD (mm)	**5 core cable** MBD (mm)
1.5	N/A	200	225	225	250
2.5	N/A	225	250	250	275
4	N/A	250	250	275	300
6	N/A	275	275	300	325
10	N/A	300	325	350	375
16	N/A	325	350	375	425
25	N/A	400	425	475	500
35	N/A	450	475	500	550
50	375	450	475	500	650
70	425	475	500	600	725
95	450	525	575	650	N/A
120	500	575	625	725	N/A
150	550	625	700	800	N/A
185	625	700	775	875	N/A
240	675	775	850	975	N/A
300	725	825	925	1 075	N/A
400	825	925	1 025	1 200	N/A
500	900	N/A	N/A	N/A	N/A
630	1 000	N/A	N/A	N/A	N/A
800	1 125	N/A	N/A	N/A	N/A
1 000	1 225	N/A	N/A	N/A	N/A

8.6 Following cutting, all cable ends should be sealed to prevent moisture ingress.

NOTE Pre-formed heat shrink end caps with a moisture seal are most suitable for this purpose. The use of tapes alone might not guarantee moisture tight sealing.

8.7 Some cables have coloured tape end marking to indicate direction of lay and core sequence (as required by some cable standards), where present, this marking should be reinstated after cutting.

8.8 Slack turns should be tightened to prevent abrasion damage and trapped turns.

9 Storage and handling at the installation site

9.1 Battens should not be removed from drums until the cable is about to be installed.

9.2 Battens should be made safe (i.e. nails removed) and removed from the immediate area prior to cable installation.

10 Installation

COMMENTARY ON ***10***
Installation of cables is a very wide subject area and is outside of the scope of this standard.

10.1 Tension limits for different cable types and sizes should be obtained from the cable manufacturer.

NOTE Excessive tension can result in damage to the cable.

10.2 Information on installation bending radii limits for different cable types and sizes are frequently given in product standards but, if not available, reference should be made to the cable manufacturer.

10.3 If cables are to be installed in ducts, the correct size of duct should be used.

NOTE See ERA Publication 69.30 Part V [4].

10.4 Any pulling lubricants and jointing and filling compounds used should be chemically compatible with the cable materials.

11 Disposal

A licensed contractor should be employed to manage the incineration of scrap cable.

NOTE The Environment Agency can provide further information.

Bibliography

[1] GREAT BRITAIN. The Management of Health and Safety at Work Regulations 1999. London: HMSO. SI 1999/3242.

[2] GREAT BRITAIN. The Personal Protective Equipment at Work Regulations 1992. London: HMSO. SI 1992/2966.

[3] GREAT BRITAIN. The Manual Handling Regulations 1992 (as amended). London: HMSO. SI 1992/2973.

[4] Coates, M. W. *Current Rating Standards 69.30 Part V. Sustained Current Ratings Publication with Thermosetting Insulation to BS 5467:1989 and BS 6724:1986 (AC 50 Hz and DC)*. ERA Technology.

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