

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



---

**Luminaires –  
Part 1: General requirements and tests**

**Luminaires –  
Partie 1: Exigences générales et essais**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

#### IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).

---

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Catalogue IEC - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

#### Recherche de publications IEC - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [csc@iec.ch](mailto:csc@iec.ch).



IEC 60598-1

Edition 8.0 2014-05

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



---

**Luminaires –  
Part 1: General requirements and tests**

**Luminaires –  
Partie 1: Exigences générales et essais**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE **XH**  
CODE PRIX

---

ICS 29.140.40

ISBN 978-2-8322-1553-1

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	9
SECTION 0: GENERAL INTRODUCTION.....	11
0.1    Scope .....	11
0.2    Normative references .....	12
0.3    General requirements.....	15
0.4    General test requirements and verification.....	15
0.5    Components of luminaires .....	16
0.6    List of parts of IEC 60598-2.....	17
SECTION 1: TERMS AND DEFINITIONS .....	18
1.1    General.....	18
1.2    Terms and definitions .....	18
SECTION 2: CLASSIFICATION OF LUMINAIRES.....	31
2.1    General.....	31
2.2    Classification according to type of protection against electric shock .....	31
2.3    Classification according to degree of protection against ingress of dust, solid objects and moisture .....	31
2.4    Classification according to material of supporting surface for which the luminaire is designed .....	31
2.5    Classification according to the circumstances of use .....	32
SECTION 3: MARKING .....	32
3.1    General.....	32
3.2    Marking on luminaires .....	32
3.3    Additional information.....	37
3.4    Test of marking .....	39
SECTION 4: CONSTRUCTION.....	40
4.1    General.....	40
4.2    Replaceable components .....	40
4.3    Wireways .....	40
4.4    Lampholders .....	40
4.5    Starterholders .....	42
4.6    Terminal blocks.....	42
4.7    Terminals and supply connections .....	43
4.8    Switches .....	45
4.9    Insulating linings and sleeves .....	45
4.10   Double and reinforced insulation.....	46
4.11   Electrical connections and current-carrying parts .....	47
4.12   Screws and connections (mechanical) and glands .....	48
4.13   Mechanical strength .....	51
4.14   Suspensions, fixings and means of adjustment.....	54
4.15   Flammable materials .....	58
4.16   Luminaires for mounting on normally flammable surfaces .....	59
4.17   Drain holes.....	60
4.18   Resistance to corrosion .....	60
4.19   Ignitors.....	61
4.20   Rough service luminaires – Vibration requirements.....	61
4.21   Protective shield.....	61

4.22	Attachments to lamps .....	62
4.23	Semi-luminaires .....	63
4.24	Photobiological hazards .....	63
4.25	Mechanical hazard .....	64
4.26	Short-circuit protection .....	64
4.27	Terminal blocks with integrated screwless earthing contacts .....	64
4.28	Fixing of thermal sensing controls .....	64
4.29	Luminaire with non replaceable light source .....	65
4.30	Luminaires with non-user replaceable light sources .....	65
4.31	Insulation between circuits .....	65
4.32	Overvoltage protective devices .....	68
SECTION 5: EXTERNAL AND INTERNAL WIRING .....		68
5.1	General .....	68
5.2	Supply connection and other external wiring .....	68
5.3	Internal wiring .....	73
SECTION 6: Not used .....		76
SECTION 7: PROVISION FOR EARTHING .....		76
7.1	General .....	76
7.2	Provision for earthing .....	76
SECTION 8: PROTECTION AGAINST ELECTRIC SHOCK .....		78
8.1	General .....	78
8.2	Protection against electric shock .....	78
SECTION 9: RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE .....		82
9.1	General .....	82
9.2	Tests for ingress of dust, solid objects and moisture .....	82
9.3	Humidity test .....	86
SECTION 10: INSULATION RESISTANCE AND ELECTRIC STRENGTH, TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT .....		86
10.1	General .....	86
10.2	Insulation resistance and electric strength .....	87
10.3	Touch current, protective conductor current and electric burn .....	90
SECTION 11: CREEPAGE DISTANCES AND CLEARANCES .....		91
11.1	General .....	91
11.2	Creepage distances and clearances .....	91
SECTION 12: ENDURANCE TEST AND THERMAL TEST .....		94
12.1	General .....	94
12.2	Selection of lamps and ballasts .....	94
12.3	Endurance test .....	94
12.4	Thermal test (normal operation) .....	96
12.5	Thermal test (abnormal operation) .....	101
12.6	Thermal test (failed windings in lamp control gear) .....	105
12.7	Thermal test in regard to fault conditions in lamp control gear or electronic devices incorporated in thermoplastic luminaires .....	107
SECTION 13: RESISTANCE TO HEAT, FIRE AND TRACKING .....		110
13.1	General .....	110
13.2	Resistance to heat .....	110
13.3	Resistance to flame and ignition .....	110
13.4	Resistance to tracking .....	111

SECTION 14: SCREW TERMINALS .....	112
14.1    General.....	112
14.2    Terms and definitions.....	112
14.3    General requirements and basic principles .....	113
14.4    Mechanical tests .....	115
SECTION 15: SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS.....	118
15.1    General.....	118
15.2    Terms and definitions.....	119
15.3    General requirements.....	119
15.4    General instructions on tests .....	120
15.5    Terminal and connections for internal wiring.....	121
15.6    Terminals and connections for external wiring .....	123
Annex A (normative) Test to establish whether a conductive part may cause an electric shock.....	151
Annex B (normative) Test lamps.....	152
B.1    General.....	152
B.2    Filament lamps within the scope of IEC 60432-1 and IEC 60432-2 .....	152
B.2.1    Principal modes of heat transfer and lamps used for testing .....	152
B.2.2    Filament test lamps.....	152
B.3    Halogen lamps within the scope of IEC 60432-3 .....	154
B.4    Tubular fluorescent and other discharge lamps.....	154
B.5    LED modules within the scope of IEC 62031.....	154
Annex C (normative) Abnormal circuit conditions .....	155
Annex D (normative) Draught-proof enclosure .....	158
Annex E (normative) Determination of winding temperature rises by the increase-in-resistance method.....	161
Annex F (normative) Test for resistance to stress corrosion of copper and copper alloys ....	162
F.1    Test cabinet .....	162
F.2    Test solution .....	162
F.3    Test piece .....	162
F.4    Test procedure.....	163
Annex G (normative) Measurement of touch current and protective conductor current ).....	164
Annex H (Void).....	168
Annex I (Void).....	169
Annex J (informative) Explanation of IP numbers for degrees of protection .....	170
Annex K (informative) Temperature measurement .....	172
K.1    Temperature measurements of the luminaire.....	172
K.2    Temperature measurement of the insulation parts of lampholders.....	173
Annex L (informative) Guide to good practice in luminaire design.....	175
L.1    General.....	175
L.2    Plastics in luminaires.....	175
L.3    Rust resistance .....	176
L.4    Corrosion resistance .....	176
L.5    Chemically corrosive atmospheres .....	177
L.6    Reflector design .....	177
L.7    Components in different kinds of luminaires.....	178
L.8    Recommendations for electromagnetic ballast protection for end of life phenomenon of HID lamps .....	179

L.9	Resistance against the effects of vibration .....	179
L.10	Flammability of components .....	179
Annex M (normative)	Determination of creepage distances and clearances.....	180
Annex N (informative)	Explanation of marking for luminaires that are not suitable for mounting on normally flammable surfaces and covering with insulation materials .....	181
N.0	General.....	181
N.1	Protection against flame.....	181
N.2	Protection against heat.....	181
N.2.1	Spacing .....	182
N.2.2	Temperature measurements of mounting surface under abnormal or failed ballast conditions .....	182
N.3	Thermal protectors .....	183
N.4	Deletion of the F mark requirements .....	184
Annex O (Void)	.....	185
Annex P (normative)	Absorption requirements for the protective shield to be fitted to luminaires designed for metal halide lamps which emit a high level of UV radiation .....	186
P.1	General.....	186
P.2	Procedure A.....	186
P.3	Procedure B.....	187
Annex Q (informative)	Conformity testing during manufacture .....	188
Q.1	General.....	188
Q.2	Testing.....	188
Annex R (normative)	Schedule of amended subclauses containing more serious/critical requirements which require products to be retested .....	190
Annex S (normative)	Requirements for the identification of a family or range of luminaires for type testing .....	191
S.1	General.....	191
S.2	Range or family of luminaires .....	191
Annex T (informative)	Reference to Class 0.....	192
T.1	General.....	192
T.2	Definition .....	192
T.3	Requirements and tests.....	192
Annex U (informative)	Creepage and clearances distances for luminaires where a higher degree of availability (impulse withstand category III) may be requested.....	193
U.1	General.....	193
U.2	Requirements for impulse withstand category III .....	193
Annex V (normative)	Additional test requirements for terminal blocks with integrated screwless earthing contact for direct connection to the luminaire housing or to parts of the body.....	195
V.1	Additional requirements to 7.2.1 .....	195
V.2	Additional requirements to 7.2.3 .....	195
Annex W (normative)	Alternative thermal test for thermoplastic luminaires.....	197
W.1	Thermal test in regard to fault conditions in lamp controlgear or electronic devices without temperature sensing controls in thermoplastic luminaires for fluorescent lamps $\leq 70$ W.....	197
Annex X (normative)	.....	199
Bibliography	.....	201
Figure 1 – Symbols (1 of 2)	.....	128

Figure 2 – Terminal block arrangement for installation test for luminaires with connecting leads (tails) .....	129
Figure 3 – <i>This figure has been withdrawn from the present edition.</i> .....	129
Figure 4 – Illustration of the requirements of 4.15 .....	130
Figure 5 – <i>This figure has been withdrawn from the present edition.</i> .....	130
Figure 6 – Apparatus for proving protection against dust.....	131
Figure 7 – Apparatus for testing protection against rain and splashing .....	132
Figure 8 – Nozzle for spray test.....	133
Figure 9 – Relation between winding temperature and mounting surface temperature .....	134
Figure 10 – Ball-pressure apparatus .....	135
Figure 11 – Arrangement and dimensions of the electrodes for the tracking test .....	135
Figure 12 – Pillar terminals.....	136
Figure 13 – Screw terminals and stud terminals (1 of 2).....	137
Figure 14 – Saddle terminals.....	139
Figure 15 – Lug terminals.....	140
Figure 16 – Mantle terminals .....	141
Figure 17 – Construction of electrical connections .....	142
Figure 18 – Examples of spring-type screwless terminals .....	142
Figure 19 – Further examples of screwless terminals.....	143
Figure 20 – Illustration of the terms “lopping-in” and “through wiring” .....	144
Figure 21 – Apparatus for ball impact tests.....	145
Figure 22 – Examples of self-tapping, thread-cutting and thread-forming screws (from ISO 1891) .....	145
Figure 23 – <i>This figure has been withdrawn from the present edition.</i> .....	145
Figure 24 – Illustration of creepage and clearance measurements at a supply terminal .....	146
Figure 25 – Tumbling barrel .....	146
Figure 26 – Test circuit for safety during insertion.....	147
Figure 27 – Ignition temperatures of wood as a function of time .....	147
Figure 28 – Example of permitted degree of soldering .....	148
Figure 29 – Test chain .....	148
Figure 30 – Example of a thread forming screw used in a groove of a metallic material.....	149
Figure 31 – Electro-mechanical contact system with plug/socket connection .....	150
Figure 32 – Test circuit for luminaires incorporating fluorescent lamp $\leq 70$ W .....	150
Figure C.1 – Circuit for testing rectifying effect (some capacitive starterless ballasts only) .....	156
Figure C.2 – Circuit for testing rectifying effect (ballasts for single pin lamps) .....	156
Figure C.3 – Circuit for testing rectifying effect of some high pressure sodium and some metal halide lamps.....	157
Figure D.1 – Example of test recess where a luminaire comprises separate parts .....	159
Figure D.2 – Correct test box size (insulating ceilings) for settable and adjustable luminaires .....	160
Figure G.1 – Test configuration: single-phase equipment on star TN or TT system.....	166
Figure G.2 – Measuring network, touch current weighted for perception or reaction .....	166
Figure G.3 – Measuring network, touch current weighted for let-go (for portable class I luminaires).....	166

Figure G.4 – Measuring network, weighted for high frequency protective conductor currents .....	167
Figure K.1 – Placing of thermocouples on a typical lampholder .....	174
Figure V.1 – Arrangement for voltage drop test.....	196
Figure X.1 – Declaration of $LV_{\text{supply}}$ and $U_{\text{out}}$ and the insulation barriers between the light source and accessible parts.....	199
Table 3.1 – Marking .....	33
Table 4.1 – Torque tests on screws .....	49
Table 4.2 – Torque tests on glands.....	51
Table 4.3 – Impact energy and spring compression .....	52
Table 4.4 – Test on semi-luminaires .....	56
Table 4.5 – Test on adjusting devices.....	57
Table 5.1 – Supply cord.....	69
Table 5.2 – Tests for cord anchorage .....	72
Table 9.1 – Solid-object-proof luminaire test.....	84
Table 10.1 – Minimum insulation resistance.....	88
Table 10.2 – Electric strength.....	90
Table 10.3 – Limits of touch current or protective conductor current and electric burn .....	91
Table 11.1 – Minimum distances for a.c. (50/60 Hz) sinusoidal voltages (to be used in conjunction with Annex M).....	93
Table 11.2 – Minimum distances for sinusoidal or non-sinusoidal pulse voltages.....	94
Table 12.1 – Maximum temperatures under the test conditions of 12.4.2, for principal parts (1 of 2).....	99
Table 12.2 – Maximum temperatures under the test conditions of 12.4.2, for common materials used in luminaires (1 of 2).....	100
Table 12.3 – Maximum temperatures under the test conditions of 12.5.1.....	103
Table 12.4 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp control gear .....	104
Table 12.5 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp control gear marked “D6” .....	104
Table 12.6 – Temperature overshoot time limitation.....	106
Table 14.1 – Nominal cross-sectional areas of conductors according to terminal sizes.....	114
Table 14.2 – Nominal cross-sectional areas of conductors according to maximum current.....	114
Table 14.3 – Composition of conductors .....	115
Table 14.4 – Torque to be applied to screws and nuts .....	117
Table 14.5 – Pull to be applied to conductor .....	118
Table 15.1 – Conductor rating .....	124
Table 15.2 – Conductor pull force.....	124
Table F.1 – pH value of the test solution.....	162
Table G.1 – Position of switch e, n and p for the measurements of the different classes of luminaires .....	165
Table J.1 – Degrees of protection indicated by the first characteristic numeral .....	170
Table J.2 – Degrees of protection indicated by the second characteristic numeral .....	171
Table L.1 – Damaging influences.....	175

Table M.1 – Determination of creepage distances and clearances (see Table 11.1) .....	180
Table N.1 – Guidance on when to use the symbol and its explanation on the luminaire or in the manufacturer’s instructions provided with the luminaire .....	181
Table N.2 – Thermal protection operation .....	183
Table Q.1 – Minimum values for electrical tests .....	189
Table U.1 – Minimum distances for a.c. (50/60 Hz) sinusoidal voltages impulse withstand category III .....	194
Table X.1 – Insulation requirements between active parts and accessible conductive parts .....	200

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

## LUMINAIRES –

### Part 1: General requirements and tests

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60598-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

This eighth edition cancels and replaces the seventh edition published in 2008. This edition constitutes a technical revision and includes the following significant technical changes with respect to the previous edition:

- a) requirements to support the construction methods for new LED luminaires entering the market;
- b) photobiological requirements extended;
- c) more precise requirements for insulation between different types of electrical circuit;
- d) other general updates and improvements.

The major changes which may affect certification are given in Annex R.

Annex R shows where a new text has been included which contains more serious/critical requirements requiring products to be re-tested.

The text of this standard is based on the following documents:

FDIS	Report on voting
34D/1110/FDIS	34D/1121/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

NOTE In this standard, the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

A list of all parts of the IEC 60598 series, under the general title: *Luminaires*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## LUMINAIRES –

### Part 1: General requirements and tests

#### SECTION 0: GENERAL INTRODUCTION

##### 0.1 Scope

This Part 1 of IEC 60598 specifies general requirements for luminaires, incorporating electric light sources for operation from supply voltages up to 1 000 V. The requirements and related tests of this standard cover: classification, marking, mechanical construction, electrical construction and photobiological safety.

Each section of this Part 1 is read in conjunction with this Section 0 and with other relevant sections to which reference is made.

Each part of IEC 60598-2 details requirements for a particular type of luminaire or group of luminaires on supply voltages not exceeding 1 000 V. These parts are published separately for ease of revision and additional sections will be added as and when a need for them is recognized.

The presentation of photometric data for luminaires is under consideration by the International Commission on Illumination (CIE) and is not, therefore, included in this Part 1.

Requirements are included in this Part 1 for luminaires incorporating ignitors with nominal peak values of the voltage pulse not exceeding those of Table 11.2. The requirements apply to luminaires with ignitors built into ballasts and to luminaires with ignitors separate from ballasts. For luminaires with ignitors built into lamps, the requirements are under consideration.

Requirements for semi-luminaires are included in this Part 1.

In general, this Part 1 covers safety requirements for luminaires. The object of this Part 1 is to provide a set of requirements and tests which are considered to be generally applicable to most types of luminaires and which can be called up as required by the detail specifications of IEC 60598-2. This Part 1 is thus not regarded as a specification in itself for any type of luminaire, and its provisions apply only to particular types of luminaires to the extent determined by the appropriate part of IEC 60598-2.

The parts of IEC 60598-2, in making reference to any of the sections of Part 1, specify the extent to which that section is applicable and the order in which the tests are to be performed; they also include additional requirements as necessary.

The order in which the sections of Part 1 are numbered has no particular significance as the order in which their provisions apply is determined for each type of luminaire or group of luminaires by the appropriate part of IEC 60598-2. All parts of IEC 60598-2 are self-contained and therefore do not contain references to other parts of IEC 60598-2.

Where the requirements of any of the sections of Part 1 are referred to in the parts of IEC 60598-2 by the phrase "The requirements of section... of IEC 60598-1 apply", this phrase is to be interpreted as meaning that all the requirements of that section of Part 1 apply except those which are clearly inapplicable to the particular type of luminaire covered by that part of IEC 60598-2.

For explosion proof luminaires, as covered by IEC 60079, the requirements of IEC 60598 (selecting the appropriate parts 2) are applied in addition to the requirements of IEC 60079. In the event of any conflict between IEC 60598 and IEC 60079, the requirements of IEC 60079 take priority.

Attention is drawn to lamp performance standards which contain "information for luminaire design"; this should be followed for proper lamp operation; however, this standard does not require the testing of lamp performance as part of the type test approval for luminaires.

Improvements in safety to take into account the state of the art technology are incorporated in the standards with revisions and amendments on an ongoing basis. Regional standardisation bodies may include statements in their derived standards to cover products which have complied with the previous document as shown by the manufacturer or standardization body. The statements may require that for such products, the previous standard may continue to apply to production until a defined date after which the new standard shall apply.

## 0.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60061, *Lamp caps and holders together with gauges for the control of interchangeability and safety*

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders*

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges*

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*  
Amendment 1:2005

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC/TR 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60155, *Glow-starters for fluorescent lamps*

IEC 60227(all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60238, *Edison screw lampholders*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60357, *Tungsten halogen lamps (non-vehicle) – Performance specifications*

IEC 60360, *Standard method of measurement of lamp cap temperature rise*

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60400, *Lampholders for tubular fluorescent lamps and starterholders*

IEC 60417, *Graphical symbols for use on equipment* Available at: <http://www.graphical-symbols.info/equipment>

IEC 60432-1, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*

IEC 60432-2, *Incandescent lamps – Safety specifications – Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*

IEC 60432-3, *Incandescent lamps – Safety specifications – Part 3: Tungsten-halogen lamps (non-vehicle)*

IEC 60449:1973, *Voltage bands for electrical installations of buildings*  
Amendment 1:1979

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60570:2003, *Electrical supply track systems for luminaires*

IEC 60598-2 (all parts), *Luminaires – Part 2: Particular requirements*

IEC 60598-2-4, *Luminaires – Part 2: Particular requirements – Section 4: Portable general purpose luminaires*

IEC 60662, *High-pressure sodium vapour lamps – Performance specifications*

IEC 60682, *Standard method of measuring the pinch temperature of quartz-tungsten-halogen lamps*

IEC 60684 (all parts), *Flexible insulating sleeving*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*