

Forum - Implementing New Cable Colour Code



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Current Electrical Code



Sixteenth edition of the IEE Wiring Regulations (BS 7671:2001) - Incorporating Amendments No. 1 & 2, 2004

Amendment No. 2:2004 was issued on 31-March-2004. The changes are:-

- Identification of colours and numbers
- The Electricity Safety, Quality and Continuity Regulations 2002
- General amendments



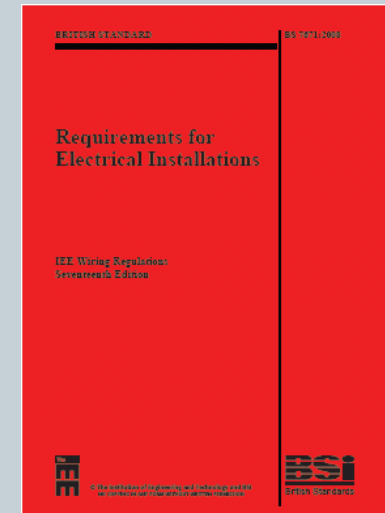
The transition of new colour code was then implemented and mandatory by 1-April-2006.

Current Electrical Code



Seventeenth edition of the IEE Wiring Regulations (BS 7671:2008) was published on 1-Jan-2008

The new colour code has been harmonised with IEC 60364 and CENELEC HD 60384 and incorporated in the 17th Edition IEE Wiring Regulations (BS 7671:2008)



Cable Colour Code


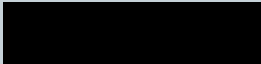


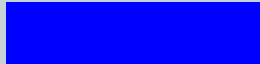







What are the changes?

The BS & IEC had harmonised to one common standards within Europe

a) CENELEC Standard HD 384.5.514: *Identification* including 514.3:
Identification of conductor

b) CENELEC Harmonization Document HD 308 S2: 2001 *Identification of cores in cables and flexible cords.*

	Earth	Neutral	L1	L2	L3
	Green/Yellow	Black	Red	Yellow	Blue
OLD					
	Green/Yellow	Blue	Brown	Black	Grey
NEW					

Cable Colour Code

Previously & typically each country has its own standards as shown

	AT Austria	BE Belgium	CZ Czech Republic	DK Denmark	FI Finland	FR France	DE Germany	HU Hungary	IE Ireland	IT Italy	NO Norway	PT Portugal	SL Slovak Republic	SE Sweden	CH Switzer- land	GB United Kingdom	CENELEC HD 308
YEAR OF CHANGE	65		73	73	89	77	66	81	90		91	74	92		85	66	2001
PE																	
PE																	
N																	
L1				N						IEC 445	N			N			
L2				N					any saept sbeto	IEC 445	N			N			
L3				N					any saept sbeto	IEC 445	N			N	WHITE		
P																	
R																	
O																	
H																	
I																	
B																	
I																	
T																	
E																	
D																	

Blue for phase allowed, if no neutral

Any colour other than Blue or green yellow for separate conductor



G-Y and Blue



G-Y with Blue marking



Black or Brown

N = No requirements

Feb 1996

CENELEC HD 308 S2: 2001 Harmonized colour

What are the issues?

















Mismatch and wrong connection of equipment from various countries due to colour code confusion can create:-

- Phase to phase voltage instead of Phase to neutral voltage causing overvoltage, overheating and fire,
- Wrong rotation of rotating equipment, (eg. for equipment driven by 3 phase motor),
- endangering live on critical safety equipment (eg. lift, fire pump, medical & rescue devices)
- Safety concern such as injury and electrocution
- Hazard due to colour deficient, etc

Old & New Colour Codes



Old Cable Colour Code		
	Single Phase	Three Phase
Phase Conductor (Line)	 Red or  Yellow or  Blue	 Line 1 Red  Line 2 Yellow  Line 3 Blue
	Neutral Conductor	 Black
	Protective Conductor (Earth)	 Green-and-Yellow

New Cable Colour Code		
	Single Phase	Three Phase
Phase Conductor (Line)	 Brown	 Line 1 Brown  Line 2 Black  Line 3 Grey
	Neutral Conductor	 Blue
	Protective Conductor (Earth)	 Green-and-Yellow

Old & New Colour Codes



Function	Alpha-numeric	Old Conductor Colour	New Conductor Colour
Protective conductor Functional earthing conductor		Green-yellow Cream	Green-yellow Cream
AC Power Circuit Single Phase Circuit			
- Phase	L	Red	Brown
- Neutral	N	Black	Blue
Three Phase Circuit			
- Phase 1	L1	Red	Brown
- Phase 2	L2	Yellow	Black
- Phase 3	L3	Blue	Grey
- Neutral	N	Black	Blue
DC Two-Wire Unearthed Circuit			
- Positive	L+	Red	Brown
- Negative	L-	Black	Grey
DC Two-Wire Earthed Circuit			
- Positive (of negative earth)	L+	Red	Brown
- Negative (of negative earth)	M	Black	Blue
- Positive (of positive earth)	M	Black	Blue
- Negative (of positive earth)	L-	Blue	Grey
DC Three-Wire Circuit			
- Positive	L+	Red	Brown
- Mid-wire (may be earthed)	M	Black	Blue
- Negative	L-	Blue	Grey

Rationale for Colour Code Change



- Harmonisation to common international standards, eg. IEC & CENELEC.
- Harmonisation of colour codes for fixed and flexible wiring by European countries;
 - European Standard HD 308 - Insulated cables and flexible cords for installations introduced the brown and blue colours for flexible cables in 1969 and the 2001 edition extends the scope to fixed wiring.
- The Electrical Appliance Regulations in UK has adopted the new colour (brown/blue/green-and-yellow) for flexible cables, cords and plugs since 1969.
- Enable and facilitate international trade for electrical products.



Who Implemented the New Colour Code and When?



UK

- 1 April 2004 – Amendment to BS 7671 permitted the use of new colour codes. The transition was allow till 31-March-2006 and the use of new colour codes become mandatory from 1-April-2006.

Singapore

- SS CP 5 Amendment No. 1 is effective from 1-March-2009. From 1- March-2011, only new colour cables are allowed for use in new electrical installations and electrical additions and alteration works. Both new and existing colour cables may be used for fixed electrical installations during the transition period.

Hongkong

- The new colour code can be used for those electrical installation works commencing on-site on or after 1-July-2007. For installation works commencing on-site from 1-July-2007 to 30-June-2009 (i.e. the 2-year grace period), either the new or the old colour code, but NOT both, can be used. For installation works commencing on-site on or after 1-July 2009, only the new colour code should be used.

When Will Changes Come Into Effect?



Brunei Darussalam

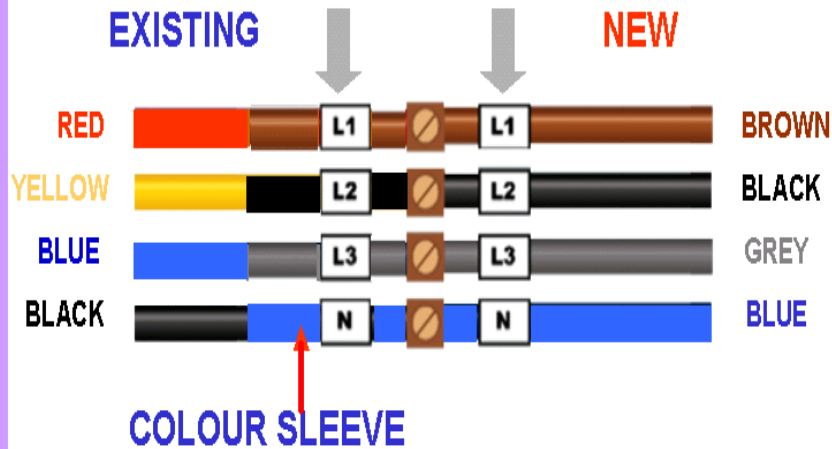
- Proposed implementation of the new colour codes effective from **1-March-2010**. The new and existing colour cables may be used during the transition period with proper safety identification and marking. From **1-March-2011** onwards only new colour codes shall be permitted.

Transition Period

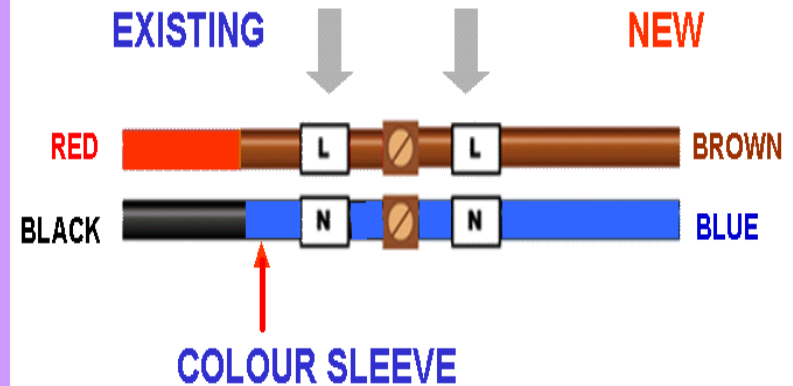


Example of labeling and identification during transition period

THREE PHASE CIRCUITS



SINGLE PHASE CIRCUIT



- Install new colour sleeve over the cable / wire of the old colour code.
- Install correct label and identification on the old and new cable / wire:-
 - For single phase - L and N
 - For three phase - L1, L2, L3 and N

Q & A



For further information, contact :-

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Questions and Answers.