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Luminaires –
Part 1: General requirements and tests

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Luminaires - Part 1: General requirements and tests

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CONTENTS

FOREWORD 12
INTRODUCTION 15
1 Scope 16
2 Normative references 16
3 Terms and definitions 19
4 General requirements 43
4.1 General 43
4.2 General test requirements and verification 43
4.3 Components of luminaires 45
4.4 Information for luminaire design in light sources and controlgear standards 46
5 Classification of luminaires 46
5.1 General 46
5.2 Classification according to the type of protection against electric shock 46
5.3 Classification according to the degree of protection against ingress of dust, solid objects and moisture 46
5.4 Classification according to the material of the mounting surface for which the luminaire is designed 47
5.5 Classification according to the circumstances of use 47
6 Marking 47
6.1 General 47
6.2 Marking on luminaires 47
6.3 Information to be marked on luminaires 49
6.4 Additional information 58
6.5 Test of marking 63
7 Construction 64
7.1 General 64
7.2 Replaceable components 64
7.3 Wireways 64
7.4 Lampholders 64
7.5 Starterholders 66
7.6 Terminal blocks 66
7.7 Terminals and supply connections 67
7.8 Switches 69
7.9 Insulating linings and sleeves 70
7.10 Double and reinforced insulation 70
7.11 Electrical connections and current-carrying parts 72
7.12 Screws, connections (mechanical) and glands 74
7.13 Mechanical strength 77
7.14 Suspensions, fixings and means of adjustment 80
7.15 Flammable materials 83
7.16 Luminaires for mounting on normally flammable surfaces 85
7.17 Drain holes 87
7.18 Resistance to corrosion 87
7.19 Ignitors 87
7.20 Rough service luminaires 87

7.21 Protective shield 89
7.22 Attachments to lamps 90
7.23 Semi-luminaires 90
7.24 Photobiological hazards 90
7.24.1 Actinic UV hazards for skin and eye (200 nm to 400 nm) 90
7.24.2 UV-A hazard assessment for the eye lens (315 nm to 400 nm) 91
7.24.3 Retinal blue light hazard 91
7.24.4 Retinal thermal hazard assessment (380 nm to 1 400 nm) 92
7.24.5 Infrared hazard assessment for the eye (780 nm to 3 000 nm) 93
7.24.6 Thermal hazard assessment for the skin (380 nm to 3 000 nm) 93
7.25 Mechanical hazard 93
7.26 Short-circuit protection 93
7.27 Terminal blocks with integrated screwless protective earthing contacts 94
7.28 Fixing of thermal sensing controls 94
7.29 Luminaires with non-replaceable light sources 95
7.30 Luminaires with non-user replaceable light sources and non-user serviceable components 95
7.31 Insulation between circuits 95
7.31.1 General 95
7.31.2 SELV or PELV circuits 96
7.31.3 FELV circuits 97
7.31.4 Other circuits 97
7.31.5 Additional requirements for luminaires using controllable controlgear providing SELV output(s) 98
7.32 Overvoltage protective devices external to controlgear 98
7.32.1 General 98
7.32.2 Surge protective devices (SPDs) 99
7.32.3 Surge protective components (SPCs) 99
7.33 Luminaire powered via information technology communication cabling 101
7.34 Electromagnetic fields (EMF) 101
7.35 Protection against moving fan blades 102
7.36 Track-mounted luminaires 102
8 External and internal wiring 102
8.1 General 102
8.2 Supply connection and other external wiring 102
8.3 Internal wiring 111
8.4 Test to determine the suitability of conductors having a reduced cross-sectional area 113
9 Provision for earthing 114
9.1 General 114
9.2 Provision for earthing 114
10 Protection against electric shock 117
10.1 General 117
10.2 Protection against electric shock 117
11 Resistance to dust, solid objects and moisture 121
11.1 General 121
11.2 General conditions and tests for IP classification 121
11.2.1 General 121
11.2.2 Tests for first characteristics IP numerals 2, 3 and 4 123

11.2.3 Tests for first characteristic IP numeral 5 and 6 123
11.2.4 Drip-proof luminaires – Tests for second characteristic IP numeral 1 124
11.2.5 Drip-proof luminaires – Tests for second characteristic IP numeral 2 125
11.2.6 Rain-proof luminaires – Tests for second characteristic IP numeral 3 125
11.2.7 Splash-proof luminaires – Tests for second characteristic IP numeral 4 126
11.2.8 Jet-proof luminaires – Tests for second characteristic IP numeral 5 126
11.2.9 Powerful jet-proof luminaires – Tests for second characteristic IP numeral 6 127
11.2.10 Watertight luminaires – Tests for second characteristic IP numeral 7 127
11.2.11 Pressure watertight luminaires – Tests for second characteristic IP numeral 8 128
11.2.12 High pressure and temperature water jet-proof luminaires – Tests for second characteristic IP numeral 9 (80 °C) 128
11.2.13 High pressure and cold water jet-proof luminaires – Tests for second characteristic IP numeral 9 (15 °C) 128
11.3 Humidity test 128
12 Insulation resistance and electric strength, touch current and protective conductor current 129
12.1 General 129
12.2 Insulation resistance and electric strength 129
12.2.1 General 129
12.2.2 Test – Insulation resistance 130
12.2.3 Test – Electric strength 131
12.3 Touch current, protective conductor current and electric burn 133
13 Creepage distances and clearances 134
13.1 General 134
13.2 Requirements 135
13.2.1 General 135
13.2.2 Creepage distances 136
13.2.3 Clearances 137
14 Endurance test and thermal test 139
14.1 General 139
14.2 Selection of lamps and controlgear 139
14.3 Endurance test 140
14.3.1 General 140
14.3.2 Test 140
14.3.3 Compliance 141
14.4 Thermal test (normal operation) 141
14.4.1 General 141
14.4.2 Test 142
14.4.3 Compliance 144
14.5 Thermal test (abnormal operation) 147
14.5.1 General 147
14.5.2 Test 148
14.5.3 Compliance 149
14.6 Thermal test (failed windings in controlgear) 151
14.6.1 General 151
14.6.2 Test for luminaires without thermal cut-outs 151
14.6.3 Test for luminaires with temperature sensing controls 152

14.7 Thermal test in regard to fault conditions in controlgear or electronic devices incorporated in thermoplastic luminaires 153
14.7.1 General 153
14.7.2 Test for luminaires without temperature sensing controls 153
14.7.3 Test for luminaires with temperature sensing controls internal or external to the controlgear or transformer 156
15 Resistance to heat, fire and tracking 157
15.1 General 157
15.2 Resistance to heat 157
15.3 Resistance to flame and ignition 158
15.4 Resistance to tracking 158
16 Screw terminals 159
16.1 General 159
16.2 General requirements and basic principles 165
16.3 Mechanical requirements and tests 167
17 Screwless terminals and electrical connections 171
17.1 General 171
17.2 General requirements 173
17.3 General instructions for tests 175
17.3.1 Preparation of samples 175
17.3.2 Test conductors 175
17.3.3 Multi-conductor terminals 175
17.3.4 Multi-way terminals 175
17.3.5 Test quantities 175
17.4 Terminal and connections for internal wiring 175
17.4.1 Mechanical tests 175
17.4.2 Electrical tests 176
17.5 Terminals and connections for external wiring 177
17.5.1 Conductors 177
17.5.2 Mechanical tests 178
17.5.3 Electrical tests 179
Annex A (normative) Test to establish whether a conductive part can cause an electric shock 181
A.1 General 181
A.2 Touch voltage limits 181
A.3 Touch current limits 181
A.4 Compliance 181
Annex B (normative) Test lamps 182
B.1 General 182
B.2 Filament lamps within the scope of IEC 60432-1 and IEC 60432-2 182
B.2.1 Principal modes of heat transfer and lamps used for testing 182
B.2.2 Filament test lamps 183
B.3 Halogen lamps within the scope of IEC 60432-3 184
B.4 Tubular fluorescent and other discharge lamps 184
B.5 LED modules within the scope of IEC 62031 184
Annex C (normative) Abnormal circuit conditions 185
Annex D (normative) Thermal testing 188
D.1 Draught-proof enclosure 188
D.2 Mounting surface 188

D.3 Alternative test procedure for adjustment of measured temperatures for luminaire t_a rating(s) 189
D.3.1 General 189
D.3.2 Thermal test of normal operation for luminaires without temperature sensing controls and where the rated ambient temperature t_a as marked on the luminaire is higher than the ambient temperature in the draught-proof enclosure 189
Annex E (normative) Determination of winding temperature rises by the increase-in-resistance method 190
Annex F (normative) Test for resistance to stress corrosion of copper and copper alloys 191
F.1 Test cabinet 191
F.2 Test solution 191
F.3 Test piece 191
F.4 Test procedure 192
Annex G (normative) Measurement of touch current and protective conductor current 193
G.1 General 193
G.2 Test conditions 193
G.3 Test procedures 193
G.4 Test measurements 193
G.5 Test sequence 195
Annex H (informative) Explanation of IP numbers for degrees of protection 197
Annex I (informative) Temperature measurements 199
I.1 Temperature measurements of the luminaire 199
I.2 Temperature measurement of the insulation parts of lampholders 200
Annex J (informative) Guidelines for good practice in luminaire design 202
J.1 General 202
J.2 Plastics in luminaires 202
J.3 Rust resistance 203
J.4 Corrosion resistance 203
J.5 Chemically corrosive atmospheres 204
J.6 Reflector design 204
J.7 Components in different kinds of luminaires 205
J.8 Recommendations for electromagnetic ballast protection for end of life phenomenon of HID lamps 205
J.9 Resistance against the effects of vibration 205
J.10 Flammability of components 206
J.11 Permanent magnets 206
Annex K (normative) Determination of creepage distances and clearances 208
Annex L (informative) Explanation of marking for luminaires that are not suitable for mounting on normally flammable surfaces and covering with insulation materials 209
L.1 General 209
L.2 Protection against flame 209
L.3 Protection against heat 210
L.3.1 General 210
L.3.2 Spacing 210
L.3.3 Temperature measurements of mounting surface under abnormal or failed ballast conditions 210
L.4 Thermal protectors 212

L.5 Deletion of the F mark requirements 213
Annex M (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 214
M.1 General 214
M.2 Procedure A 214
M.3 Procedure B 215
Annex N (informative) Conformity testing during manufacture 216
N.1 General 216
N.2 Testing 216
Annex O (normative) Schedule of amended subclauses containing more serious or critical requirements which call for products to be retested 218
Annex P (normative) Requirements for the identification of a family or range of luminaires for type testing 219
P.1 General 219
P.2 Range or family of luminaires 219
Annex Q (informative) Additional requirements for luminaires where a higher degree of availability (overvoltage category III) may be requested 220
Q.1 General 220
Q.2 Requirements for overvoltage category III 220
Annex R (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 222
R.1 Additional requirements to 9.2.1 222
R.1.1 Requirements for mechanical strength 222
R.1.2 Test for terminal fixing 222
R.1.3 Test for supporting plate 222
R.2 Additional requirements to 9.2.3 222
Annex S (normative) Alternative thermal test for thermoplastic luminaires 224
S.1 General 224
S.2 Thermal test in regard to fault conditions in controlgear or electronic devices without temperature sensing controls in thermoplastic luminaires for fluorescent lamps ≤ 70 W 224
Annex T (normative) Requirements for insulation between live parts of circuits and accessible conductive parts 226
Annex U (informative) Information regarding power sourcing equipment powering class III luminaires via information technology communication cabling 228
U.1 General 228
U.2 Insulation of the mains supply 228
U.3 Electrical limits of a PSE 228
Annex V (informative) Cross-references to the previous edition of IEC 60598-1 230
Annex W (normative) Battery/EDLC-operated luminaires 233
W.1 General 233
W.2 General test requirements and verification 233
W.3 Marking 235
W.3.1 General 235
W.3.2 Luminaires with replaceable battery 235
W.3.3 Coin and button batteries 235
W.3.4 Other standardized batteries (e.g. AAA or AA) 236
W.3.5 Luminaires with non-standardized replaceable rechargeable battery 237
W.3.6 Luminaires with non-user replaceable battery/EDLC 237

W.3.7 Luminaires with non-replaceable battery/EDLC 238
W.3.8 Luminaires supplied by external dedicated power supply units 238
W.3.9 Rechargeable luminaires other than ordinary 238
W.3.10 Conditions for charging 238
W.4 Construction 239
W.4.1 General 239
W.4.2 Small batteries (coins, button and other non-standardized batteries) 239
W.4.3 Battery compartment fasteners for small batteries and other standardized batteries (e.g. AAA or AA) 240
W.4.4 Battery/EDLC chargers incorporated in luminaires 240
W.4.5 Short-circuit protection 240
W.4.6 Electrical parameters of the batteries operation 241
W.4.7 Protection against overpressure for Li-ion batteries used in luminaires 242
W.4.8 Protection against the consequence of failure of cells or EDLCs 242
W.5 Protection against electric shock 243
W.6 Endurance test and thermal test 243
W.6.1 Endurance test 243
W.6.2 Thermal test (normal operation) 243
W.6.3 Thermal test (abnormal operation) 244
W.6.4 Lithium-ion charging systems – Fault conditions 245
Bibliography 247

Figure 1 – Example of "looping-in" (feed through) 30
Figure 2 – Examples of "through wiring" 30
Figure 3 – Example of electro-mechanical contact system with plug or socket connection 32
Figure 4 – AC supply 49
Figure 5 – DC supply 49
Figure 6 – DC and AC supply 49
Figure 7 – Class II 50
Figure 8 – Class III 50
Figure 9 – Luminaire not suitable for direct mounting on normally flammable surfaces 52
Figure 10 – High-pressure sodium lamps that require an external ignitor (to the lamp) 52
Figure 11 – High-pressure sodium lamps having an internal starting device 52
Figure 12 – Warning against the use of cool-beam lamps 52
Figure 13 – Functional earthing 53
Figure 14 – Protective earthing 53
Figure 15 – Minimum distance from lighted objects (metres) 54
Figure 16 – Rough service 54
Figure 17 – Bowl mirror lamp 54
Figure 18 – Replace any cracked protective shield 55
Figure 19 – Test circuit for safety during insertion 55
Figure 20 – Self-shielded lamp 55
Figure 21 – Luminaires with internal fuses 56
Figure 22 – Do not stare at the operating light source 56
Figure 23 – Caution, risk of electric shock 57

Figure 24 – Use of heat resistant supply cables, interconnecting cables or external wiring 58
Figure 25 – Pictogram for non-replaceable light source 60
Figure 26 – Pictogram for non-user replaceable light source 61
Figure 27 – Pictogram for replaceable light source 61
Figure 28 – Pictogram for non-replaceable controlgear 62
Figure 29 – Pictogram for non-user replaceable controlgear 63
Figure 30 – Pictogram for replaceable controlgear 63
Figure 31 – Terminal block arrangement for installation test for luminaires with connecting leads (tails) 67
Figure 32 – Examples of self-tapping, thread-cutting and thread-forming screws 73
Figure 33 – Illustration of the requirements of 7.15 84
Figure 34 – Apparatus for ball impact tests 88
Figure 35 – Test chain 94
Figure 36 – Example of permitted degree of soldering 109
Figure 37 – Circuit for checking electrical contact between socket-outlet and plug 110
Figure 38 – Test to determine the suitability of conductors having a reduced cross-sectional area 114
Figure 39 – Example of a thread-forming screw used in a groove of a metallic material 115
Figure 40 – Apparatus for proving protection against dust 124
Figure 41 – Apparatus for testing protection against rain and splashing 125
Figure 42 – Nozzle for spray test 127
Figure 43 – Illustration of creepage and clearance measurements at a supply terminal 136
Figure 44 – Test circuit for luminaires incorporating fluorescent lamp ≤ 70 W 154
Figure 45 – Ball-pressure apparatus 157
Figure 46 – Pillar terminals 160
Figure 47 – Screw terminals and stud terminals 162
Figure 48 – Saddle terminals 163
Figure 49 – Lug terminals 164
Figure 50 – Mantle terminals 165
Figure 51 – Construction of electrical connections 171
Figure 52 – Examples of spring-type screwless terminals 172
Figure 53 – Further examples of screwless terminals 173
Figure C.1 – Circuit for testing rectifying effect (some capacitive starterless ballasts only) 186
Figure C.2 – Circuit for testing rectifying effect (ballasts for single pin lamps) 186
Figure C.3 – Circuit for testing rectifying effect of some high-pressure sodium and some metal halide lamps 187
Figure G.1 – Test configuration: single-phase equipment on star TN or TT system 195
Figure G.2 – Measuring network, touch current weighted for perception or reaction 196
Figure G.3 – Measuring network, touch current weighted for let-go (for portable class I luminaires) 196
Figure G.4 – Measuring network, weighted for high frequency 196
Figure I.1 – Placing of thermocouples on a typical lampholder 201
Figure L.1 – Relation between winding temperature and mounting surface temperature 211

Figure L.2 – Ignition temperatures of wood as a function of time 212
Figure R.1 – Arrangement for voltage drop test 223
Figure T.1 – Declaration of LV_{supply} and U_{out} and the insulation barriers between the light source and accessible parts 226

Table 1 – Marking 48
Table 2 – IP numbers for degree of protection against ingress of dust, solid objects and moisture 51
Table 3 – Identification of extra-low-voltage DC leads and terminations 53
Table 4 – Overview of required Y capacitors 72
Table 5 – Torque tests on screws 75
Table 6 – Torque tests on cable glands 77
Table 7 – Impact energy and spring compression 78
Table 8 – Test on semi-luminaires 82
Table 9 – Test on adjusting devices 83
Table 10 – Nominal discharge current (used in the combination wave test) 100
Table 11 – Supply cord 104
Table 12 – Wiring dimension 105
Table 13 – Tests for cord anchorage 108
Table 14 – Solid-object-proof luminaire test 123
Table 15 – Minimum insulation resistance 130
Table 16 – Electric strength 132
Table 17 – Limits of touch current or protective conductor current and electric burn 134
Table 18 – Minimum creepage distances for AC sinusoidal voltages up to 30 kHz (to be used in conjunction with Annex K) 137
Table 19 – Minimum clearances for working voltages (to be used in conjunction with Annex K) 138
Table 20 – Minimum distances for ignition pulse voltages or equivalent transformed peak voltage U_p 139
Table 21 – Maximum temperatures under the test conditions of 14.4.3, for principal parts 145
Table 22 – Maximum temperatures under the test conditions of 14.4.3, for common materials used in luminaires 146
Table 23 – Maximum temperatures under the test conditions of 14.5.2 149
Table 24 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for controlgear 150
Table 25 – Maximum temperature of windings under abnormal operating conditions and at 110 % of rated voltage for controlgear marked "D6" 151
Table 26 – Temperature overshoot time limitation 153
Table 27 – Nominal cross-sectional areas of conductors according to terminal sizes 166
Table 28 – Nominal cross-sectional areas of conductors according to maximum current 167
Table 29 – Composition of conductors 168
Table 30 – Torque to be applied to screws and nuts 169
Table 31 – Pull to be applied to conductor 170
Table 32 – Conductor rating 178

Table 33 – Conductor pull force 178
Table F.1 – pH value of the test solution 191
Table G.1 – Position of switches e, n and p for the measurements of the different classes of luminaires 195
Table H.1 – Degrees of protection indicated by the first characteristic numeral 197
Table H.2 – Degrees of protection indicated by the second characteristic numeral 198
Table J.1 – Damaging influences 202
Table K.1 – Determination of creepage distances and clearances (see Table 18, Table 19 and Table 20) 208
Table L.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 L.2 – Thermal protection operation 213
Table N.1 – Minimum values for electrical tests 217
Table Q.1 – Minimum clearance distances for AC sinusoidal working voltages overvoltage category III 220
Table Q.2 – Overview of required Y capacitors 221
Table Q.3 – Nominal discharge current (used in the combination wave test) 221
Table T.1 – Insulation requirements between live parts and accessible conductive parts 227
Table U.1 – Limits for the electrical parameters of a PSE 228
Table U.2 – Electrical parameters for communication cables or connectors 229
Table V.1 – Cross-references 230
Table W.1 – Artificial source characteristics 234
Table W.2 – Total area of openings for Li-ion cells 242
Table W.3 – Volume of air injected at 2 070 kPa 242

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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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IEC 60598-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lighting. It is an International Standard.

This tenth edition cancels and replaces the ninth edition published in 2020. This edition constitutes a technical revision.

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

a) new structure to comply with the ISO/IEC Directives, Part 2;
b) addition of a new Annex V for comparison with the previous edition;
c) revision of 7.32 for SPDs and for SPCs;
d) the terms "live part" and "active part" were reviewed and aligned with the definitions of "live part" and "hazardous live part" given in IEC 60050-195;

e) revision of 7.14.2 for conductor mechanical stress;

f) revision of 14.5.2, Item 4 to include controlgear;

g) revision of 9.2.1 (Earthing) with the deletion of the word "permanently";

h) revision of Annex N: earth continuity test time;

i) revision of 7.11.4; 7.14.1; Table 22 (14.4.3): Introduction of requirements for suspension by magnets;

j) addition of a new Annex W for luminaires using batteries;

k) clarification of Clause 6 for marking requirements for nature of supply;

l) addition of a new Subclause 7.31.5: Additional requirements for luminaires using controllable controlgear providing SELV output(s);

m) revision of 6.4.16: Information to be provided for luminaire having protective earth current > 10 mA;

n) revision of 6.3.23; 6.4.18; 6.4.24; 7.30 and 10.2.1 for serviceable, non-user serviceable and non-serviceable components;

o) revision of Annex D: Draught-proof enclosure;

p) revision of 8.2.1 and 13.2.1: Inconsistencies in the inclusion of the limits of voltage ranges;

q) revision of 9.2.10 for looping-in;

r) Revision of Clause 2 and 7.8: update of the reference to IEC 61058-1-1, IEC 61058-1-2 and IEC 61058-2-1. Update of temperature limits in Table 21 (14.4.3) for luminaires incorporating switches according to IEC 60669-1 or IEC 60669-2-1;

s) revision of 6.3.22 and 7.24 for photobiological safety;

t) addition of a new Subclause 6.3.27 for marking of mains socket outlet moved from information requirements.

The major changes which can affect certification are given in Annex O.

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

The text of this International Standard is based on the following documents:

Draft	Report on voting
34D/XX/FDIS	34D/XX/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

When using this document with already published parts of the IEC 60598-2 series, Annex V of this document is to be used to update the cross-referencing of the relevant part of the IEC 60598-2 series to the new structure of this document. SC 34D projects to update the structure of the IEC 60598-2 series in line with the new structure of this document are to follow.

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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

INTRODUCTION

In general, this document covers safety requirements for luminaires. The object of this document 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 the IEC 60598-2 series. This document 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 the IEC 60598-2 series.

Each part of the IEC 60598-2 series details the requirements for a particular type of luminaire or group of luminaires. These parts of the IEC 60598-2 series are published separately for ease of revision and additional documents will be added as and when a need for them is recognized.

The IEC 60598-2 series comprises the following parts:

IEC 60598-2-1: Fixed general purpose luminaires
IEC 60598-2-2: Recessed luminaires and recessed air-handling luminaires
IEC 60598-2-3: Luminaires for road and street lighting
IEC 60598-2-4: Portable general purpose luminaires
IEC 60598-2-5: Floodlights
IEC 60598-2-6: Luminaires with built-in transformer for filament lamps (withdrawn)
IEC 60598-2-7: Portable luminaires for garden use (withdrawn)
IEC 60598-2-8: Handlamps
IEC 60598-2-9: Photo and film luminaires (non-professional) (withdrawn)
IEC 60598-2-10: Portable luminaires for children
IEC 60598-2-11: Aquarium luminaires
IEC 60598-2-12: Mains socket-outlet mounted nightlights
IEC 60598-2-13 Ground recessed luminaires
IEC 60598-2-14: Luminaires for cold cathode tubular discharge lamps (neon tubes) and similar equipment
IEC 60598-2-15: Not used at present
IEC 60598-2-16: Not used at present
IEC 60598-2-17: Luminaires for stage lighting, television and film studios (outdoor and indoor)
IEC 60598-2-18: Luminaires for swimming pools and similar applications
IEC 60598-2-19 Air-handling luminaires (safety requirements) (withdrawn)
IEC 60598-2-20: Lighting chains
IEC 60598-2-21: Rope lights
IEC 60598-2-22 Luminaires for emergency lighting
IEC 60598-2-23: Extra-low-voltage lighting systems for filament lamps
IEC 60598-2-24: Luminaires with limited surface temperatures
IEC 60598-2-25: Luminaires for use in clinical areas of hospitals and health care buildings

LUMINAIRES –

Part 1: General requirements and tests

1 Scope

This part of IEC 60598 specifies general safety requirements for luminaires, incorporating electric light sources for operation from supply voltages up to 1 000 V.

Requirements for semi-luminaires are included in this document.

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

This document does not cover performance. Performance of luminaires is covered by the IEC 62722 series.

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 60061-2, *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 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14:2023, *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 60112:2020, *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 60335-1:2020, *Household and similar electrical appliances – Safety – Part 1: General requirements*

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 60669-1, *Switches for household and similar fixed-electrical installations – Part 1: General requirements*

IEC 60669-2-1, *Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic control devices*

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 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 61051-2:2021, *Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

IEC 61058-1-1, *Switches for appliances – Part 1-1: Requirements for mechanical switches*

IEC 61058-1-2, *Switches for appliances – Part 1-2: Requirements for electronic switches*

IEC 61058-2-1, *Switches for appliances – Part 2-1: Particular requirements for cord switches*

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 61535:2023, *Installation couplers intended for permanent connection in fixed installations*

IEC 61558 (all parts), *Safety of transformers, reactors, power supply units and combinations thereof*

IEC 61558-1:2017, *Safety of transformers, reactors, power supply units and combinations thereof – Part 1: General requirements and tests*

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

IEC 61643-331:2020, *Components for low-voltage surge protection – Part 331: Performance requirements and test methods for metal oxide varistors (MOV)*

IEC 61984:2008, *Connectors – Safety requirements and tests*

IEC 62133-2, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems*

IEC 62368-1:2018, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

IEC 62391-1, *Fixed electric double-layer capacitors for use in electric and electronic equipment – Part 1: Generic specification*

IEC 62391-2, *Fixed electric double-layer capacitors for use in electronic equipment – Part 2: Sectional specification – Electric double layer capacitors for power application*

IEC 62471-7:2023, *Photobiological safety of lamps and lamp systems – Part 7: Light sources and luminaires primarily emitting visible radiation*

IEC 62493:2015, *Assessment of lighting equipment related to human exposure to electromagnetic fields*
IEC 62493:2015/AMD1:2022

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

IEC TR 62778:2014[1], *Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires*

ISO 3864-1, *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs and safety markings*

ISO 7000, *Graphical symbols for use on equipment – Registered symbols*, available at https://www.graphical-symbols.info/equipment

ISO 8124-1:2022, *Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*

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1 Withdrawn.