



Technology Training that Works

Practical Electrical Wiring Standards - IEE

BS7671:2008+A1:2011 Edition

Contents

1	Overview	1
1.1	Introduction	1
1.2	An overview of the contents of this book	1
1.3	Why is such a standard necessary?	2
1.4	Objective of the Rules	3
1.5	Scope of the Rules	3
1.6	Exclusions	4
1.7	The Health and Safety at Work etc. Act 1974	5
1.8	Electricity at Work Regulations 1989	5
1.9	Fundamental principles of the Rules	5
1.10	Organization of the Rules	6
1.11	Appendices	7
1.12	Guidance notes to the Rules	8
1.13	Harmonization with European Standards	8
1.14	Summary	9
2	Growth of Electrical Distribution Systems	11
2.1	Introduction	11
2.2	Evolution of electrical distribution	11
2.3	Relevance of Alternating Current (AC) systems	13
2.4	Polyphase circuits	14
2.5	Summary	22
3	Earthing of Electrical Systems	23
3.1	Introduction	23
3.2	Need for earthing in electrical systems	24
3.3	Supply system (source) earthing	25
3.4	Protective earthing of consumer installations	33
3.5	Common earthing practices in low voltage consumer installations	42
3.6	More on TN-C-S systems	45
3.7	Sensing of earth systems	46
3.8	Earth electrodes	47
3.9	Equipotential bonding	49
3.10	Summary	50



Technology Training that Works

4	Planning of Electrical Installations	53
4.1	Introduction	53
4.2	Purpose, supplies and structure	54
4.3	External influences	56
4.4	Compatibility	57
4.5	Maintainability	58
4.6	Safety services	59
4.7	Continuity of service	59
4.8	Summary	60
5	Electrical Hazards and Protection	61
5.1	Introduction	61
5.2	Electrical hazards	62
5.3	Electrical hazards explanation of codes for degree of protection by enclosures as per BS EN 60529: 1991 specification (IP code)	64
5.4	Electrical shock hazards and preventative measures	66
5.5	Thermal effects	78
5.6	Protection against overcurrent	79
5.7	Protection against voltage disturbances	84
5.8	Summary	87
6	Selection and Erection of Equipment	89
6.1	Introduction	89
6.2	Common rules	89
6.3	Wiring systems	92
6.4	Isolation, switching, control and monitoring	96
6.5	Earthing arrangement and protective conductors	100
6.6	Other equipment	103
6.7	Luminaires and lighting installations	106
6.8	Safety services	107
6.9	Summary	107
7	Inspection and Testing	109
7.1	Introduction	109
7.2	Initial verification	109
7.3	Testing	110
7.4	Alterations and additions	111
7.5	Periodic inspection and testing	112
7.6	Summary	112
8	Requirement for Special Locations or Installations	115
8.1	Introduction	115
8.2	Locations containing a bath or shower	116
8.3	Swimming pools, fountains and other basins	119



Technology Training that Works

8.4	Hot air saunas	122
8.5	Construction installations	123
8.6	Installations in agricultural and horticultural premises	124
8.7	Installations in restrictive conductive locations	124
8.8	Electrical installations in caravan/camping parks	125
8.9	Marinas and similar locations	125
8.10	Medical locations	126
8.11	Exhibitions, shows and stands	126
8.12	Solar photovoltaic power supply systems	127
8.13	Mobile or transportable units	127
8.14	Electrical installations in caravans and motor caravans	128
8.15	Operating and maintenance gangways	129
8.16	Temporary electrical installations for structures, amusement devices for fairgrounds, amusement parks and circuses, etc.	129
8.17	Floor and ceiling heating systems	130
8.18	Summary	131
<hr/>		
Appendix A	Earthing Electrodes	133
<hr/>		
Appendix B	Certification and Reporting	153
<hr/>		
Appendix C	Problems	163
<hr/>		
Appendix D	Solutions	167
<hr/>		