



SLOVENSKI STANDARD
oSIST prEN IEC 61347-1:2023
01-maj-2023

Stikalne naprave za sijalke - Varnost - 1. del: Splošne zahteve

Controlgear for electric light sources - Safety - Part 1: General requirements

Geräte für Lampen - Teil 1: Allgemeine und Sicherheitsanforderungen

Appareillages de lampes - Partie 1: Exigences générales et exigences de sécurité

Ta slovenski standard je istoveten z: prEN IEC 61347-1:2023

<https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-a6922102e0bb/osist-pr-en-iec-61347-1-2023>

ICS:

29.130.01	Stikalne in krmilne naprave na splošno	Switchgear and controlgear in general
29.140.99	Drugi standardi v zvezi z žarnicami	Other standards related to lamps

oSIST prEN IEC 61347-1:2023

en



34C/1575/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 61347-1 ED4	
DATE OF CIRCULATION: 2023-02-24	CLOSING DATE FOR VOTING: 2023-05-19
SUPERSEDES DOCUMENTS: 34C/1554/CD, 34C/1562A/CC	

IEC SC 34C : AUXILIARIES FOR LAMPS	
SECRETARIAT: United Kingdom	SECRETARY: Mr Petar Luzajic
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p>Attention IEC-CENELEC parallel voting</p> <p>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

This document is still under study and subject to change. It should not be used for reference purposes. Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant "in some countries" clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

Controlgear for electric light sources – Safety – Part 1: General requirements

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

Copyright © 2023 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

1	CONTENTS		
2			
3	FOREWORD.....		8
4	INTRODUCTION.....		10
5	1 Scope.....		11
6	2 Normative references		11
7	3 Terms and definitions		13
8	4 General requirements		23
9	4.1 General.....		23
10	4.2 Transformers		23
11	4.3 Information for controlgear design in light sources standards		24
12	5 General notes on tests.....		24
13	5.1 General.....		24
14	5.2 Sample size		24
15	5.3 Test sequence		24
16	5.4 DC supplied controlgear		25
17	5.5 Voltage and current.....		25
18	6 Information and marking		25
19	6.1 Information and marking items.....		25
20	6.2 Durability and legibility of marking		29
21	6.3 Built-in and integral controlgear		30
22	7 Terminals		30
23	8 Earthing		30
24	8.1 General.....		30
25	8.2 Protective earthing		31
26	8.2.1 Constructional requirements.....		31
27	8.2.2 Earthing via printed circuit board tracks		31
28	8.2.3 Earthing via independent controlgear.....		31
29	8.2.4 Conditioning and compliance.....		32
30	8.3 Functional earthing		32
31	9 Protection against accidental contact with hazardous live parts		32
32	9.1 General.....		32
33	9.2 Capacitors		33
34	9.3 ELV limits		33
35	9.4 SELV and PELV leakage currents.....		33
36	9.5 Safety Isolating Controlgear which does not rely upon the luminaire		
37	enclosure for protection against electric shock		34
38	9.5.1 General		34
39	9.5.2 Touch voltage limits		34
40	9.5.3 Touch current limits.....		35
41	10 Insulation resistance and electric strength.....		36
42	10.1 General.....		36
43	10.2 Insulation resistance		36
44	10.2.1 Moisture treatment and testing		36
45	10.2.2 Compliance.....		36
46	10.3 Electric strength		37

47	10.3.1	General	37
48	10.3.2	AC test	37
49	10.3.3	DC test	37
50	10.3.4	General test conditions and compliance	37
51	11	Fault conditions	38
52	11.1	General.....	38
53	11.2	Applicable fault conditions	38
54	11.2.1	PCB tracks	38
55	11.2.2	Electronic components	38
56	11.2.3	Insulation layers.....	38
57	11.3	Test power supply requirements	38
58	11.4	Test procedure and compliance	40
59	11.4.1	Test procedure.....	40
60	11.4.2	Compliance.....	41
61	12	Construction	41
62	12.1	Use of fibrous materials.....	41
63	12.2	Insulation between circuits and accessible parts	42
64	12.2.1	General	42
65	12.2.2	SELV or PELV circuits.....	42
66	12.2.3	FELV circuits	43
67	12.2.4	Other circuits	43
68	12.3	Metal core printed circuits boards (MCPCBs).....	43
69	12.4	Interrupted DC output.....	43
70	12.5	Control circuits	43
71	12.6	Bridging of insulation.....	44
72	12.6.1	Resistors	44
73	12.6.2	Capacitors	44
74	12.7	Built-in controlgear with basic insulation and built-in controlgear with double insulation	45
75			
76	12.8	Transformers	45
77	12.8.1	General	45
78	12.8.2	Components	45
79	12.8.3	Independent controlgear	45
80	13	Creepage distances, clearances and distances through insulation	46
81	13.1	General.....	46
82	13.2	Creepage distances	46
83	13.2.1	General	46
84	13.2.2	Creepage distances for working frequencies not exceeding 30 kHz	47
85	13.2.3	Creepage distances for working frequencies above 30 kHz	48
86	13.2.4	Compliance with the required creepage distances.....	49
87	13.3	Clearances	50
88	13.3.1	General	50
89	13.3.2	Clearances considering mains supply transient overvoltages	51
90	13.3.3	Clearances not considering mains supply transient overvoltages	51
91	13.3.4	Compliance with the required clearances.....	55
92	13.4	Distances through insulation (DTI).....	55
93	13.5	Specific requirements for PCB	55
94	13.5.1	General	55
95	13.5.2	Reduction of creepage distances.....	55

96	13.5.3	No minimum requirements for creepage distances and clearances	56
97	13.6	Specific requirements for insulation layers	56
98	14	Screws, current-carrying parts and connections	56
99	14.1	General.....	56
100	14.2	Electrical connections	56
101	14.3	Self-tapping and thread-cutting screws	57
102	14.4	Locking against loosening	57
103	14.5	Current-carrying parts	57
104	14.6	Mechanical stress resistance.....	58
105	15	Resistance to heat, fire and tracking	59
106	15.1	Resistance to heat	59
107	15.2	Resistance to flames and fire	60
108	15.2.1	General	60
109	15.2.2	Glow wire test	60
110	15.2.3	Needle flame test.....	60
111	15.2.4	Printed circuit boards	61
112	15.3	Resistance to tracking	61
113	16	Thermal requirements for controlgear	61
114	16.1	General.....	61
115	16.1.1	Test specifications	61
116	16.1.2	Built-in controlgear.....	61
117	16.1.3	Integral controlgear.....	62
118	16.1.4	Independent controlgear	62
119	16.2	Normal operation	62
120	16.3	Abnormal operation	63
121	Annex A (normative)	Test to establish whether a conductive part is a hazardous live	
122		part.....	67
123	A.1	General.....	67
124	A.2	Touch voltage limits	67
125	A.3	Touch current limits.....	67
126	A.4	Compliance.....	67
127	Annex B (normative)	Temperature declared thermally protected controlgear	68
128	B.1	General requirements.....	68
129	B.2	General notes on tests	68
130	B.3	Classification	68
131	B.4	Limitation of heating	68
132	Annex C (normative)	Thermal tests of thermally protected controlgear	70
133	C.1	General.....	70
134	C.2	Test chamber	70
135	C.3	Test chamber Heating	70
136	C.4	Controlgear operating temperatures.....	70
137	C.5	Controlgear position in the test chamber	70
138	C.6	Temperature measurements	71
139	Annex D (normative)	Draught-proof test chambers.....	72
140	Annex E (normative)	Tests.....	73
141	E.1	Ambient temperature and test room	73
142	E.2	Test voltage and test frequency	73
143	E.3	Magnetic effects.....	73

144	E.4	Instrument characteristics.....	73
145	E.5	Test conditions.....	74
146	Annex F (informative)	Schedule of more onerous requirements.....	75
147	Annex G (informative)	Conformity testing during manufacture.....	76
148	G.1	General.....	76
149	G.2	Routine testing.....	76
150	G.3	Additional electric strength routine tests for controlgear with protection against pollution using coating or potting material.....	76
152	Annex H (normative)	Requirements for insulation materials used for double or reinforced insulation.....	78
154	H.1	General requirements.....	78
155	H.2	Insulating barrier test.....	78
156	Annex I (normative)	Reduction of creepage distances and clearances for coated or potted controlgear.....	79
158	I.1	General.....	79
159	I.2	Reduction of creepage distances.....	79
160	I.3	Conditioning and compliance.....	81
161	Annex J (informative)	Example for U_p calculation.....	83
162	Annex K (informative)	Concept of creepage distances and clearances.....	84
163	K.1	Basic concept considerations.....	84
164	K.2	Why setting up tables?.....	85
165	Annex L (informative)	Overvoltage category III controlgear.....	86
166	L.1	General.....	86
167	L.2	Electric strength test voltages.....	86
168	L.3	Clearances for controlgear not protected against pollution by coating or potting materials.....	86
169	L.4	Clearances for controlgear protected against pollution by coating or potting.....	87
170	L.5	Distances through insulation.....	87
171	L.6	Bridging by Y capacitors.....	87
173	Annex M (informative)	Information for luminaire design.....	89
174	M.1	Controlgear to be tested together with the luminaire.....	89
175	M.2	Earthing of built-in controlgear.....	89
176	M.3	Insulation between controlgear circuits and accessible conductive parts of luminaires.....	89
177	M.4	Thermally protected controlgear.....	89
179	Annex N (normative)	Touch current measurements.....	92
180	N.1	General conditions.....	92
181	N.2	Measuring networks.....	93
182	N.3	Setup and test sequence.....	94
183	Annex O (informative)	Information on document re-organisation.....	99
184	O.1	General.....	99
185	O.2	Renumbering of Clauses and Annexes.....	99
186	O.3	Renumbering of Figures.....	101
187	O.4	Renumbering of Tables.....	101
188	O.5	Rearrangement of marking and information items.....	102
189	Bibliography.....		103
190			
191	Figure 1 – Test circuit (default).....		39

192	Figure 2 – test circuit (EL-P, see text)	39
193	Figure 3 –Determination of creepage distances	47
194	Figure 4 – Determination of clearances (general).....	50
195	Figure 5 – Determination of clearances (guidance for Table 15 and Table 16).....	51
196	Figure 6 – Screw type examples.....	57
197	Figure 7 – Ball-pressure apparatus.....	60
198	Figure 8 – Test arrangement for heating test	62
199	Figure C.1 – Example of a heating test chamber for thermally protected controlgear	71
200	Figure H.1 – test electrode.....	78
201	Figure J.1 – Example for the calculation of U_p	83
202	Figure M.1 – Example of a controlgear insulation.....	90
203	Figure N.1 – Measuring network (perception weighted).....	93
204	Figure N.2 – Measuring network (let-go weighted)	94
205	Figure N.3 – Test configuration for touch currents between accessible parts and earth.....	94
206	Figure N.4 – Test configuration for touch currents between different accessible parts.....	95
207	Figure N.5 – Test configuration for touch currents between output and earth.....	96
208		
209	Table 1 – Required rated impulse withstand voltage of equipment.....	21
210	Table 2 – marking according to installation type	25
211	Table 3 – marking according to output isolation classification.....	26
212	Table 4 – voltage steps.....	28
213	Table 5 – further markings	29
214	Table 6 – ELV limits.....	33
215	Table 7 – Touch current limits.....	34
216	Table 8 – SELV touch voltage limits	35
217	Table 9 – PELV touch voltage limits	35
218	Table 10 – Electric strength test voltages	37
219	Table 11 – required number and type of Y capacitors	44
220	Table 12 – Creepage distances – working frequencies not exceeding 30 kHz	48
221	Table 13 – Creepage distances – working frequencies above 30 kHz	49
222	Table 14 – Clearances considering mains supply transient overvoltages	51
223	Table 15 –Clearances without considering mains supply transient overvoltages; – basic	
224	or supplementary insulation	53
225	Table 16 – Clearances without considering mains supply transient overvoltages –	
226	reinforced insulation	54
227	Table 17 – Minimum creepage distances on printed circuit boards (PCB)	56
228	Table 18 – Torque tests on screws.....	58
229	Table 19 – Values of maximum temperatures in normal use	63
230	Table 20 – Maximum temperatures under short-circuit or overload conditions	64
231	Table G.1 – Minimum values for electrical routine tests	77
232	Table I.1 – Creepage distances – working frequencies not exceeding 30 kHz (coated	
233	or potted controlgear)	79
234	Table I.2 – Creepage distances – working frequencies above 30 kHz (coated or potted	
235	controlgear).....	80

236	Table I.3 – Impulse withstand test voltages	82
237	Table L.1 – electric strength test voltages for overvoltage category III controlgear	86
238	Table L.2 – Impulse withstand test voltages for overvoltage category III coated or	
239	potted controlgear.....	87
240	Table L.3 – overview of required Y capacitors	88
241	Table M.1 – Insulation requirements between live parts and accessible conductive	
242	parts for different luminaire constructions	91
243	Table N.1 – Test sequence according to Figure N.3, Figure N.4 and Figure N.6	97
244	Table N.2 – Test sequence according to Figure N.5.....	98
245	Table O.1 – renumbering of clauses	99
246	Table O.2 – Renumbering of Annexes	100
247	Table O.3 – Renumbering of Figures	101
248	Table O.4 – Renumbering of Tables	101
249	Table O.5 – re-arrangement of marking and information items	102
250		

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN IEC 61347-1:2023](https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-a6922102e0bb/osist-pren-iec-61347-1-2023)

<https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-a6922102e0bb/osist-pren-iec-61347-1-2023>

251

INTERNATIONAL ELECTROTECHNICAL COMMISSION

252

253

254

CONTROLGEAR FOR ELECTRIC LIGHT SOURCES – SAFETY

255

256

Part 1: General requirements

257

258

259

FOREWORD

260 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
261 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international
262 co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in
263 addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports,
264 Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their
265 preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with
266 may participate in this preparatory work. International, governmental and non-governmental organizations liaising
267 with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for
268 Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

269 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international
270 consensus of opinion on the relevant subjects since each technical committee has representation from all
271 interested IEC National Committees.

272 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National
273 Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC
274 Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any
275 misinterpretation by any end user.

276 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications
277 transparently to the maximum extent possible in their national and regional publications. Any divergence between
278 any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

279 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity
280 assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any
281 services carried out by independent certification bodies.

282 6) All users should ensure that they have the latest edition of this publication.

283 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and
284 members of its technical committees and IEC National Committees for any personal injury, property damage or
285 other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses
286 arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

287 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is
288 indispensable for the correct application of this publication.

289 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent
290 rights. IEC shall not be held responsible for identifying any or all such patent rights.

291 IEC 61347-1 has been prepared by subcommittee 34C: Auxiliaries for lamps, of IEC technical
292 committee 34: Lighting. It is an International Standard.

293 This 4th edition cancels and replaces the 3rd edition published in 2015 and as amended by
294 Amendment 1:2017. This edition constitutes a technical revision.

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

297 a) Complete review of document structure, including but not limited to what is individually
298 described under items b) to s)

299 b) Removal of requirements for electromagnetic controlgear

300 c) More specific requirements for control circuit insulation and corresponding marking (see
301 34C/1429/CD)

302 d) Merging of thermal test requirements for transformers into new clause (see 34C/1430/CD)

303 e) More precise specifications for the moisture resistance test (see 34C/1431/CD)

- 304 f) Update of the normative reference to standards of the transformer series IEC 61558 (see
305 34C/1432/CD)
- 306 g) Correction of normative reference for PCB testing with respect to flames and fire
307 (see 34C/1447/CD)
- 308 h) Update of further normative references where appropriate
- 309 i) Allowance of an alternative DC electric strength test (see 34C/1433/CD)
- 310 j) Addition of specific provisions for the use of bridging capacitors (see 34C/1434/CD)
- 311 k) Update of fire hazard testing requirements (see 34C/1435/CD)
- 312 l) Introduction of requirements for PELV applications (see 34C/1436/CD)
- 313 m) Clearance distances now generally based on peak instead of RMS voltage values
314 (see 34C/1437/CD)
- 315 n) Introduction of new type protected emergency lighting controlgear (see 34C/1438/CD)
- 316 o) Review and clarification of touch current/voltage requirements (see 34C/1439/CD)
- 317 p) Clarification of the test sequence for independent controlgear with respect to application of
318 IEC 60598 vs. IEC 61347 (see 34C/1449/CD)
- 319 q) Introduction of reduced touch voltages/currents for interrupted DC voltage applications/PWM
320 (see 34C/1448/CD)
- 321 r) Changes concerning the recommendations for electric strength routine testing
322 (see 34C/1449/CD)
- 323 s) Merging of requirements for safety isolating controlgear from former Annex L into main body
324 of the document
- 325 t) Introduction of Annex N intended to address Touch Current Measurement (see 34C/1557/CD)

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

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

327
328 Full information on the voting for its approval can be found in the report on voting indicated in
329 the above table.

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

331 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
332 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
333 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
334 described in greater detail at <http://www.iec.ch/standardsdev/publications>.

335 The committee has decided that the contents of this document will remain unchanged until the
336 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
337 specific document. At this date, the document will be

- 338 • reconfirmed,
- 339 • withdrawn,
- 340 • replaced by a revised edition, or
- 341 • amended.

342

343

INTRODUCTION

344 This part of IEC 61347 provides a set of general and safety requirements and tests which are
345 considered to be generally applicable to most types of controlgear for light sources and which
346 can be called up as required by the different parts that make up IEC 61347-2. This Part 1 is
347 thus not to be regarded as a specification in itself for any type of controlgear, and its provisions
348 apply only to particular types of controlgear, to the extent determined by the appropriate Part 2
349 of IEC 61347. IEC 61347-2 parts refer to the clauses of this part to the extent to which such a
350 clause is applicable and the order in which the tests are to be performed; they also include
351 additional requirements as necessary. The order in which the clauses of this part are numbered
352 has no particular significance, as the order in which their provisions apply is determined for
353 each type of controlgear by the appropriate Part 2 of the IEC 61347-2 series. All such IEC
354 61347-2 parts are self-contained and therefore do not contain references to each other.

355 Where the requirements of any of the clauses of this part of IEC 61347 are referred to in the
356 various parts that make up IEC 61347-2 by the phrase "IEC 61347-1, Clause N applies.", this
357 phrase will be interpreted as meaning that all requirements of the clause in question of Part 1
358 apply, except any which are clearly inapplicable to the particular type of controlgear for light
359 sources covered by the Part 2 concerned.

360 Performance requirements for controlgear for electric light sources are the subject of the
361 appropriate performance standard, e.g. IEC 61047 and IEC 62384 as appropriate for the type
362 of controlgear.

363 Safety requirements ensure that electrical equipment constructed in accordance with these
364 requirements does not endanger the safety of persons, domestic animals or property when
365 properly installed and maintained and used in applications for which it was intended.

366

[oSIST prEN IEC 61347-1:2023](https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-a6922102e0bb/osist-pren-iec-61347-1-2023)

<https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-a6922102e0bb/osist-pren-iec-61347-1-2023>

CONTROLGEAR FOR ELECTRIC LIGHT SOURCES – SAFETY

Part 1: General requirements

367
368
369
370

1 Scope

372 This part of IEC 61347 specifies general safety requirements for controlgear for electric light
373 sources for use on DC supplies up to 1 500 V or AC supplies up to 1 000 V at 50 Hz or 60 Hz.

374 NOTE 1 In the remaining of this document light source will be used instead of electric light source.

375 This document is only applicable in conjunction with the relevant part(s) 2.

376 NOTE 2 Please refer to the introduction for further information about the structure of the IEC 61347 series.

377 NOTE 3 As far as covered in the scope of the relevant part 2, this document is also applicable to controlgear used
378 for electric sources producing optical radiation with the same technology used for purposes different than illumination
379 and producing radiation other than visible spectrum.

2 Normative references

381 The following documents are referred to in the text in such a way that some or all of their content
382 constitutes requirements of this document. For dated references, only the edition cited applies.
383 For undated references, the latest edition of the referenced document (including any
384 amendments) applies.

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

386 IEC 60127 (all parts), *Miniature fuses*
<https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2->

387 IEC 60269-1:2006, *Low-voltage fuses - Part 1: General requirements*

388 IEC 60269-1:2006/AMD1:2009

389 IEC 60269-1:2006/AMD2:2014

390 IEC 60269-2, *Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by*
391 *authorized persons (fuses mainly for industrial application) - Examples of standardized systems*
392 *of fuses A to K*

393 IEC 60269-3, *Low-voltage fuses - Part 3: Supplementary requirements for fuses for use by*
394 *unskilled persons (fuses mainly for household or similar applications) - Examples of*
395 *standardized systems of fuses A to F*

396 IEC 60317-0-1:2013, *Specifications for particular types of winding wires - Part 0-1: General*
397 *requirements - Enamelled round copper wire*

398 IEC 60317-0-1:2013/AMD1:2019

399 IEC 60384-14:2013, *Fixed capacitors for use in electronic equipment - Part 14: Sectional*
400 *specification - Fixed capacitors for electromagnetic interference suppression and connection to*
401 *the supply mains*

402 IEC 60384-14:2013/AMD1:2016

403 IEC 60598-1:2020, *Luminaires - Part 1: General requirements and tests*

404 IEC 60598-2, *Luminaires, particular requirements (all parts)*

- 405 IEC 60695-2-11:2021, *Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods -*
406 *Glow-wire flammability test method for end-products (GWEPT)*
- 407 IEC 60695-11-5:2016, *Fire hazard testing - Part 11-5: Test flames - Needle-flame test method*
408 *- Apparatus, confirmatory test arrangement and guidance*
- 409 IEC 60691:2015, *Thermal-links - Requirements and application guide*
410 IEC 60691:2015/AMD1:2019
- 411 IEC 60747-5-5:2020, *Semiconductor devices - Part 5-5: Optoelectronic devices -*
412 *Photocouplers*
- 413 IEC 61032:1997, *Protection of persons and equipment by enclosures - Probes for verification*
- 414 IEC 61048, *Auxiliaries for lamps - Capacitors for use in tubular fluorescent and other discharge*
415 *lamp circuits - General and safety requirements*
- 416 IEC 61189-2:2006, *Test methods for electrical materials, printed boards and other*
417 *interconnection structures and assemblies - Part 2: Test methods for materials for*
418 *interconnection structures*
- 419 IEC 61249-2 (all parts), *Materials for printed boards and other interconnecting structures*
- 420 IEC 61558-1:2017, *Safety of transformers, reactors, power supply units and combinations*
421 *thereof - Part 1: General requirements and tests*
- 422 IEC 61558-2-1, *Safety of transformers, reactors, power supply units and combinations thereof*
423 *- Part 2-1: Particular requirements and tests for separating transformers and power supply units*
424 *incorporating separating transformers for general applications*
<https://standards.iteh.ai/catalog/standards/sist/6776e739-589a-47dc-8cd2-1a33-698b1e0a1233/iec-61558-2-1-2017>
- 425 IEC 61558-2-4, *Safety of transformers, reactors, power supply units and combinations thereof*
426 *- Part 2-4: Particular requirements and tests for isolating transformers and power supply units*
427 *incorporating isolating transformers for general applications*
- 428 IEC 61558-2-6, *Safety of transformers, reactors, power supply units and combinations thereof*
429 *- Part 2-6: Particular requirements and tests for safety isolating transformers and power supply*
430 *units incorporating safety isolating transformers for general applications*
- 431 IEC 61558-2-13, *Safety of transformers, reactors, power supply units and similar products for*
432 *supply voltages up to 1 100 V - Part 2-13: Particular requirements and tests for auto*
433 *transformers and power supply units incorporating auto transformers*
- 434 IEC 61558-2-16:2021, *Safety of transformers, reactors, power supply units and combinations*
435 *thereof - Part 2-16: Particular requirements and tests for switch mode power supply units and*
436 *transformers for switch mode power supply units for general applications*
- 437 IEC 61643-11:2011, *Low-voltage surge protective devices - Part 11: Surge protective devices*
438 *connected to low-voltage power systems - Requirements and test methods*
- 439 IEC 62368-1:2018, *Audio/video, information and communication technology equipment - Part*
440 *1: Safety requirements*
- 441 ISO 4046-4:2016, *Paper, board, pulps and related terms, Part 4: Paper and board grades and*
442 *converted products*
- 443 ISO 8820 (series), *Road vehicles*

444 3 Terms and definitions

445 For the purposes of this document, the following terms and definitions apply.

446 ISO and IEC maintain terminological databases for use in standardization at the following
447 addresses:

- 448 • IEC Electropedia: available at <http://www.electropedia.org/>
- 449 • ISO Online browsing platform: available at <http://www.iso.org/obp>

450 3.1

451 control gear

452 controlgear

453 <for an electric light source> unit inserted between the power supply and at least one light
454 source, which serves to supply the light source(s) with its (their) rated voltage, rated current or
455 rated power, and which can consist of one or more separate components

456 Note 1 to entry: A controlgear can include means for igniting, dimming, correcting the power factor and suppressing
457 radio interference, and further control functions.

458 Note 2 to entry: A controlgear can consist of a power supply and a control unit of a controlgear.

459 Note 3 to entry: A controlgear can be partly or totally integrated in the light source.

460 Note 4 to entry: The terms "control gear" and "controlgear" are interchangeable. In IEC standards, the term
461 "controlgear" is commonly used

462 Note 5 to entry: In this document, whenever this is unambiguous, the shortened term "controlgear" is used instead
463 of "controlgear for an electric light source".

464 [SOURCE: IEC 60050-845:2020, 845-28-048, modified – "or rated current" has been replaced
465 by ", rated current or rated power"; Note 5 to entry has been added.]

466 3.2

467 built-in controlgear

468 controlgear designed to be built into a luminaire, a box, an enclosure or the like and not intended
469 to be mounted outside a luminaire

470 Note 1 to entry: The controlgear compartment in the base of a road lighting column is considered to be an enclosure.

471 [SOURCE: IEC 60050-845:2020, 845-28-053, modified – "lamp control gear" has been replaced
472 by "controlgear"]

473 3.3

474 built-in controlgear with basic insulation

475 built-in electronic controlgear providing basic insulation between live parts and all parts of the
476 enclosure (complete or partial) that can become in contact with the luminaire body when
477 incorporated.

478 3.4

479 built-in controlgear with double insulation

480 built-in electronic controlgear providing double or reinforced insulation between hazardous live
481 parts and all parts of the enclosure (complete or partial) that can come in contact with the
482 luminaire body when incorporated.

483 Note 1 to entry: A possible application for such controlgear is a metal encased Class II luminaire.

484 3.5

485 independent controlgear

486 controlgear consisting of one or more separate elements so designed that it can be mounted
487 separately outside a luminaire, with protection according to the marking of the controlgear and
488 without any additional enclosure