

# Requirements for Electrical Installations

**Amendment No 2 : AMD 14905  
March 2004**

## IEE Wiring Regulations Sixteenth Edition

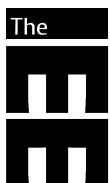
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## Structure and use of Amendment No 2 (AMD 14905) to BS 7671 : 2001

This document contains the changes agreed by the Joint IEE/BSI Committee JPEL/64 to BS 7671 : 2001 Requirements for Electrical Installations, as amended by Amendment No 1, 2002.

Regulations are either amended, replaced or added.

For amended regulations the original text and all deletions and additions are given. Deleted text is ruled through and additional text is underlined.

Where changes are complex, groups of regulations are replaced and are not underlined (to aid readability).

Where a change is an addition, that text is not underlined.

## Amendment No 2 : 2004 to BS 7671 : 2001

Amendment No 2 : 2004 to BS 7671 : 2001 is issued on the 31<sup>st</sup> March 2004.

Amendment No 2 requires changes that can be considered in three sections:

- |  |         |
|--|---------|
| A) Identification by colours and numbers                           | page 3  |
| B) The Electricity Safety, Quality and Continuity Regulations 2002 | page 11 |
| C) General amendments.   | page 14 |

### A) Identification by colours and numbers

#### Introduction

Amendment No 2 : 2004 to BS 7671 : 2001 implements the cable core colours introduced in the revision of CENELEC Harmonization Document HD 308 S2: 2001 *Identification of cores in cables and flexible cords* and agrees generally with BS EN 60446 : 2000 *Basic and safety principles for the man-machine interface, marking and identification. Identification of conductors by colours or numerals* and BS EN 60445 : 2000 *Basic and safety principles for man-machine interface, marking and identification of equipment terminals and of terminations*.... The single-phase colours of red phase and black neutral are replaced by brown phase and blue neutral. These colours have been used in appliance flexible cables since 1969.

The cable core colours are described in IEC 60304 (1982-01), *Standard colours for insulation for low-frequency cables and wires*.

The three-phase phase colours are brown, black and grey instead of red, yellow and blue. Where a circuit includes a neutral or mid-point conductor identified by colour, the colour used shall be blue.

In all installations the earth or protective conductor will remain green-and-yellow.

To assist in implementation a new Appendix 7 is included to advise on marking at the interface between old and new (harmonized) colours and to provide general guidance on the colours to be used for phase conductors.

#### Implementation

Installations commencing on site after 31<sup>st</sup> March 2006 are to comply with Section 514 and, as appropriate, cores are to be identified with the harmonized colours. Installations commencing on site after 31<sup>st</sup> March 2004 and before 1<sup>st</sup> April 2006 may be installed in accordance with Amendment No 2 : 2004 or Amendment No 1 : 2002; that is, they may use the harmonized colours or the old colours, but NOT both.

## Part 2, Definitions

Amend as follows:

**Neutral conductor.** A conductor connected to the neutral point of a system and contributing to the transmission of electrical energy. The term also means the equivalent conductor of an IT or d.c. system unless otherwise specified in the Regulations and also identifies either the mid-wire of a three-wire d.c. circuit or the earthed conductor of a two-wire earthed d.c. circuit.

Amend 514-01 to 514-02 as follows:

### 514 IDENTIFICATION AND NOTICES

#### 514-01 General

**514-01-01** Except where there is no possibility of confusion, a label or other suitable means of identification shall be provided to indicate the purpose of each item of switchgear and controlgear.

Where the ~~operation-operator cannot observe the operation~~ of switchgear and controlgear ~~cannot be observed by the operator~~ and where this might lead to danger, a suitable indicator, ~~complying with BS EN 60073 where applicable,~~ shall be fixed in a position visible to the operator.

**514-01-02** As far as is reasonably practicable, wiring shall be so arranged or marked that it can be identified for inspection, testing, repair or alteration of the installation.

**514-01-03** Except where there is no possibility of confusion, unambiguous marking shall be provided at the interface between conductors identified in accordance with these Regulations and conductors identified to previous versions of the Regulations. Appendix 7 gives guidance on how this can be achieved.

#### 514-02 Conduit

**514-02-01** Where an electrical conduit is required to be distinguished from a pipeline or another service, orange shall be used as the basic identification colour ~~in compliance with BS 1710.~~

Replace Regulations 514-03 to 514-07 as follows:

#### 514-03 Identification of conductors

**514-03-01** Except where identification is not required by Regulation 514-06, cores of cables shall be identified by:

- (i) colour as required by Regulation 514-04 and /or
- (ii) lettering and/or numbering as required by Regulation 514-05.

**514-03-02** Every core of a cable shall be identifiable at its terminations and preferably throughout its length.

Binding and sleeves for identification purposes shall comply with BS 3858 where appropriate .

#### **Switchboards**

**514-03-03** Any identification of a switchboard busbar or conductor shall comply with the requirements of Table 51 so far as these are applicable.

#### 514-04 Identification of conductors by colour

##### **Neutral or mid-point conductor**

**514-04-01** Where a circuit includes a neutral or mid-point conductor identified by colour, the colour used shall be blue.

### ***Protective conductor***

**514-04-02** The bi-colour combination green-and-yellow shall be used exclusively for identification of a protective conductor and this combination shall not be used for any other purpose.

Single-core cables that are coloured green-and-yellow throughout their length shall only be used as a protective conductor and shall not be over-marked at their terminations, except as permitted by Regulation 514-04-03.

In this combination one of the colours shall cover at least 30 % and at most 70 % of the surface being coloured, while the other colour shall cover the remainder of the surface.

A bare conductor or busbar used as a protective conductor shall be identified, where necessary, by equal green-and-yellow stripes, each not less than 15 mm and not more than 100 mm wide, close together, either throughout the length of the conductor or in each compartment and unit and at each accessible position. If adhesive tape is used, it shall be bi-coloured.

### ***PEN conductor***

**514-04-03** A PEN conductor shall, when insulated, be marked by one of the following methods:

- (i) green-and-yellow throughout its length with, in addition, blue markings at the terminations, or
- (ii) blue throughout its length with, in addition, green-and-yellow markings at the terminations.

### ***Other conductors***

**514-04-04** Other conductors shall be identified by colour in accordance with Table 51.

**514-04-05** The single colour green shall not be used.

### ***Bare conductors***

**514-04-06** A bare conductor shall be identified, where necessary, by the application of tape, sleeve or disc of the appropriate colour prescribed in Table 51 or by painting with such a colour.

### **514-05 Identification of conductors by letters and/or numbers**

**514-05-01** The lettering or numbering system applies to identification of individual conductors and of conductors in a group. The identification shall be clearly legible and durable. All numerals shall be in strong contrast to the colour of the insulation. The identification shall be given in letters or Arabic numerals. In order to avoid confusion, unattached numerals 6 and 9 shall be underlined.

### ***Protective conductor***

**514-05-02** Conductors with green-and-yellow colour identification shall not be numbered other than for the purpose of circuit identification.

### ***Alphanumeric***

**514-05-03** The preferred alphanumeric system is described in Table 51.

### ***Numeric***

**514-05-04** Conductors may be identified by numbers, the number 0 being reserved for the neutral or mid-point conductor.

### **514-06 Omission of identification by colour or marking**

**514-06-01** Identification by colour or marking is not required for:

- (i) concentric conductors of cables
- (ii) metal sheath or armour of cables when used as a protective conductor
- (iii) bare conductors where permanent identification is not practicable
- (iv) extraneous-conductive-parts used as a protective conductor
- (v) exposed-conductive-parts used as a protective conductor.

**TABLE 51**  
**Identification of conductors**

Function	Alphanumeric	Colour
Protective conductors		Green-and-yellow
Functional earthing conductor		Cream
<b>a.c. power circuit<sup>(1)</sup></b>		
Phase of single-phase circuit	L	Brown
Neutral of single- or three-phase circuit	N	Blue
Phase 1 of three-phase a.c. circuit	L1	Brown
Phase 2 of three-phase a.c. circuit	L2	Black
Phase 3 of three-phase a.c. circuit	L3	Grey
<b>Two-wire unearthed d.c. power circuit</b>		
Positive of two-wire circuit	L+	Brown
Negative of two-wire circuit	L-	Grey
<b>Two-wire earthed d.c. power circuit</b>		
Positive (of negative earthed) circuit	L+	Brown
Negative (of negative earthed) circuit <sup>(2)</sup>	M	Blue
Positive (of positive earthed) circuit <sup>(2)</sup>	M	Blue
Negative (of positive earthed) circuit	L-	Grey
<b>Three-wire d.c. power circuit</b>		
Outer positive of two-wire circuit derived from three-wire system	L+	Brown
Outer negative of two-wire circuit derived from three-wire system	L-	Grey
Positive of three-wire circuit	L+	Brown
Mid-wire of three-wire circuit <sup>(2)(3)</sup>	M	Blue
Negative of three-wire circuit	L-	Grey
<b>Control circuits, ELV and other applications</b>		
Phase conductor	L	Brown, Black, Red, Orange, Yellow, Violet, Grey, White, Pink or Turquoise
Neutral or mid-wire <sup>(4)</sup>	N or M	Blue

NOTES:

- (1) Power circuits include lighting circuits.
- (2) M identifies either the mid-wire of a three-wire d.c. circuit, or the earthed conductor of a two-wire earthed d.c. circuit.
- (3) Only the middle wire of three-wire circuits may be earthed.
- (4) An earthed PELV conductor is blue.

**514-07 Deleted by BS 7671 : 2001, Amendment No 2, 2004.**

Add a Regulation 514-14 as follows:

**514-14 Warning notice - non-standard colours**

**514-14-01** If wiring alterations or additions are made to an installation such that some of the wiring complies with Regulation 514-04 but there is also wiring to previous versions of these Regulations, a warning notice shall be affixed at or near the appropriate distribution board with the following wording:

**CAUTION**

This installation has wiring colours to two versions of BS 7671. Great care should be taken before undertaking extension, alteration or repair that all conductors are correctly identified.

Amend Appendix 1 as follows:

BS 1710 : 1984 (1991)	<del>Specification for identification of pipelines and services.</del> Deleted by BS 7671 : 2001, Amendment No 2, 2004.	514-02-01
BS 3858 : 1992	Specification for binding and identification sleeves for use on electric cables and wires.	514-06-01-03-02
BS EN 60073 : 1997	<del>Specification for coding of indicating devices and actuators by colours and supplementary means.</del> Deleted by BS 7671 : 2001, Amendment No 2, 2004.	514-01-01
<u>BS EN 60445 : 2000</u>	<u>Basic and safety principles for man-machine interface, marking and identification. Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system.</u>	<u>Introduction to Amendment No 2</u>
<u>BS EN 60446 : 2000</u>	<u>Basic and safety principles for the man-machine interface, marking and identification. Identification of conductors by colours or numerals.</u>	<u>Introduction to Amendment No 2</u>

Index:

Amend the references as follows:

Bare conductors-		Colour-	
- as overhead lines	412-05-01	- emergency switching devices	537-04-04
- cables connected to	523-03	- fireman's switch	537-04-06
- electromechanical stresses	521-03	- identification of non-flexible cables and conductors	Sec. 514, <u>Appx. 7</u>
- identification	514-06-03-04-06	- identification of flexible cables and cords	514-07-03, <u>Table 7D</u>
- switchboards, on	523-03, 514-06-03-03-03	- identification of conduits	514-02
Busbars and busbar connections-		<u>Harmonized cable core colours</u>	<u>Appx. 7</u>
- cables connected to busbars	523-03		
- colour identification of	514-06-04-03-03	Phase conductor-	
Cables-		- cross-sectional area of	524-01
...		- definition	Part 2
- core identification	514-06-03	- identification of	514-06, 514-07-03
Cables- (cont'd)		Protective conductors-	
- flame propagation requirements	527-01-03, 04	...	
- flexible (including flexible cords)-		- colour identification of	<u>514-03, 514-06-514-04-02, 514-07-514-05-02</u>
...		...	
- identification of cores	514-07-03	- identification of	<u>514-03, 514-06-514-04-02, 514-07-514-05-02</u>
		Switchboards-	
		- conductors on	523-03, 514-06-04-03-03

Add a new appendix:

## APPENDIX 7

### HARMONIZED CABLE CORE COLOURS

#### 1. Introduction

The requirements of BS 7671 have been harmonized with the technical intent of CENELEC Standard HD 384.5.514: *Identification*, including 514.3: *Identification of conductors*. The cable standards have been harmonized with CENELEC Harmonization Document HD 308 S2: 2001 *Identification of cores in cables and flexible cords*. These standards specify the cable core marking including cable core colours to be implemented in the CENELEC countries.

This appendix provides guidance on marking at the interface between old and harmonized colours, and general guidance on the colours to be used for conductors.

British Standards for fixed and flexible cables have been harmonized with the colours in HD 308 S2. BS 7671 has been modified to align with these cable colours, but also allows other suitable methods of marking connections by colours (tapes, sleeves or discs), or by alphanumeric (letters and/or numbers). Methods may be mixed within an installation.

#### 2. Alteration or addition to an existing installation

##### 2.1 Single-phase

An alteration or an addition made to a single-phase installation need not be marked at the interface provided that:

- (i) the old cables are correctly identified by the colour red for phase and black for neutral, and
- (ii) the new cables are correctly identified by the colour brown for phase and blue for neutral.

##### 2.2 Two- or three-phase installation

Where an alteration or an addition is made to a two- or a three-phase installation wired in the old core colours with cable to the new core colours, unambiguous identification is required at the interface. Cores shall be marked as follows:

*Neutral conductors*

Old and new conductors: N

*Phase conductors*

Old and new conductors: L1, L2, L3.

**TABLE 7A**  
**Example of conductor marking at the interface for additions and alterations**  
**to an a.c. installation identified with the old cable colours**

Function	Old conductor		New conductor	
	Colour	Marking	Marking	Colour
Phase 1 of a.c.	Red	L1	L1	Brown <sup>(1)</sup>
Phase 2 of a.c.	Yellow	L2	L2	Black <sup>(1)</sup>
Phase 3 of a.c.	Blue	L3	L3	Grey <sup>(1)</sup>
Neutral of a.c.	Black	N	N	Blue
Protective conductor	Green-and-Yellow		Green-and-Yellow	

<sup>(1)</sup> Three single-core cables with insulation of the same colour may be used if identified at the terminations.



### 3. Switch wires in a new installation or an alteration or addition to an existing installation

Where a two-core cable with cores coloured brown and blue is used as a switch wire, both conductors being phase conductors, the blue conductors shall be marked brown or L at its terminations.

### 4. Intermediate and two-way switch wires in a new installation or an alteration or addition to an existing installation

Where a three-core cable with cores coloured brown, black and grey is used as a switch wire, all three conductors being phase conductors, the black and grey conductors shall be marked brown or L at their terminations.

### 5. Phase conductors in a new installation or an alteration or addition to an existing installation

Power circuit phase conductors should be coloured as in Table 51. Other phase conductors may be brown, black, red, orange, yellow, violet, grey, white, pink or turquoise.

In a two- or three-phase power circuit the phase conductors may all be of one of the permitted colours, either identified L1, L2, L3 or marked brown, black, grey at their terminations to show the phases.

### 6. Changes to cable core colour identification

**TABLE 7B**  
Cable to BS 6004 (flat cable with bare cpc)

Cable type	Old core colours	New core colours
Single-core + bare cpc	Red or Black	Brown or Blue
Two-core + bare cpc	Red, Black	Brown, Blue
Alt. two-core + bare cpc	Red, Red	Brown, Brown
Three-core + bare cpc	Red, Yellow, Blue	Brown, Black, Grey

**TABLE 7C**  
Standard 600/1000V armoured cable BS 6346, BS 5467 or BS 6724

Cable type	Old core colours	New core colours
Single-core	Red or Black	Brown or Blue
Two-core	Red, Black	Brown, Blue
Three-core	Red, Yellow, Blue	Brown, Black, Grey
Four-core	Red, Yellow, Blue, Black	Brown, Black, Grey, Blue
Five-core	Red, Yellow, Blue, Black, Green-and-Yellow	Brown, Black, Grey, Blue, Green-and-Yellow

**TABLE 7D**  
Flexible cable to BS 6500

Cable type	Old core colours	New core colours
Two-core	Brown, Blue	No change
Three-core	Brown, Blue, Green-and-Yellow	No change
Four-core	Black, Blue, Brown, Green-and-Yellow	Brown, Black, Grey, Green-and-Yellow
Five-core	Black, Blue, Brown, Black, Green-and-Yellow	Brown, Black, Grey, Blue, Green-and-Yellow

## 7. Alteration or addition to a d.c. installation

Where an alteration or an addition is made to a d.c. installation wired in the old core colours with cable to the new core colours, unambiguous identification is required at the interface. Cores shall be marked as follows:

*Neutral and mid-point conductors*

Old and new conductors: M

*Phase conductors*

Old and new conductors: Brown or Grey, or

old and new conductors: L, L+ or L-.

**TABLE 7E**  
**Example of conductor marking at the interface for additions and alterations**  
**to a d.c. installation identified with the old cable colours**

Function	Old conductor		New conductor	
	Colour	Marking	Marking	Colour
<b>Two-wire unearthed d.c. power circuit</b>				
Positive of two-wire circuit	Red	L+	L+	Brown
Negative of two-wire circuit	Black	L-	L-	Grey
<b>Two-wire earthed d.c. power circuit</b>				
Positive (of negative earthed) circuit	Red	L+	L+	Brown
Negative (of negative earthed) circuit	Black	M	M	Blue
Positive (of positive earthed) circuit	Black	M	M	Blue
Negative (of positive earthed) circuit	Blue	L-	L-	Grey
<b>Three-wire d.c. power circuit</b>				
Outer positive of two-wire circuit derived from three-wire system	Red	L+	L+	Brown
Outer negative of two-wire circuit derived from three-wire system	Red	L-	L-	Grey
Positive of three-wire circuit	Red	L+	L+	Brown
Mid-wire of three-wire circuit	Black	M	M	Blue
Negative of three-wire circuit	Blue	L-	L-	Grey

## B) The Electricity Safety, Quality and Continuity Regulations 2002

### Introduction

The Electricity Safety, Quality and Continuity Regulations 2002 require changes to be made to BS 7671 generally of an editorial nature, although there is a prohibition on the use of a PEN conductor other than for distribution systems.

### Implementation

The changes, being statutory requirements, are for immediate implementation.

#### Part 2: Definitions

Delete the following definitions:

Supplier  
Supplier's works

Add the following definition:

**Distributor.** A person who distributes electricity to consumers using electrical lines and equipment that he owns or operates

#### Figure 3 TN-C system

Amend third line of the note as follows:

An example of the TN-C arrangement is earthed concentric wiring but where it is intended to use this special authorisation must be obtained from the appropriate authority. Regulation 8(4) of the Electricity Safety, Quality and Continuity Regulations 2002 states that a consumer shall not combine the neutral and protective functions in a single conductor in his consumer's installation.

Regulations 110-02-01, 110-04-01 (twice), 412-05-01, 525-01-02, 611-01-01 and 611-02-01(ii),  
Definition of protective multiple earthing (PME), Appendix 2 para 1(i) and para 3,

Index: Electricity Supply Regulations

Delete: Electricity Supply Regulations 1988 as amended

Insert: Electricity Safety, Quality and Continuity Regulations 2002

Regulations 110-02-01(i) and 611-01-01

Delete: supplier's works

Insert: distributor's equipment

Regulations 110-04-01, 130-07-01, 131-02-01(v), 312-02-01 (twice), 313-02-01 (twice), 331-01-01,  
473-01-04(iv), 473-02-04(iv), 476-01-01, 542-01-02, 542-01-03, 546-02-01(i), 551-07-04, 554-03-06  
and 611-03-02 (twice), Appendix 2 para 2 (three times), Appendix 2 para 3, Electrical Installation  
Certificate (page 287), Periodic Inspection Report (page 292), Index: Disputes with electricity suppliers,  
Highway power supplies - isolation..., Isolator - supplier's..., Overcurrent protective devices - at  
origin..., Overcurrent protective devices - supplier's ..., Safety services - sources - supplier..., Suppliers,  
Switchgear - use of...

Delete: supplier or supplier's as appropriate

Insert: distributor or distributor's as appropriate

Regulation 551-07-01

Delete: public supplier

Insert: distributor

Regulation 551-01-01 (last sentence), Appendix 2 para 1(i), Index: Disputes with electricity suppliers

Delete: electricity supplier

Insert: distributor

Regulations 546-02-01(ii), 551-01-01 (4 times), 551-02-02, 551-02-03 (twice), heading to 551-04-03, 551-04-03, 551-04-04, 551-05-02, heading to 551-06, 551-06-01, heading to 551-07, 551-07-01, 551-07-02 (twice), 551-07-3 (twice), 551-07-04, 551-07-05, Index: Generating sets (twice), Interlocking, parallel operation (twice), public supply

Delete: public supply, general public supply or public supply system as appropriate

Insert: distributor's network

#### Table 54H

Delete: public electricity supply network

Insert: distributor's network

#### Regulation 460-01-04

Amend as follows:

**460-01-04** ~~In TN-C systems, the Combined protective and neutral (PEN) conductors~~ shall not be isolated or switched.

Except as required by Regulation 476-01-03, in TN-S or TN-C-S systems the neutral conductor need not be isolated or switched, where the neutral conductor can reliably be regarded as being at earth potential. For supplies which are provided in accordance with the ~~Electricity Supply Regulations 1988 as amended~~ [Electricity Safety, Quality and Continuity Regulations 2002](#), the supply neutral conductor (PEN or N) is considered to be connected with earth by a suitably low resistance.

#### Regulation 542-01-05

Amend as follows:

**542-01-05** ~~For a TN-C system, means shall be provided for the connection of PEN conductors to the main earthing terminal. Deleted by BS 7671 : 2001, Amendment No 2, 2004.~~

#### Regulation 551-07-02

Amend last sentence to read:

The type of protection and the sensitivity and operating times depend upon the protection of the distributor's network and shall be [agreed by in accordance with the distributor's requirements](#).

#### Regulation 551-07-04

Amend as follows:

**551-07-04** Means shall be provided to enable the generating set to be isolated from the distributor's network. The means of isolation shall be accessible to the distributor at all times, [so far as is reasonably practicable](#).

#### Regulation 608-13-05

Amend last sentence as follows:

For a ~~PME~~ supply [from a distributor's multiple earthed network](#) the protective conductor of each socket-outlet circuit shall be connected to an earth electrode and shall comply with Regulations 413-02-18 to 413-02-20.

#### Add Regulation 611-04-05

**611-04-05** Drawings shall be prepared showing the position and depth of underground cables supplying highway power supplies, street furniture and street located equipment.

*Appendix 2*

*para 1(i)*

*Amend as follows:*

- |  |   |  |
|--|---|--|
| (i) Distributors' installations generally, subject to certain exemptions | Electricity Safety, Quality and Continuity Regulations 2002<br><a href="#">SI 1988 No 1057</a><br><del><a href="#">SI 1990 No 390</a></del><br><del><a href="#">SI 1992 No 2961</a></del><br><del><a href="#">SI 1994 No 3021</a></del><br><del><a href="#">SI 1994 No 531</a></del><br><del><a href="#">SI 1998 No 2971</a></del><br><a href="#">SI 2002 No 2665</a> | President of the Board of Trade and Secretary of State for Trade and Industry, and Secretary of State for Scotland |
|--|---|--|

*Appendix 2*

*Para 2, 2nd sentence*

*Amend as follows:*

Under Regulation ~~29 26~~ of the ~~Electricity Supply Regulations 1988 as amended~~ [Electricity Safety, Quality and Continuity Regulations 2002](#), any ~~difference~~ [dispute](#) which may arise between a consumer and the distributor having reference to the consumer's installation shall be determined by a person nominated by the Secretary of State on the application of the consumer or consumer's authorised agent or the distributor.

*Appendix 2*

*Para 2,*

*Add after 2nd sentence:*

Regulation 28 of the Electricity Safety, Quality and Continuity Regulations 2002 requires distributors to provide the following information to relevant persons free of charge:

- The maximum prospective short-circuit current at the supply terminals
- The maximum earth loop impedance of the earth fault path outside the installation ( $Z_e$ )
- The type and rating of the distributor's protective device or devices nearest to the supply terminals
- The type of earthing system applicable to the connection
- The number of phases of the supply
- The frequency of the supply and the extent of the permitted variations
- The voltage of the supply and the extent of the permitted variations.

*Appendix 2*

*Paragraph 14*

*Amend last line of the table as follows:*

<b>Effective date</b>	<b>Nominal voltage</b>	<b>Permitted tolerance</b>	<b>Permitted voltage range</b>
Pre-1995	240 V	+6 % / -6 %	225.6 - 254.4 V
1 January 1995	230 V	+10 % / -6 %	216.2 - 253.0 V
1 January 2003-8 (proposed)	230 V	+10 % / -10 %	207.0 - 253.0 V

*Index: Electricity Supply Regulations,  
after changing as indicated above*

*Amend the reference as follows:*

- |  |  |
|--|--|
| Electricity Safety, Quality and Continuity Regulations 2002- | Appx. 2, Item 1(i)                       |
| - relationship of the Regulations to                         | <del><a href="#">120-02-110-04</a></del> |
| - failure of consumer's installation to comply with          | Appx. 2, Para. 2                         |

## C) General amendments

### Introduction

The amendments to Regulations 522-06-06 and 522-06-07 are intended to clarify the requirements, particularly for thin walls and partitions. The new Regulation 741-01-05 is intended to clarify that electronic media may be used for certificates and reports. Other, generally editorial, changes have been made.

### Implementation

These amendments may be implemented immediately. The changes to Appendix 6 are to model forms and may be adopted at the user's discretion.

#### *Part 2: Symbols used in the Regulations*

*Add the following:*

R <sub>1</sub>	resistance of phase conductor of a distribution or final circuit	Ω	Appx 6
R <sub>2</sub>	resistance of circuit protective conductor (cpc) of a distribution or final circuit.	Ω	Appx 6

*Regulations 522-06-06 and 522-06-07, amend as follows:*

**522-06-06** A cable concealed in a wall or partition at a depth of less than 50 mm from the surfaces of the wall or partition shall:

- (i) ~~comply with Regulation 522-06-07, or incorporate an earthed metallic covering which complies with the requirements of these Regulations for a protective conductor of the circuit concerned, the cable complying with BS 5467, BS 6346, BS 6724, BS 7846, BS EN 60702-1 or BS 8436, or~~
- (ii) ~~be of insulated concentric construction complying with BS 4553-1, BS 4553-2 or BS 4553-3, or~~
- (iii) ~~be enclosed in earthed conduit, trunking or ducting satisfying the requirements of these Regulations for a protective conductor, or be mechanically protected sufficient to prevent penetration of the cable by nails, screws and the like, or~~
- (~~iv~~ iv) be installed in a zone within 150 mm ~~of from~~ the top of the wall or partition or within 150 mm of an angle formed by two adjoining walls or partitions. Where the cable is connected to a point, accessory or switchgear on any surface of the wall or partition, the cable may be installed ~~outside these zones only in a straight run in~~ a zone either horizontally or vertically, to the point, accessory or switchgear. Where the location of the accessory, point or switchgear can be determined from the reverse side, a zone formed on one side of a wall of 100 mm thickness or less or partition of 100 mm thickness or less extends to the reverse side.

**522-06-07** ~~Where compliance with Regulation 522-06-06 is impracticable, the concealed cable shall incorporate an earthed metallic covering which complies with the requirements of these Regulations for a protective conductor of the circuit concerned, or shall be enclosed in earthed conduit, trunking or ducting satisfying the requirements of these Regulations for a protective conductor, or by mechanical protection sufficient to prevent penetration of the cable by nails, screws and the like, or be of insulated concentric construction.~~

~~Deleted by BS 7671 : 2001, Amendment No 2, 2004. For requirements see Regulation 522-06-06.~~

*Regulation 601-07-01, amend as follows:*

**601-07-01** The following rules apply to surface wiring systems and to wiring systems embedded in the walls at a depth not exceeding 50 mm and which do not comply with Regulation 522-06-~~07-06(i), (ii) or (iii)~~.

*Add a new Regulation 741-01-05 as follows:*

**741-01-05** Electrical Installation Certificates, Periodic Inspection Reports and Minor Electrical Installation Works Certificates may be produced in any durable medium, including written and electronic media. Regardless of the media used for original certificates, reports or their copies, their authenticity and integrity shall be verified by a reliable process or method. The process or method shall also verify that any copy is a true copy of the original.

Amend Appendix 1 as follows:

<a href="#">BS 4553 :</a>	<a href="#">Specification for 600/1000 V single-phase split concentric electric cables.</a>	
<a href="#">BS 4553-1 : 1998</a>	<a href="#">Cables having PVC insulation.</a>	<a href="#">522-06-06 Table 4A2</a>
<a href="#">BS 4553-2 : 1998</a>	<a href="#">Cables having thermosetting insulation.</a>	<a href="#">522-06-06 Table 4A2</a>
<a href="#">BS 4553-3 : 1998</a>	<a href="#">Cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire.</a>	<a href="#">522-06-06 Table 4A2</a>
BS 5467 : 1997	Specification for 600/1000 V and 1900/3300 V armoured electric cables having thermosetting insulation.	<a href="#">522-06-06 Table 4A2</a>
BS 6007 : 1993	<del>Specification for rubber insulated cables for electric power and lighting.</del> Deleted by BS 7671 : 2001, Amendment No 2, 2004.	<a href="#">Table 4A2</a>
BS 6346 : 1997	Specification for 600/1000 V and 1900/3000 V armoured cables having pvc insulation.	<a href="#">522-06-06 Table 4A2</a>
BS 6724 : 1997	Specification for 600/1000 V and 1900/3300 V armoured cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire.	<a href="#">522-06-06 Table 4A2</a>
BS 7846 : 2000	Electric cables. 600/1000 V armoured fire-resistant electric cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire.	<a href="#">522-06-06 Table 4A2</a>
<a href="#">BS 8436 : 2004</a>	<a href="#">300/500 V screened electric cables having low emission of smoke and corrosive gases when affected by fire, for use in thin partitions and building voids.</a>	<a href="#">522-06-06 Table 4A2</a>
<a href="#">BS EN 60702-1 : 2002</a>	<a href="#">Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V. Cables.</a>	<a href="#">433-02-04 522-06-06 546-02-07 Table 4A2</a>

Appendix 4, Table 4A2

Add as follows:

BS 8436 : 2004	300/500 V screened electric cables having low emission of smoke and corrosive gases when affected by fire, for use in thin partitions and building voids.	4D2	70 °C
BS EN 60702-1 : 2002	Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V. Cables.	4J1, 4J2	70 °C*, 105 °C*

Appendix 4, Table 4D3A

Add values for 150 mm<sup>2</sup> as follows:

150 mm<sup>2</sup> 393 352 413 373 449 429 479 458 436 405 373

Amend page as follows:

**MINOR ELECTRICAL INSTALLATION WORKS CERTIFICATE**

**NOTES:**

The Minor Works Certificate is intended to be used for additions and alterations to an installation that do not extend to the provision of a new circuit. Examples include the addition of a socket-outlet or lighting point to an existing circuit, the relocation of a light switch etc. This Certificate may also be used for the replacement of equipment such as accessories or luminaires, but not for the replacement of distribution boards or similar items. Appropriate inspection and testing, however, should always be carried out irrespective of the extent of the work undertaken.

**MINOR ELECTRICAL INSTALLATION WORKS CERTIFICATE  
GUIDANCE FOR RECIPIENTS (to be appended to the Certificate)**

This Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed and inspected and tested in accordance with British Standard 7671, (the IEE Wiring Regulations).

You should have received an 'original' Certificate and the contractor should have retained a duplicate. If you were the person ordering the work, but not the owner of the installation, you should pass this Certificate, or a copy of it, to the owner.

~~The Minor Works Certificate is only to be used for additions, alterations or replacements to an installation that do not extend to the provision of a new circuit. Examples include the addition of a socket outlet or lighting point to an existing circuit, or the replacement or relocation of a light switch.~~ A separate Certificate should have been received for each existing circuit on which minor works have been carried out. This Certificate is not ~~valid-appropriate~~ if you requested the contractor to undertake more extensive installation work, for which you should have received An Electrical Installation Certificate ~~would be required in such circumstances.~~

The "original" Certificate should be retained in a safe place and be shown to any person inspecting or undertaking further work on the electrical installation in the future. If you later vacate the property, this Certificate will demonstrate to the new owner that the minor electrical installation work carried out complied with the requirements of British Standard 7671 at the time the Certificate was issued.

*Appendix 6, Schedule of inspections*

Add to the notes the following:

LIM to indicate that, exceptionally, a limitation agreed with the person ordering the work prevented the inspection or test being carried out.

*Appendix 6, Schedule of test results*

Columns 6 & 7

Add asterisk as shown:

$(R_1 + R_2)^*$	$R_2^*$
$\Omega$	$\Omega$
6	7

Add a note at the bottom of the schedule as follows:

\* Complete column 6 or 7.



# IEE Support for BS 7671 : 2001

The IEE publishes a range of books and runs courses and services for industry to support the use and application of BS 7671.

## GUIDANCE NOTES

The IEE's series of **Guidance Notes** offers extensive, industry-endorsed guidance to designers and installers in the effective use of BS 7671.

Seven **IEE Guidance Notes** are currently available:

1. Selection and Erection of Equipment
2. Isolation and Switching
3. Inspection and Testing
4. Protection against Fire
5. Protection against Electric Shock
6. Protection against Overcurrent
7. Special Locations

## ON-SITE GUIDE

A convenient, practical guide for electricians which covers domestic installations and smaller industrial and commercial installations up to 100 A, 3-phase. The most widely used guide in the industry, it removes the need for detailed calculations and outlines a detailed inspection and testing regime for installations. Comprehensive checklists and procedures are provided.

## COMMENTARY ON BS 7671 : 2001

Written for designers and managers by the IEE's former Principal Engineer, Paul Cook, this title provides clear interpretations of and guidance to the Regulations.

## CODES OF PRACTICE

The **IEE Code of Practice for In-Service Inspection and Testing of Electrical Equipment** offers guidance for the inspection, testing and maintenance of electrical appliances, plus advice on compliance with health and safety legislation.

The **IEE Electrical Maintenance – Code of Practice** offers guidance on electrical aspects of building maintenance, including electrical installation, fire alarms, emergency lighting and more, plus detailed guidance on legal responsibilities.

## CD-ROM OF IEE WIRING REGULATIONS

The CD-ROM version of BS 7671 (incorporating all amendments) is a fully-structured electronic reference tool, hyperlinked and fully cross-referenced. As well as BS 7671, the CD-ROM contains the **On-Site Guide**, all seven **Guidance Notes** and both **IEE Codes of Practice**.

**To order any of these publications, please contact The IEE:**

- by telephone: +44 (0)1438 767328
- by fax: +44 (0)1438 742792
- by email: [sales@iee.org](mailto:sales@iee.org)
- via our website: [www.iee.org/shop](http://www.iee.org/shop)

For free downloads, updates and to join our email list, visit [www.iee.org/technical](http://www.iee.org/technical)

## COMPETENT PERSONS SCHEME

Under Part P of the Building Regulations, domestic installation work will have to be inspected by Local Authority Building Control officers unless carried out by a 'Competent Person' who can self-certify the work. The IEE supports the Part P Competent Person Scheme arranged by BRE-Certification and the ECA. Details can be received by returning the reply paid card below

## TRAINING AND SHORT COURSES

The IEE offers a full range of training for BS 7671 and its amendments. Both public and in-company courses are available.

**Design** – Two-day course

**Level 3 Certificate in Requirements for Electrical Installations BS 7671** – Two-day course (Qualifying C & G 2381)

**Testing of Electrical Installations** – One-day course

**Level 3 Certificate in Inspection, Testing and Certification of Electrical Installations** – Three-day course (Qualifying C & G 2391)

**Portable Appliance Testing** – Two one-day courses  
(Incorporating Management of Electrical Equipment qualifying C & G 2377-001 and Inspection and Testing of Electrical Equipment qualifying C & G 2377-002)

**Electrical Maintenance** – Two-day course

**Electrical Basics** – Two -day course

**Electrical Safety Appreciation** – One-day course

**Electricity at Work** – One-day course

**Dates and venues** for these and other courses can be found from The IEE:

- by telephone: +44 (0)1438 767288
- by fax: +44 (0)1438 767291
- by email: [courses@iee.org](mailto:courses@iee.org)
- via the web: [www.iee.org/courses](http://www.iee.org/courses)

*Tape - please do not staple*

✂ Please send me further information on the following IEE products and/or courses:

- |   |  |
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| <input type="checkbox"/> BS 7671 IEE Wiring Regulations / CD-ROM                                    | <input type="checkbox"/> On-Site Guide     |
| <input type="checkbox"/> Guidance Notes / Commentary  | <input type="checkbox"/> Codes of Practice |
| <input type="checkbox"/> Part P (Building Regs) Competent Persons Scheme                            | <input type="checkbox"/> Training Courses  |
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