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## REDLINE VERSION

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### **Ljusarmatur – Säkerhet – Del 1: Allmänna fordringar och provning**

*Luminaires –  
Part 1: General requirements and tests*

En så kallad ”Redline version” (RLV) innehåller både den fastställda IEC-standarden och en ändringsmarkerad standard. Alla tillägg och borttagningar sedan den tidigare utgåvan är markerade med färg. Med en RLV sparar du mycket tid när du ska identifiera och bedöma aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut en RLV i de fall den finns tillgänglig från IEC.



IEC 60598-1

Edition 9.0 2020-08  
REDLINE VERSION

# INTERNATIONAL STANDARD



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## Luminaires – Part 1: General requirements and tests

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 29.140.40

ISBN 978-2-8322-8784-2

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## CONTENTS

FOREWORD .....	9
SECTION 0: GENERAL INTRODUCTION .....	12
0.1 Scope .....	12
0.2 Normative references .....	13
0.3 General requirements .....	16
0.4 General test requirements and verification .....	16
0.5 Components of luminaires .....	18
0.6 List of parts of IEC 60598-2 .....	18
0.7 Information for luminaire design in light sources standards .....	19
SECTION 1: TERMS AND DEFINITIONS .....	20
1.1 General .....	20
1.2 Terms and definitions .....	20
SECTION 2: CLASSIFICATION OF LUMINAIRES .....	36
2.1 General .....	36
2.2 Classification according to type of protection against electric shock .....	36
2.3 Classification according to degree of protection against ingress of dust, solid objects and moisture .....	36
2.4 Classification according to material of supporting surface for which the luminaire is designed .....	36
2.5 Classification according to the circumstances of use .....	37
SECTION 3: MARKING .....	38
3.1 General .....	38
3.2 Marking on luminaires .....	38
3.3 Additional information .....	44
3.4 Test of marking .....	47
SECTION 4: CONSTRUCTION .....	48
4.1 General .....	48
4.2 Replaceable components .....	48
4.3 Wireways .....	48
4.4 Lampholders .....	48
4.5 Starterholders .....	50
4.6 Terminal blocks .....	50
4.7 Terminals and supply connections .....	51
4.8 Switches .....	53
4.9 Insulating linings and sleeves .....	53
4.10 Double and reinforced insulation .....	54
4.11 Electrical connections and current-carrying parts .....	55
4.12 Screws and connections (mechanical) and glands .....	57
4.13 Mechanical strength .....	60
4.14 Suspensions, fixings and means of adjustment .....	64
4.15 Flammable materials .....	67
4.16 Luminaires for mounting on normally flammable surfaces .....	69
4.17 Drain holes .....	70
4.18 Resistance to corrosion .....	70
4.19 Ignitors .....	71
4.20 Rough service luminaires – Vibration requirements .....	71

4.21	Protective shield .....	71
4.22	Attachments to lamps.....	72
4.23	Semi-luminaires .....	73
4.24	Photobiological hazards .....	73
4.25	Mechanical hazard .....	74
4.26	Short-circuit protection.....	74
4.27	Terminal blocks with integrated screwless protective earthing contacts.....	74
4.28	Fixing of thermal sensing controls.....	74
4.29	Luminaire with non-replaceable light source.....	75
4.30	Luminaires with non-user replaceable light sources .....	75
4.31	Insulation between circuits .....	75
4.32	Overvoltage protective devices .....	78
4.33	Luminaire powered via information technology communication cabling.....	78
4.34	Electromagnetic fields (EMF) .....	78
4.35	Protection against moving fan blades.....	79
4.36	Track-mounted luminaires.....	79
SECTION 5: EXTERNAL AND INTERNAL WIRING .....		80
5.1	General.....	80
5.2	Supply connection and other external wiring .....	80
5.3	Internal wiring .....	89
5.4	Test to determine suitability of conductors having a reduced cross-sectional area .....	91
SECTION 6: <del>Not used</del> Void.....		92
SECTION 7: PROVISION FOR EARTHING .....		94
7.1	General.....	94
7.2	Provision for earthing.....	94
SECTION 8: PROTECTION AGAINST ELECTRIC SHOCK .....		97
8.1	General.....	97
8.2	Protection against electric shock.....	97
SECTION 9: RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE .....		101
9.1	General.....	101
9.2	Tests for ingress of dust, solid objects and moisture .....	101
9.3	Humidity test.....	105
SECTION 10: INSULATION RESISTANCE AND ELECTRIC STRENGTH, TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT.....		107
10.1	General.....	107
10.2	Insulation resistance and electric strength .....	107
10.3	Touch current, protective conductor current and electric burn .....	111
SECTION 11: CREEPAGE DISTANCES AND CLEARANCES .....		113
11.1	General.....	113
11.2	Creepage distances and clearances.....	113
SECTION 12: ENDURANCE TEST AND THERMAL TEST.....		118
12.1	General.....	118
12.2	Selection of lamps and ballasts .....	118
12.3	Endurance test.....	118
12.4	Thermal test (normal operation) .....	120
12.5	Thermal test (abnormal operation) .....	125
12.6	Thermal test (failed windings in lamp controlgear) .....	130

12.7	Thermal test in regard to fault conditions in lamp controlgear or electronic devices incorporated in thermoplastic luminaires .....	132
SECTION 13: RESISTANCE TO HEAT, FIRE AND TRACKING.....		135
13.1	General.....	135
13.2	Resistance to heat .....	135
13.3	Resistance to flame and ignition .....	135
13.4	Resistance to tracking.....	136
SECTION 14: SCREW TERMINALS.....		137
14.1	General.....	137
14.2	Terms and definitions.....	137
14.3	General requirements and basic principles.....	138
14.4	Mechanical tests .....	140
SECTION 15: SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS.....		144
15.1	General.....	144
15.2	Terms and definitions.....	144
15.3	General requirements .....	144
15.4	General instructions on tests.....	146
15.5	Terminal and connections for internal wiring .....	146
15.6	Terminals and connections for external wiring.....	149
Annex A (normative) Test to establish whether a conductive part <del>may</del> can cause an electric shock.....		177
Annex B (normative) Test lamps .....		178
B.1	General.....	178
B.2	Filament lamps within the scope of IEC 60432-1 and IEC 60432-2.....	178
B.3	Halogen lamps within the scope of IEC 60432-3 .....	180
B.4	Tubular fluorescent and other discharge lamps .....	180
B.5	LED modules within the scope of IEC 62031 .....	180
Annex C (normative) Abnormal circuit conditions .....		181
Annex D (normative) Thermal testing .....		184
D.1	Draught-proof enclosure .....	184
D.2	Mounting surface and test recess.....	184
D.3	Alternative test procedure for adjustment of measured temperatures for luminaire $t_a$ rating(s).....	187
Annex E (normative) Determination of winding temperature rises by the increase-in-resistance method .....		189
Annex F (normative) Test for resistance to stress corrosion of copper and copper alloys.....		190
F.1	Test cabinet.....	190
F.2	Test solution .....	190
F.3	Test piece .....	190
F.4	Test procedure.....	190
Annex G (normative) Measurement of touch current and protective conductor current .....		192
Annex H (xxx) (Void).....		196
Annex I (xxx) (Void) .....		197
Annex J (informative) Explanation of IP numbers for degrees of protection .....		198
Annex K (informative) Temperature measurement.....		200
K.1	Temperature measurements of the luminaire .....	200
K.2	Temperature measurement of the insulation parts of lampholders .....	201

Annex L (informative) <del>Guide to</del> Guidelines for good practice in luminaire design .....	203
L.1 General.....	203
L.2 Plastics in luminaires .....	203
L.3 Rust resistance .....	204
L.4 Corrosion resistance .....	204
L.5 Chemically corrosive atmospheres .....	205
L.6 Reflector design.....	205
L.7 Components in different kinds of luminaires .....	206
L.8 Recommendations for electromagnetic ballast protection for end of life phenomenon of HID lamps .....	206
L.9 Resistance against the effects of vibration .....	207
L.10 Flammability of components.....	207
Annex M (normative) Determination of creepage distances and clearances .....	208
Annex N (informative) Explanation of marking for luminaires that are not suitable for mounting on normally flammable surfaces and covering with insulation materials .....	209
N.0 General.....	209
N.1 Protection against flame .....	209
N.2 Protection against heat .....	209
N.3 Thermal protectors.....	210
N.4 Deletion of the F mark requirements .....	211
Annex O (xxx) (Void) .....	212
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 .....	213
P.1 General.....	213
P.2 Procedure A.....	213
P.3 Procedure B.....	214
Annex Q (informative) Conformity testing during manufacture .....	215
Q.1 General.....	215
Q.2 Testing .....	215
Annex R (normative) Schedule of amended clauses and subclauses containing more serious/critical requirements which <del>require</del> call for products to be retested .....	217
Annex S (normative) Requirements for the identification of a family or range of luminaires for type testing.....	219
S.1 General.....	219
S.2 Range or family of luminaires.....	219
Annex T (xxx) <del>(informative) Reference to Class 0</del> (Void) .....	220
Annex U (informative) <del>Creepage and clearances distances</del> Additional requirements for luminaires where a higher degree of availability (impulse withstand category III) may be requested.....	222
U.1 General.....	222
U.2 Requirements for impulse withstand category III .....	222
Annex V (normative) Additional test requirements for terminal blocks with integrated screwless protective earthing contact for direct connection to the luminaire housing or to parts of the body.....	225
V.1 Additional requirements to 7.2.1.....	225
V.2 Additional requirements to 7.2.3.....	225
Annex W (normative) Alternative thermal test for thermoplastic luminaires.....	227
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 ≤ 70 W.....	227

Annex X (normative) Requirements for insulation between active parts of circuits and accessible conductive parts ..... 229

Annex Y (informative) Information regarding power sourcing equipment powering class III luminaires via information technology communication cabling ..... 231

    Y.0 General..... 231

    Y.1 Insulation of the mains supply ..... 231

    Y.2 Electrical limits of a PSE..... 231

Bibliography..... 233

Figure 34 – Circuit for checking electrical contact between socket outlet and plug ..... 87

Figure 33 – Test to determine suitability of conductors having a reduced cross-sectional area ..... 92

Figure 1 – Symbols ..... 152

Figure 2 – Terminal block arrangement for installation test for luminaires with connecting leads (tails) ..... 155

Figure 3 – Void ..... 155

Figure 4 – Illustration of the requirements of 4.15 ..... 156

Figure 5 – Void ..... 156

Figure 6 – Apparatus for proving protection against dust..... 157

Figure 7 – Apparatus for testing protection against rain and splashing ..... 158

Figure 8 – Nozzle for spray test ..... 159

Figure 9 – Relation between winding temperature and mounting surface temperature..... 160

Figure 10 – Ball-pressure apparatus ..... 161

Figure 11 – Arrangement and dimensions of the electrodes for the tracking test ..... 161

Figure 12 – Pillar terminals ..... 162

Figure 13 – Screw terminals and stud terminals ..... 163

Figure 14 – Saddle terminals ..... 165

Figure 15 – Lug terminals ..... 166

Figure 16 – Mantle terminals..... 167

Figure 17 – Construction of electrical connections ..... 168

Figure 18 – Examples of spring-type screwless terminals ..... 168

Figure 19 – Further examples of screwless terminals ..... 169

Figure 20 – Illustration of the terms "lopping-in" and "through wiring" ..... 170

Figure 21 – Apparatus for ball impact tests ..... 171

Figure 22 – Examples of self-tapping, thread-cutting and thread-forming screws (from ISO 1891) ..... 171

Figure 23 – Void ..... 171

Figure 24 – Illustration of creepage and clearance measurements at a supply terminal..... 172

Figure 25 – ~~Tumbling barrel~~ Void ..... 172

Figure 26 – Test circuit for safety during insertion ..... 173

Figure 27 – Ignition temperatures of wood as a function of time ..... 173

Figure 28 – Example of permitted degree of soldering ..... 174

Figure 29 – Test chain ..... 174

Figure 30 – Example of a thread forming screw used in a groove of a metallic material ..... 175

Figure 31 – Electro-mechanical contact system with plug/socket connection ..... 176

Figure 32 – Test circuit for luminaires incorporating fluorescent lamp $\leq 70$ W .....	176
Figure C.1 – Circuit for testing rectifying effect (some capacitive starterless ballasts only) .....	182
Figure C.2 – Circuit for testing rectifying effect (ballasts for single pin lamps) .....	182
Figure C.3 – Circuit for testing rectifying effect of some high pressure sodium and some metal halide lamps .....	183
Figure D.1 – Example of test recess where a luminaire comprises separate parts, in accordance with Clause D.2 a) .....	185
Figure D.2 – Example of test recess where a luminaire comprises separate parts, in accordance with Clause D.2 b) .....	186
Figure D.3 – Correct test box size (insulating ceilings) for settable and adjustable luminaires .....	187
Figure G.1 – Test configuration: single-phase equipment on star TN or TT system .....	194
Figure G.2 – Measuring network, touch current weighted for perception or reaction .....	194
Figure G.3 – Measuring network, touch current weighted for let-go (for portable class I luminaires) .....	195
Figure G.4 – Measuring network, weighted for high frequency <del>protective conductor currents</del> .....	195
Figure K.1 – Placing of thermocouples on a typical lampholder .....	202
Figure V.1 – Arrangement for voltage drop test .....	226
Figure X.1 – Declaration of $LV_{\text{supply}}$ and $U_{\text{out}}$ and the insulation barriers between the light source and accessible parts .....	229
Table 3.1 – Marking .....	39
Table 3.2 – Identification of extra-low-voltage DC leads and terminations .....	42
Table 4.6 – Overview of required Y capacitors .....	55
Table 4.1 – Torque tests on screws .....	58
Table 4.2 – Torque tests on cable glands .....	60
Table 4.3 – Impact energy and spring compression .....	61
Table 4.4 – Test on semi-luminaires .....	66
Table 4.5 – Test on adjusting devices .....	67
Table 5.1 – Supply cord .....	81
Table 5.3 – Wiring dimension .....	83
Table 5.2 – Tests for cord anchorage .....	86
Table 9.1 – Solid-object-proof luminaire test .....	103
Table 10.1 – Minimum insulation resistance .....	108
Table 10.2 – Electric strength .....	110
Table 10.3 – Limits of touch current or protective conductor current and electric burn .....	112
<del>Table 11.2 – Minimum distances for sinusoidal or non-sinusoidal pulse voltages .....</del>	<del>115</del>
Table 11.1.A – Minimum creepage distances for AC <del>(50/60-Hz)</del> sinusoidal voltages up to 30 kHz (to be used in conjunction with Annex M) .....	115
Table 11.1.B – Minimum clearance for working voltages (to be used in conjunction with Annex M) .....	117
Table 11.2 – Minimum distances for ignition pulse voltages or equivalent peak voltage $U_p$ .....	117
Table 12.1 – Maximum temperatures under the test conditions of 12.4.2, for principal parts .....	123



Table 12.2 – Maximum temperatures under the test conditions of 12.4.2, for common materials used in luminaires.....	125
Table 12.3 – Maximum temperatures under the test conditions of 12.5.1 .....	128
Table 12.4 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp controlgear .....	129
Table 12.5 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp controlgear marked "D6" .....	129
Table 12.6 – Temperature overshoot time limitation .....	131
Table 14.1 – Nominal cross-sectional areas of conductors according to terminal sizes .....	139
Table 14.2 – Nominal cross-sectional areas of conductors according to maximum current .....	139
Table 14.3 – Composition of conductors .....	140
Table 14.4 – Torque to be applied to screws and nuts .....	142
Table 14.5 – Pull to be applied to conductor .....	143
Table 15.1 – Conductor rating.....	149
Table 15.2 – Conductor pull force .....	150
Table F.1 – pH value of the test solution .....	190
Table G.1 – Position of switch e, n and p for the measurements of the different classes of luminaires .....	193
Table J.1 – Degrees of protection indicated by the first characteristic numeral.....	198
Table J.2 – Degrees of protection indicated by the second characteristic numeral .....	199
Table L.1 – Damaging influences .....	203
Table M.1 – Determination of creepage distances and clearances (see Table 11.1).....	208
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.....	209
Table N.2 – Thermal protection operation .....	211
Table Q.1 – Minimum values for electrical tests .....	216
Table U.1 – Minimum clearance distances for AC <del>(50/60 Hz)</del> sinusoidal working voltages impulse withstand category III.....	223
Table U.2 – Overview of required Y capacitors .....	224
Table X.1 – Insulation requirements between active parts and accessible conductive parts .....	230
Table Y.1 – Limits for the electrical parameters of a PSE.....	231
Table Y.2 – Electrical parameters for communication cable/connectors.....	232

## 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.
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**This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.**

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

This ninth edition cancels and replaces the eighth edition published in 2014 and Amendment 1:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Revision of Clause 4.30, Fixing cover live parts of non-user replaceable light source;
- b) Subclause 4.24.2, Blue Light Hazard: removal of Risk Group 0;
- c) Subclause 5.2.16: additional requirements for AC mains appliance inlets related to IEC 61984;
- d) Addition of Subclause 3.3.25, UV protection of cable;
- e) Addition of Clause 4.34, Inclusion of EMF safety requirements (IEC 62493);
- f) Revision of the requirements for functional earth and protective earth;
- g) Addition of Clause 4.35, Protection against fast rotating parts;
- h) Revision of Clause 3.2, Rated voltage marking;
- i) Revision of Subclause 5.2.10, Cord anchorage;
- j) Revision of Annex G for touch current and protective conductor current test set-up;
- k) Addition of requirements for constant light output function and programmable current output;
- l) Revision of Subclause 8.2.3 c), touch voltage limits for interrupted DC voltage;
- m) Introduction of PELV;
- n) Introduction of Ethernet power supply connection for luminaires (PoE);
- o) Section 9, Introduction of IPX9;
- p) Addition of Subclause 3.3.26 for wall mounted luminaires;
- q) Revision of Annex D introducing alternative thermal tests for luminaires with  $t_a$  marking higher than 25°C;
- r) Revision of Table 10.3 and Subclause 3.3.19 for protective conductor current limits;
- s) Track-mounted luminaires: cross reference to Annex A of IEC 60570:2003/AMD2:2019;
- t) Revision of Subclause 10.2.2, alternative DC electric strength test;
- u) Revision of Annex D for recessed luminaires;
- v) Subclause 4.12.5: revision of Table 4.2 for torque test on metal glands;
- w) Revision of use of bridging capacitors in luminaires;
- x) Revision of electrical connection to class III plugs.

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 International Standard is based on the following documents:

FDIS	Report on voting
34D/1546/FDIS	34D/1560/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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

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

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

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

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## 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 document 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 standardization bodies ~~may~~ can 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 are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety* (available at <http://std.iec.ch/iec60061>)

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders* (available at <http://std.iec.ch/iec60061>)

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges* (available at <http://std.iec.ch/iec60061>)

IEC 60065:2001/2014, *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 60068-2-31:2008, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

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 60238:2016, *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 60432-1:1999, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*

IEC 60432-1:1999/AMD1:2005

IEC 60432-1:1999/AMD2:2011

IEC 60432-2:1999, *Incandescent lamps – Safety specifications – Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*

IEC 60432-2:1999/AMD1:2005

IEC 60432-2:1999/AMD2:2012

~~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 60570:2003/AMD1:2017

IEC 60570:2003/AMD2:2019

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

IEC 60598-2-4:2017, *Luminaires – Part 2-4: Particular requirements – Portable general purpose luminaires*

IEC 60603 (all parts), *Connectors for frequencies below 3 MHz for use with printed boards*

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

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

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

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 (GWEPT)*

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

~~IEC 60838 (all parts), *Miscellaneous lampholders*~~

IEC 60989, *Separating transformers, autotransformers, variable transformers and reactors*

IEC 60990:~~1999~~, *Methods of measurement of touch current and protective conductor current*

IEC 60998-2-1, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2000<sup>1</sup>, *Switches for appliances – Part 1: General requirements*

IEC 61167, *Metal halide lamps – Performance specification*

~~IEC 61184, *Bayonet lampholders*~~

~~IEC 61199, *Single-capped fluorescent lamps – Safety specifications*~~

IEC 61249 (all parts), *Materials for printed boards and other interconnecting structures*

IEC 61347 (all parts), *Lamp controlgear*

IEC 61347-1:2015, *Lamp controlgear – Part 1: General and safety requirements*  
IEC 61347-1:2015/AMD1:2017

IEC 61347-2-9, *Lamp controlgear – Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)*

IEC 61535:2009 <sup>2</sup>, *Installation couplers intended for permanent connection in fixed installations*

IEC 61558 (all parts), *Safety of power transformers, power supplies, reactors and similar products*

IEC 61558-1:2005 <sup>3</sup>, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

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<sup>1</sup> Withdrawn.

<sup>2</sup> Withdrawn.

<sup>3</sup> Withdrawn.



~~IEC 61558-2 (all parts), Safety of power transformers, power supplies, reactors and similar products – Part 2: Particular requirements and tests~~

~~IEC 61558-2-5, Safety of transformers, reactors, power supply units and combinations thereof – Part 2-5: Particular requirements and test for transformer for shavers, power supply units for shavers and shaver supply units~~

IEC 61558-2-6, Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers

IEC 61643-11, Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and tests ~~and~~ methods

IEC 61984:2008, Connectors – Safety requirements and tests

~~IEC 62031, LED modules for general lighting – Safety specifications~~

~~IEC 62035: Discharge lamps (excluding fluorescent lamps) – Safety specifications~~

IEC 62368-3:2017, Audio/video, information and communication technology equipment – Part 3: Safety aspects for DC power transfer through communication cables and ports

IEC 62493:2015, Assessment of lighting equipment related to human exposure to electromagnetic fields

IEC 62680 (all parts), Universal serial bus interfaces for data and power

IEC TR 62778, Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires

IEC 80416-1, Basic principles for graphical symbols for use on equipment – Part 1: Creation of graphical symbol ~~originals~~ for registration

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## Ljusarmatur – Säkerhet – Del 1: Allmänna fordringar och provning

*Luminaires –  
Part 1: General requirements and tests*

Som svensk standard gäller europastandarden EN IEC 60598-1:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60598-1:2021.

### Nationellt förord

Europastandarden EN IEC 60598-1:2021

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60598-1, Ninth edition, 2020 - Luminaires - Part 1: General requirements and tests**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60598-1, utgåva 8, 2015, SS-EN 60598-1/A1, utgåva 1, 2018 och SS-EN 60598-1/AC1, utgåva 1, 2016, gäller ej fr o m 2024-03-19.

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ICS 29.140.40

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EUROPEAN STANDARD

**EN IEC 60598-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2021

ICS 29.140.40

Supersedes EN 60598-1:2015 and all of its amendments  
and corrigenda (if any)

English Version

## Luminaires - Part 1: General requirements and tests (IEC 60598-1:2020)

Luminaires - Partie 1: Exigences générales et essais  
(IEC 60598-1:2020)

Leuchten - Teil 1: Allgemeine Anforderungen und  
Prüfungen  
(IEC 60598-1:2020)

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European Committee for Electrotechnical Standardization  
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Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN IEC 60598-1:2021 E

SEK Svensk Elstandard

SS-EN IEC 60598-1, utg 9:2021

## **European foreword**

The text of document 34D/1546/FDIS, future edition 9 of IEC 60598-1, prepared by SC 34D "Luminaires" of IEC/TC 34 "Lighting" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60598-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2021-09-19 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2024-03-19 document have to be withdrawn

This document supersedes EN 60598-1:2015 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

## **Endorsement notice**

The text of the International Standard IEC 60598-1:2020 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079 (series)	NOTE	Harmonized as EN IEC 60079-7:2015/A1 (series)
IEC 60081	NOTE	Harmonized as EN 60081
IEC 60216 (series)	NOTE	Harmonized as EN 60216 (series)
IEC 60228:2004	NOTE	Harmonized as EN 60228:2005 (not modified)
IEC 60269 (series)	NOTE	Harmonized as EN 60269 (series)
IEC 60357	NOTE	Harmonized as EN 60357
IEC 60364 (series)	NOTE	Harmonized as HD 60364 (series)
IEC 60364-4-41:2005	NOTE	Harmonized as HD 60364-4-41:2017
IEC 60364-5-51	NOTE	Harmonized as HD 60364-5-51
IEC 60364-7-701	NOTE	Harmonized as HD 60364-7-701
IEC 60364-7-702	NOTE	Harmonized as HD 60364-7-702
IEC 60400	NOTE	Harmonized as EN 60400

IEC 60432-3	NOTE	Harmonized as EN 60432-3
IEC 60598-2-3	NOTE	Harmonized as EN 60598-2-3
IEC 60598-2-5	NOTE	Harmonized as EN 60598-2-5
IEC 60634	NOTE	Harmonized as EN 60634
IEC 60664 (series)	NOTE	Harmonized as EN 60664 (series)
IEC 60664-1:2007	NOTE	Harmonized as EN 60664-1:2007 (not modified)
IEC 60664-3	NOTE	Harmonized as EN 60664-3
IEC 60682	NOTE	Harmonized as EN 60682
IEC 60695 (series)	NOTE	Harmonized as EN 60695 (series)
IEC 60695-2 (series)	NOTE	Harmonized as EN 60695-2-13:2010/A1 (series)
IEC 60695-10-2	NOTE	Harmonized as EN 60695-10-2
IEC 60838 (series)	NOTE	Harmonized as EN 60838 (series)
IEC 60901	NOTE	Harmonized as EN 60901
IEC 60921	NOTE	Harmonized as EN 60921
IEC 60923	NOTE	Harmonized as EN 60923
IEC 60929	NOTE	Harmonized as EN 60929
IEC 60950-1:2005	NOTE	Harmonized as EN 60950-1:2006
IEC 61184	NOTE	Harmonized as EN 61184
IEC 61195	NOTE	Harmonized as EN 61195
IEC 61199:2011	NOTE	Harmonized as EN 61199:2011 (not modified)
IEC 61199:2011/A1:2012	NOTE	Harmonized as EN 61199:2011/A1:2013 (not modified)
IEC 61199:2011/A2:2014	NOTE	Harmonized as EN 61199:2011/A2:2015 (not modified)
IEC 61210	NOTE	Harmonized as EN 61210
IEC 61558-2-5	NOTE	Harmonized as EN 61558-2-5
IEC 61995 (series)	NOTE	Harmonized as EN 61995-2:2009/A1 (series)
IEC 62031	NOTE	Harmonized as EN IEC 62031
IEC 62035	NOTE	Harmonized as EN 62035
IEC 62368 (series)	NOTE	Harmonized as EN IEC 62368 (series)
IEC 62471:2006	NOTE	Harmonized as EN 62471:2008
IEC 62504:2014	NOTE	Harmonized as EN 62504:2014 (not modified)

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60061	Series	Lamp caps and holders together with gauges for the control of interchangeability and safety	EN 60061	Series
IEC 60061-2 (mod)		Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 2: Lampholders	EN 60061-2 + A1 to A54	1993
IEC 60061-3		Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 3: Gauges	EN 60061-3 + A1 to A56	1993
IEC 60065 (mod)	2014	Audio, video and similar electronic apparatus - Safety requirements	EN 60065 + A11	2014 2017
IEC 60068-2-6	2007	Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-14	2009	Environmental testing – Part 2-14: Tests – Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-31	2008	Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	2008
IEC 60068-2-75		Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	2014
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	EN 60085	2008
IEC 60112	2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
IEC 60155		Glow-starters for fluorescent lamps	EN 60155 + A1 + A2	1995 1995 2007

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>		
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	EN 50525 <sup>1</sup>	Series		
IEC 60238	2016	Edison screw lampholders	EN IEC 60238	2018		
IEC 60245	series	Rubber insulated cables - Rated voltages up to and including 450/750 V	EN 50525 <sup>2</sup>	series		
IEC 60320	Series	Appliance couplers for household and similar general purposes	EN 60320	Series		
IEC 60360		Standard method of measurement of lamp cap temperature rise	EN 60360	1998		
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	EN 60384-14 + A1	2013 2016		
IEC 60417	data-base	Graphical symbols for use on equipment	-	-		
IEC 60432-1 (mod)	1999	Incandescent lamps - Safety specifications - Part 1: Tungsten filament lamps for domestic and similar general lighting purposes	EN 60432-1	2000		
A1	2005				A1	2005
A2	2011				A2	2012
IEC 60432-2 (mod)	1999	Incandescent lamps - Safety specifications - Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes	EN 60432-2	2000		
A1 (mod)	2005				A1	2005
A2	2012				A2	2012
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991		
			+ corr. May	1993		
			+ A1	2000		
			+ A2	2013		
IEC 60570 (mod)	2003	Electrical supply track systems for luminaires	EN 60570	2003		
+ A1	2017				+ A1	2018
+ A2	2019				+ A2	2020
IEC 60598-2	series	Luminaires - Part 2: Particular requirements	EN 60598-2	series		
IEC 60598-2-4 (mod)	2017	Luminaires - Part 2: Particular requirements - Section 4: Portable general purpose luminaires	EN 60598-2-4	2018		
IEC 60603	series	Connectors for frequencies below 3 MHz for use with printed boards	EN 60603	series		
IEC 60662 (mod)	-	High pressure sodium vapour lamps	EN 60662	2012		
			+ A11	2019		
IEC 60664-4	2005	Insulation coordination for equipment within low-voltage systems - Part 4: Consideration of high-frequency voltage stress	EN 60664-4	2006		
-	-		+ corrigendum Oct. 2006			

<sup>1</sup> EN 50525 Series, which is related to, but not directly equivalent with IEC 60227 Series, applies instead.

<sup>2</sup> EN 50525 Series, which is related to, but not directly equivalent with IEC 60245 Series, applies instead.



## EN IEC 60598-1:2021 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60684	series	Flexible insulating sleeving	EN 60684	series
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)	EN 60695-2-11	2014
IEC 60695-11-5	-	Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	2017
IEC 60989	-	Separating transformers, autotransformers, - variable transformers and reactors.	-	-
IEC 60990	-	Methods of measurement of touch current and protective conductor current	EN 60990	2016
IEC 60998-2-1	-	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units	EN 60998-2-1	2004
IEC 60998-2-2	-	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	EN 60998-2-2	2004
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61058-1	2000	Switches for appliances -- Part 1: General requirements	EN 61058-1	2002 <sup>3</sup>
IEC 61167	-	Metal halide lamps	EN 61167 + A1	2018 2018
IEC 61249	series	Materials for printed boards and other interconnecting structures	EN 61249	series
IEC 61347	series	Lamp controlgear	EN 61347	series
IEC 61347-1	2015	Lamp controlgear - Part 1: General and safety requirements	EN 61347-1	2015
+ A1	2017		+ A1	2021
IEC 61347-2-9	-	Lamp controlgear - Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)	EN 61347-2-9	2013
IEC 61535 (mod)	2009	Installation couplers intended for permanent connection in fixed installations	EN 61535	2009
IEC 61558	series	Safety of power transformers, power supplies, reactors and similar products	EN 61558	series
IEC 61558-1	2005	Safety of power transformers, power supplies, reactors and similar products -- Part 1: General requirements and tests	EN 61558-1	2005

<sup>3</sup> EN 61058-1 includes A1:2001 to IEC 61058-1 (mod).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
-	-		+ corrigendum Aug.2006	
IEC 61558-2-6	-	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V - Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers	EN 61558-2-6	2009
IEC 61643-11	-	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods	EN 61643-11 + A11	2012 2018
IEC 61984	2008	Connectors - Safety requirements and tests	EN 61984	2009
IEC 62368-3	2017	Audio/video, information and communication technology equipment - Part 3: Safety aspects for DC power transfer through communication cables and ports	EN IEC 62368-3	2020
IEC 62493	2015	Assessment of lighting equipment related to human exposure to electromagnetic fields	EN 62493	2015
IEC 62680	series	Universal Serial Bus interfaces for data and power	EN 62680	series
IEC/TR 62778	-	Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	IEC/TR 62778	2014
IEC 80416-1	-	Basic principles for graphical symbols for use on equipment - Part 1: Creation of graphical symbols for registration	EN 80416-1	2009

## CONTENTS

FOREWORD .....	9
SECTION 0: GENERAL INTRODUCTION .....	12
0.1 Scope .....	12
0.2 Normative references .....	13
0.3 General requirements .....	16
0.4 General test requirements and verification .....	16
0.5 Components of luminaires .....	17
0.6 List of parts of IEC 60598-2 .....	18
0.7 Information for luminaire design in light sources standards .....	19
SECTION 1: TERMS AND DEFINITIONS .....	20
1.1 General .....	20
1.2 Terms and definitions .....	20
SECTION 2: CLASSIFICATION OF LUMINAIRES .....	36
2.1 General .....	36
2.2 Classification according to type of protection against electric shock .....	36
2.3 Classification according to degree of protection against ingress of dust, solid objects and moisture .....	36
2.4 Classification according to material of supporting surface for which the luminaire is designed .....	36
2.5 Classification according to the circumstances of use .....	37
SECTION 3: MARKING .....	38
3.1 General .....	38
3.2 Marking on luminaires .....	38
3.3 Additional information .....	44
3.4 Test of marking .....	47
SECTION 4: CONSTRUCTION .....	48
4.1 General .....	48
4.2 Replaceable components .....	48
4.3 Wireways .....	48
4.4 Lampholders .....	48
4.5 Starterholders .....	50
4.6 Terminal blocks .....	50
4.7 Terminals and supply connections .....	51
4.8 Switches .....	53
4.9 Insulating linings and sleeves .....	53
4.10 Double and reinforced insulation .....	54
4.11 Electrical connections and current-carrying parts .....	56
4.12 Screws and connections (mechanical) and glands .....	57
4.13 Mechanical strength .....	60
4.14 Suspensions, fixings and means of adjustment .....	63
4.15 Flammable materials .....	67
4.16 Luminaires for mounting on normally flammable surfaces .....	68
4.17 Drain holes .....	70
4.18 Resistance to corrosion .....	70
4.19 Ignitors .....	70
4.20 Rough service luminaires – Vibration requirements .....	71

4.21	Protective shield .....	71
4.22	Attachments to lamps.....	72
4.23	Semi-luminaires .....	72
4.24	Photobiological hazards .....	72
4.25	Mechanical hazard .....	73
4.26	Short-circuit protection.....	73
4.27	Terminal blocks with integrated screwless protective earthing contacts.....	74
4.28	Fixing of thermal sensing controls.....	74
4.29	Luminaire with non-replaceable light source.....	75
4.30	Luminaires with non-user replaceable light sources .....	75
4.31	Insulation between circuits .....	75
4.32	Overvoltage protective devices .....	77
4.33	Luminaire powered via information technology communication cabling.....	78
4.34	Electromagnetic fields (EMF) .....	78
4.35	Protection against moving fan blades.....	78
4.36	Track-mounted luminaires.....	78
SECTION 5: EXTERNAL AND INTERNAL WIRING .....		79
5.1	General.....	79
5.2	Supply connection and other external wiring .....	79
5.3	Internal wiring .....	87
5.4	Test to determine suitability of conductors having a reduced cross-sectional area .....	89
SECTION 6: Void.....		91
SECTION 7: PROVISION FOR EARTHING .....		92
7.1	General.....	92
7.2	Provision for earthing.....	92
SECTION 8: PROTECTION AGAINST ELECTRIC SHOCK .....		95
8.1	General.....	95
8.2	Protection against electric shock.....	95
SECTION 9: RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE .....		99
9.1	General.....	99
9.2	Tests for ingress of dust, solid objects and moisture .....	99
9.3	Humidity test.....	103
SECTION 10: INSULATION RESISTANCE AND ELECTRIC STRENGTH, TOUCH CURRENT AND PROTECTIVE CONDUCTOR CURRENT.....		105
10.1	General.....	105
10.2	Insulation resistance and electric strength .....	105
10.3	Touch current, protective conductor current and electric burn .....	109
SECTION 11: CREEPAGE DISTANCES AND CLEARANCES .....		111
11.1	General.....	111
11.2	Creepage distances and clearances.....	111
SECTION 12: ENDURANCE TEST AND THERMAL TEST.....		115
12.1	General.....	115
12.2	Selection of lamps and ballasts .....	115
12.3	Endurance test.....	115
12.4	Thermal test (normal operation) .....	117
12.5	Thermal test (abnormal operation) .....	122
12.6	Thermal test (failed windings in lamp controlgear) .....	127

12.7	Thermal test in regard to fault conditions in lamp controlgear or electronic devices incorporated in thermoplastic luminaires .....	129
SECTION 13: RESISTANCE TO HEAT, FIRE AND TRACKING.....		132
13.1	General.....	132
13.2	Resistance to heat .....	132
13.3	Resistance to flame and ignition .....	132
13.4	Resistance to tracking.....	133
SECTION 14: SCREW TERMINALS.....		134
14.1	General.....	134
14.2	Terms and definitions.....	134
14.3	General requirements and basic principles.....	135
14.4	Mechanical tests .....	137
SECTION 15: SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS.....		141
15.1	General.....	141
15.2	Terms and definitions.....	141
15.3	General requirements .....	141
15.4	General instructions on tests.....	143
15.5	Terminal and connections for internal wiring .....	143
15.6	Terminals and connections for external wiring.....	146
Annex A (normative) Test to establish whether a conductive part can cause an electric shock.....		173
Annex B (normative) Test lamps .....		174
B.1	General.....	174
B.2	Filament lamps within the scope of IEC 60432-1 and IEC 60432-2.....	174
B.3	Halogen lamps within the scope of IEC 60432-3 .....	176
B.4	Tubular fluorescent and other discharge lamps .....	176
B.5	LED modules within the scope of IEC 62031 .....	176
Annex C (normative) Abnormal circuit conditions .....		177
Annex D (normative) Thermal testing .....		180
D.1	Draught-proof enclosure .....	180
D.2	Mounting surface and test recess.....	180
D.3	Alternative test procedure for adjustment of measured temperatures for luminaire $t_a$ rating(s).....	183
Annex E (normative) Determination of winding temperature rises by the increase-in-resistance method .....		185
Annex F (normative) Test for resistance to stress corrosion of copper and copper alloys.....		186
F.1	Test cabinet.....	186
F.2	Test solution .....	186
F.3	Test piece .....	186
F.4	Test procedure.....	186
Annex G (normative) Measurement of touch current and protective conductor current .....		188
Annex H (xxx) (Void).....		192
Annex I (xxx) (Void) .....		193
Annex J (informative) Explanation of IP numbers for degrees of protection .....		194
Annex K (informative) Temperature measurement.....		196
K.1	Temperature measurements of the luminaire .....	196
K.2	Temperature measurement of the insulation parts of lampholders .....	197

Annex L (informative) Guidelines for good practice in luminaire design .....	199
L.1 General.....	199
L.2 Plastics in luminaires .....	199
L.3 Rust resistance .....	200
L.4 Corrosion resistance .....	200
L.5 Chemically corrosive atmospheres .....	201
L.6 Reflector design.....	201
L.7 Components in different kinds of luminaires .....	202
L.8 Recommendations for electromagnetic ballast protection for end of life phenomenon of HID lamps .....	202
L.9 Resistance against the effects of vibration .....	203
L.10 Flammability of components.....	203
Annex M (normative) Determination of creepage distances and clearances .....	204
Annex N (informative) Explanation of marking for luminaires that are not suitable for mounting on normally flammable surfaces and covering with insulation materials .....	205
N.0 General.....	205
N.1 Protection against flame .....	205
N.2 Protection against heat .....	205
N.3 Thermal protectors.....	206
N.4 Deletion of the F mark requirements .....	207
Annex O (xxx) (Void) .....	208
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 .....	209
P.1 General.....	209
P.2 Procedure A.....	209
P.3 Procedure B.....	210
Annex Q (informative) Conformity testing during manufacture .....	211
Q.1 General.....	211
Q.2 Testing .....	211
Annex R (normative) Schedule of amended clauses and subclauses containing more serious/critical requirements which call for products to be retested .....	213
Annex S (normative) Requirements for the identification of a family or range of luminaires for type testing.....	214
S.1 General.....	214
S.2 Range or family of luminaires.....	214
Annex T (xxx) (Void) .....	215
Annex U (informative) Additional requirements for luminaires where a higher degree of availability (impulse withstand category III) may be requested .....	216
U.1 General.....	216
U.2 Requirements for impulse withstand category III .....	216
Annex V (normative) Additional test requirements for terminal blocks with integrated screwless protective earthing contact for direct connection to the luminaire housing or to parts of the body.....	218
V.1 Additional requirements to 7.2.1.....	218
V.2 Additional requirements to 7.2.3.....	218
Annex W (normative) Alternative thermal test for thermoplastic luminaires.....	220
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 ≤ 70 W.....	220

Annex X (normative) Requirements for insulation between active parts of circuits and accessible conductive parts .....	222
Annex Y (informative) Information regarding power sourcing equipment powering class III luminaires via information technology communication cabling .....	224
Y.0 General.....	224
Y.1 Insulation of the mains supply .....	224
Y.2 Electrical limits of a PSE.....	224
Bibliography.....	226
Figure 34 – Circuit for checking electrical contact between socket outlet and plug .....	85
Figure 33 – Test to determine suitability of conductors having a reduced cross-sectional area .....	90
Figure 1 – Symbols .....	149
Figure 2 – Terminal block arrangement for installation test for luminaires with connecting leads (tails).....	152
Figure 3 – Void .....	152
Figure 4 – Illustration of the requirements of 4.15 .....	152
Figure 5 – Void .....	152
Figure 6 – Apparatus for proving protection against dust.....	153
Figure 7 – Apparatus for testing protection against rain and splashing.....	154
Figure 8 – Nozzle for spray test .....	155
Figure 9 – Relation between winding temperature and mounting surface temperature.....	156
Figure 10 – Ball-pressure apparatus .....	157
Figure 11 – Arrangement and dimensions of the electrodes for the tracking test .....	157
Figure 12 – Pillar terminals .....	158
Figure 13 – Screw terminals and stud terminals .....	159
Figure 14 – Saddle terminals .....	161
Figure 15 – Lug terminals .....	162
Figure 16 – Mantle terminals.....	163
Figure 17 – Construction of electrical connections .....	164
Figure 18 – Examples of spring-type screwless terminals .....	164
Figure 19 – Further examples of screwless terminals.....	165
Figure 20 – Illustration of the terms "lopping-in" and "through wiring".....	166
Figure 21 – Apparatus for ball impact tests .....	167
Figure 22 – Examples of self-tapping, thread-cutting and thread-forming screws (from ISO 1891).....	167
Figure 23 – Void .....	167
Figure 24 – Illustration of creepage and clearance measurements at a supply terminal.....	168
Figure 25 – Void .....	168
Figure 26 – Test circuit for safety during insertion.....	168
Figure 27 – Ignition temperatures of wood as a function of time .....	169
Figure 28 – Example of permitted degree of soldering .....	170
Figure 29 – Test chain .....	170
Figure 30 – Example of a thread forming screw used in a groove of a metallic material .....	171
Figure 31 – Electro-mechanical contact system with plug/socket connection.....	172

Figure 32 – Test circuit for luminaires incorporating fluorescent lamp $\leq 70$ W .....	172
Figure C.1 – Circuit for testing rectifying effect (some capacitive starterless ballasts only) .....	178
Figure C.2 – Circuit for testing rectifying effect (ballasts for single pin lamps) .....	178
Figure C.3 – Circuit for testing rectifying effect of some high pressure sodium and some metal halide lamps .....	179
Figure D.1 – Example of test recess where a luminaire comprises separate parts, in accordance with Clause D.2 a) .....	181
Figure D.2 – Example of test recess where a luminaire comprises separate parts, in accordance with Clause D.2 b) .....	182
Figure D.3 – Correct test box size (insulating ceilings) for settable and adjustable luminaires .....	183
Figure G.1 – Test configuration: single-phase equipment on star TN or TT system .....	190
Figure G.2 – Measuring network, touch current weighted for perception or reaction .....	190
Figure G.3 – Measuring network, touch current weighted for let-go (for portable class I luminaires) .....	191
Figure G.4 – Measuring network, weighted for high frequency .....	191
Figure K.1 – Placing of thermocouples on a typical lampholder .....	198
Figure V.1 – Arrangement for voltage drop test .....	219
Figure X.1 – Declaration of $LV_{\text{supply}}$ and $U_{\text{out}}$ and the insulation barriers between the light source and accessible parts .....	222
Table 3.1 – Marking .....	39
Table 3.2 – Identification of extra-low-voltage DC leads and terminations .....	41
Table 4.6 – Overview of required Y capacitors .....	55
Table 4.1 – Torque tests on screws .....	58
Table 4.2 – Torque tests on cable glands .....	60
Table 4.3 – Impact energy and spring compression .....	61
Table 4.4 – Test on semi-luminaires .....	65
Table 4.5 – Test on adjusting devices .....	66
Table 5.1 – Supply cord .....	80
Table 5.3 – Wiring dimension .....	81
Table 5.2 – Tests for cord anchorage .....	84
Table 9.1 – Solid-object-proof luminaire test .....	101
Table 10.1 – Minimum insulation resistance .....	106
Table 10.2 – Electric strength .....	108
Table 10.3 – Limits of touch current or protective conductor current and electric burn .....	110
Table 11.1.A – Minimum creepage distances for AC sinusoidal voltages up to 30 kHz (to be used in conjunction with Annex M) .....	113
Table 11.1.B – Minimum clearance for working voltages (to be used in conjunction with Annex M) .....	114
Table 11.2 – Minimum distances for ignition pulse voltages or equivalent peak voltage $U_p$ .....	114
Table 12.1 – Maximum temperatures under the test conditions of 12.4.2, for principal parts .....	120
Table 12.2 – Maximum temperatures under the test conditions of 12.4.2, for common materials used in luminaires .....	122



Table 12.3 – Maximum temperatures under the test conditions of 12.5.1 .....	125
Table 12.4 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp controlgear .....	126
Table 12.5 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for lamp controlgear marked "D6" .....	126
Table 12.6 – Temperature overshoot time limitation .....	128
Table 14.1 – Nominal cross-sectional areas of conductors according to terminal sizes .....	136
Table 14.2 – Nominal cross-sectional areas of conductors according to maximum current .....	136
Table 14.3 – Composition of conductors .....	137
Table 14.4 – Torque to be applied to screws and nuts .....	139
Table 14.5 – Pull to be applied to conductor .....	140
Table 15.1 – Conductor rating .....	146
Table 15.2 – Conductor pull force .....	147
Table F.1 – pH value of the test solution .....	186
Table G.1 – Position of switch e, n and p for the measurements of the different classes of luminaires .....	189
Table J.1 – Degrees of protection indicated by the first characteristic numeral .....	194
Table J.2 – Degrees of protection indicated by the second characteristic numeral .....	195
Table L.1 – Damaging influences .....	199
Table M.1 – Determination of creepage distances and clearances (see Table 11.1) .....	204
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 .....	205
Table N.2 – Thermal protection operation .....	207
Table Q.1 – Minimum values for electrical tests .....	212
Table U.1 – Minimum clearance distances for AC sinusoidal working voltages impulse withstand category III .....	216
Table U.2 – Overview of required Y capacitors .....	217
Table X.1 – Insulation requirements between active parts and accessible conductive parts .....	223
Table Y.1 – Limits for the electrical parameters of a PSE .....	224
Table Y.2 – Electrical parameters for communication cable/connectors .....	225

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## LUMINAIRES –

### Part 1: General requirements and tests

#### FOREWORD

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

This ninth edition cancels and replaces the eighth edition published in 2014 and Amendment 1:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Revision of Clause 4.30, Fixing cover live parts of non-user replaceable light source;
- b) Subclause 4.24.2, Blue Light Hazard: removal of Risk Group 0;
- c) Subclause 5.2.16: additional requirements for AC mains appliance inlets related to IEC 61984;
- d) Addition of Subclause 3.3.25, UV protection of cable;
- e) Addition of Clause 4.34, Inclusion of EMF safety requirements (IEC 62493);

- f) Revision of the requirements for functional earth and protective earth;
- g) Addition of Clause 4.35, Protection against fast rotating parts;
- h) Revision of Clause 3.2, Rated voltage marking;
- i) Revision of Subclause 5.2.10, Cord anchorage;
- j) Revision of Annex G for touch current and protective conductor current test set-up;
- k) Addition of requirements for constant light output function and programmable current output;
- l) Revision of Subclause 8.2.3 c), touch voltage limits for interrupted DC voltage;
- m) Introduction of PELV;
- n) Introduction of Ethernet power supply connection for luminaires (PoE);
- o) Section 9, Introduction of IPX9;
- p) Addition of Subclause 3.3.26 for wall mounted luminaires;
- q) Revision of Annex D introducing alternative thermal tests for luminaires with  $t_a$  marking higher than 25°C;
- r) Revision of Table 10.3 and Subclause 3.3.19 for protective conductor current limits;
- s) Track-mounted luminaires: cross reference to Annex A of IEC 60570:2003/AMD2:2019;
- t) Revision of Subclause 10.2.2, alternative DC electric strength test;
- u) Revision of Annex D for recessed luminaires;
- v) Subclause 4.12.5: revision of Table 4.2 for torque test on metal glands;
- w) Revision of use of bridging capacitors in luminaires;
- x) Revision of electrical connection to class III plugs.

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 International Standard is based on the following documents:

FDIS	Report on voting
34D/1546/FDIS	34D/1560/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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

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

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

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 standardization bodies can 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 are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety* (available at <http://std.iec.ch/iec60061>)

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders* (available at <http://std.iec.ch/iec60061>)

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges* (available at <http://std.iec.ch/iec60061>)

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

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 60068-2-31:2008, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

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 60238:2016, *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 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 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

IEC 60432-1:1999, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*

IEC 60432-1:1999/AMD1:2005

IEC 60432-1:1999/AMD2:2011

IEC 60432-2:1999, *Incandescent lamps – Safety specifications –Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*

IEC 60432-2:1999/AMD1:2005

IEC 60432-2:1999/AMD2:2012

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

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

IEC 60570:2003/AMD1:2017

IEC 60570:2003/AMD2:2019

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

IEC 60598-2-4:2017, *Luminaires – Part 2-4: Particular requirements – Portable general purpose luminaires*

IEC 60603 (all parts), *Connectors for frequencies below 3 MHz for use with printed boards*

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

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

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 (GWEPT)*

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60989, *Separating transformers, autotransformers, variable transformers and reactors*

IEC 60990, *Methods of measurement of touch current and protective conductor current*

IEC 60998-2-1, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2000<sup>1</sup>, *Switches for appliances – Part 1: General requirements*

IEC 61167, *Metal halide lamps – Performance specification*

IEC 61249 (all parts), *Materials for printed boards and other interconnecting structures*

IEC 61347 (all parts), *Lamp controlgear*

IEC 61347-1:2015, *Lamp controlgear – Part 1: General and safety requirements*  
IEC 61347-1:2015/AMD1:2017

IEC 61347-2-9, *Lamp controlgear – Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)*

IEC 61535:2009<sup>2</sup>, *Installation couplers intended for permanent connection in fixed installations*

IEC 61558 (all parts), *Safety of power transformers, power supplies, reactors and similar products*

IEC 61558-1:2005<sup>3</sup>, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

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IEC 62680 (all parts), *Universal serial bus interfaces for data and power*

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<sup>1</sup> Withdrawn.

<sup>2</sup> Withdrawn.

<sup>3</sup> Withdrawn.



IEC TR 62778, *Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires*

IEC 80416-1, *Basic principles for graphical symbols for use on equipment – Part 1: Creation of graphical symbol for registration*