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BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

Draft *Indian Standard*

Luminaires – Part 1: General Requirements and Tests (Third Revision)

Illumination Engineering and Luminiaries Sectional Committee ETD 49

Last Date of Comments: **27 June 2024**

NATIONAL FOREWORD

This draft Indian Standard (Part 1) (third revision) which is identical with IEC 60598-1 'Luminaires – Part 1: General requirements and tests' issued by the International Electrotechnical Commission (IEC) will be adopted by the Bureau of Indian Standards on the recommendation of the Illumination Engineering and Luminiaries Sectional Committee and approval of the Electrotechnical Division Council.

This standard was first published in year 1982 and subsequently revised in year 2014 to align it with the IEC 60598-1(2003-10), Edition 6. The third revision has been undertaken to align it with the latest version of IEC 60598-1.

India specific changes have been made to the adopted IEC 60598-1 as outlined in National Annexure A.

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appears referring to this standard, they should be read as 'Indian Standard'.
b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to International Standards for which Indian Standards also exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
IEC 60065:2014, Audio, video and similar electronic apparatus – Safety requirements	IS 616 : 2017 Audio, video and similar electronic apparatus - Safety requirements (Fifth Revision)	Identical with IEC 60065 : 2014

IEC 60068-2-6:2007, Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)	IS/IEC 60068-2-6 : 2007 Environmental Testing Part 2 Tests Section 6 Test Fc: Vibration sinusoidal	Identical
IEC 60068-2-14:2009, Environmental testing – Part 2-14: Tests – Test N: Change of temperature	IS/IEC 60068-2-14 : 2009 Environmental testing Part 2: Tests Section 14: Test N: Change of temperature	Identical
IEC 60068-2-31:2008, Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens	IS 9000 (Part 7/Sec 3) : 2019 Environmental testing: Part 7 tests :: Sec 3 test Ec: rough handling shocks, primarily for equipment - Types specimens (First Revision)	Identical with IEC 60068-2-31 : 2008
IEC 60068-2-75, Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests	IS 9000 (Part 7/Sec 7) : 2020 Environmental Testing Part 7 Tests Section 7 Test Eh: Hammer tests (First Revision)	Identical with IEC 60068-2-75 : 2014
IEC 60085, Electrical insulation – Thermal evaluation and designation	IS 1271 : 2012 Electrical insulation - Thermal evaluation and designation (Second Revision)	Identical with IEC 60085: 2007
IEC 60112:2003, Method for the determination of the proof and the comparative tracking indices of solid insulating materials	IS 2824 : 2007 Method for the determination of the proof and the comparative tracking indices of solid insulating materials (Second Revision)	Identical with IEC 60112 : 2003
IEC 60155, Glow-starters for fluorescent lamps	IS 2215 : 2006 Starters for fluorescent lamps (Third Revision)	Identical with IEC 60155: 1993
IEC 60432-1:1999, Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes	IS 15518 (Part 1) : 2004 Safety requirements for incandescent lamps: Part 1 tungsten filament lamps for domestic and similar general lighting purposes	Technically Equivalent IEC 60432-1:1999
IEC 60529, Degrees of protection provided by enclosures (IP Code)	IS/IEC 60529 : 2001 Degrees of protection provided by enclosures (IP Code)	Identical
IEC 60598-2-4:2017, Luminaires – Part 2-4: Particular requirements – Portable general purpose luminaires	IS 10322 (Part 5/Sec 4) : 1987 Specification for luminaires: Part 5 particular requirements: Sec 4 portable general purpose luminaires	Identical with IEC 60598-2-4:1979
IEC 60664-4:2005, Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress	IS 15382 (Part 4) : 2017 Insulation Coordination for Equipment Within Low-voltage Systems Part 4 Consideration of High-frequency Voltage Stress (First Revision)	Identical with IEC60664-4 : 2005
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)	IS/IEC 60695-2-11) : 2021 Fire Hazard Testing Part 2: Glowinghot-wire based test methods Section 11: Glow-wire flammability test method for end products GWEPT	Identical

IEC 60695-11-5, Fire hazard testing – Part 11-5: Test flames – Needle-flame test method Apparatus, confirmatory test arrangement and guidance	IS/IEC 60695-11-5 : 2016 Fire Hazard Testing Part 11 Test Flames Section 5 Needle - Flame test method - Apparatus, confirmatory test arrangement and guidance (First Revision)	Identical
IEC 60990, Methods of measurement of touch current and protective conductor current	IS/IEC 60990 : 2016 Methods of measurement of touch current and protective conductor current (First Revision)	Identical
IEC 61032:1997, Protection of persons and equipment by enclosures – Probes for verification	IS 1401 : 2008 Protection of persons and equipment by enclosures - Probes for verification (Second Revision)	Identical with IEC 61032:1997
IEC 61167, Metal halide lamps – Performance specification	IS 16148 : 2014 Metal halide lamps - Performance specification	Identical with IEC 61167:2011
IEC 61558-1:2005 [3], Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests	IS/IEC 61558-1 : 1997 Safety of power transformers, power supply units and similar: Part 1 general requirements and tests	Identical
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	IS/IEC 61558-2-6 : 1997 Safety of power transformers, power supply units and similar: Part 2 particular requirement: Sec 6 safety isolating transformers for general use	Identical
IEC 61643-11, Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and test methods	IS 16463 (Part 11) : 2016 Low - Voltage surge protective devices: Part 11 surge protective devices connected to low - Voltage power systems - Requirements and test methods	Identical with IEC 61643-11 : 2011
IEC TR 62778, Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	IS 16661 : 2019 Application of IS 16108/IEC 62471 for the assessment of blue light hazard to light sources and luminaires	Identical with IEC/TR 62778 : 2014
IEC 80416-1, Basic principles for graphical symbols for use on equipment – Part 1: Creation of graphical symbol for registration	IS 16898 (Part 1) : 2023 Basic Principles for Graphical Symbols for Use on Equipment Part 1: Creation of Graphical Symbols for Registration	Identical with ISO/IEC 80416-1 : 2008
IEC 60360 Standard method of measurement of lamp cap temperature rise	IS 8913: 1978 Method of measurement of lamp cap temperature rise	Identical with IEC 60360: 1971
IEC 60238:2016 Edison screw lampholders	ETD 14 Doc. (22268) Edison screw lampholders	Identical
IEC 60384-14 Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed	IS/QC 302400 : 1994 Fixed capacitors for use in electronic equipment: Sectional specification for fixed	Identical

capacitors for electromagnetic interference suppression and connection to the supply mains	capacitors for electromagnetic interference suppression and connection to the supply mains	
IEC 61058-1:20001 Switches for appliances – Part 1: General requirements	IS/IEC 61058-1 : 2016 Switches for appliances: Part 1 general requirements First revision	Identical
IEC 60662 High-pressure sodium vapour lamps – Performance specifications	IS 9974 (all parts) Specification for high pressure sodium vapour lamps	Technically Equivalent with IEC 60662: 1980
IEC 61347-1:2015 Lamp controlgear – Part 1: General and safety requirements	IS 15885 (Part 1) : 2011 Safety of lamp controlgear: Part 1 general requirements	Technically Equivalent
IEC 61347-2-9 Lamp controlgear – Part 2-9: Particular requirements for electromagnetic controlgear for discharge lamps (excluding fluorescent lamps)	IS 15885 (Part 2/Sec 9) : 2011 Safety of lamp control gear: Part 2 particular requirements: Sec 9 ballasts for discharge lamps (Excluding Fluorescent Lamps)	Technically Equivalent with IEC 61347-2-9

The technical committee has reviewed the provisions of the following international standards referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard.

International Standard	*Title*
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 TR 60083	Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC
IEC 60227 (all parts)	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
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 60417	Graphical symbols for use on equipment (available at http://www.graphicalsymbols.info/equipment)
IEC 60432-2:1999	Incandescent lamps – Safety specifications –Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes
IEC 60570:2003	Electrical supply track systems for luminaires
IEC 60598-2 (all parts)	Luminaires – Part 2: Particular requirements
IEC 60603 (all parts)	Connectors for frequencies below 3 MHz for use with printed boards
IEC 60684 (all parts)	Flexible insulating sleeving
IEC 60989	Separating transformers, autotransformers, variable transformers and reactors
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 screw less-type clamping units
IEC 61249 (all parts)	Materials for printed boards and other interconnecting structures
IEC 61347 (all parts)	Lamp controlgear
IEC 61535:2009 [2]	Installation couplers intended for permanent connection in fixed installations
IEC 61558 (all parts)	Safety of power transformers, power supplies, reactors and similar products
IEC 61984:2008	Connectors – Safety requirements and tests
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

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Note: The technical content of the document is not available on website. For details, please refer the corresponding IEC 60598-1:2020 or kindly contact the undersigned:

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NATIONAL ANNEXURE A

(National Foreword)

(Normative)

A-1 As per Indian conditions, the general ambient temperature conditions shall be considered as 25°±10° C.

A-2 Cl 4.18 Resistance to Corrosion

As per Indian conditions, corrosion test temperature conditions shall be considered as 27±5.

A-3 Table 5.1 Substitute the following for the existing:

Table 5.1 – Supply cord

Luminaire	Rubber	PVC	HFFR Cable	FS Cable
Ordinary class I luminaires	IS 9968-1[b]	IS 694[b]	IS 17048[ab]	IS 17505-1[b]
Ordinary class II luminaires	IS 9968-1[b]	IS 694[b]	IS 17048[ab]	IS 17505-1[b]
Luminaires other than ordinary class I and II	IS 9968-1[b]	IS 694[b]	IS 17048[ab]	IS 17505-1[b]
Portable rough service luminaires	IS 9968-1[b]			
Class III or with SELV or PELV circuits luminaires AC: $U \leq 50$ V DC: $U \leq 120$ V	Unsheathed basic insulated conductor			
[a] For indoor use only. [b] For supply voltages greater than 250 V, higher voltage grade cables and cords than those given in this table may be necessary.				

A-4 Table 5.3 Substitute the following for the existing:

Table 5.3 – Wiring dimension

Condition	Minimum nominal conductor cross-section (mm2)[i]	
	Ordinary luminaire	Other than ordinary luminaire
General		
a) Conventional (designed for incandescent and gas discharge light source technologies) Product	0.75	1.0

b) LED Light Source Product	0.5 (Rated Power ≤20W) 0.75 (Rated Power >20W)	0.75 (Rated Power ≤ 20W) 1.0 (Rated Power > 20W)
Declared to be "For indoor use only", in accordance with 3.3.18.		
a) Conventional (designed for incandescent and gas discharge light source technologies) Product	0.75	0.75
b) LED Light Source Product	0.5 (Rated Power ≤ 20W) 0.75 (Rated Power > 20W)	0.75 (Rated Power ≤ 20W) 0.75 (>Rated Power > 20W)
When luminaire is provided with a 10/16 A socketoutlet.	1.5	1.5
Class III luminaires or SELV or PELV circuits connections between parts of other luminaire types, with 2 A maximum rated current.	0.4 [a,c]	0.4 [a,c]
Class III luminaires or SELV c or PELV circuits connections between parts of other luminaire types, with 2 A maximum rated current, consisting of cables with two or more conductors.	0.2 [a,b,c]	0.2 [a,b,c]
Conductors connected to SELV or PELV controlgear that limits output current to maximum 2 A.	< 0.2 (No minimum)[d,e,g,h]	< 0.2 (No minimum) [d,f,g,h]

a) Provided that current-carrying capacity and mechanical properties are adequate.

b) Able to withstand the normal and short circuit current provided by the associated controlgear.

c) Compliance is checked by inspection and by the test in 5.2.10.

d) Selected in relation to the maximum available current, compliance is checked by the test in 5.4.1.

e) Controlgear output voltage under load does not exceed 25 V RMS or 60 V ripple free DC and no-load voltage does not exceed 35 V peak or 60 V ripple free DC.

f) Controlgear output voltage not exceeding 12 V RMS or 30 V ripple free DC.

g) To check mechanical properties, the conductor assembly, fixed to the luminaire, shall be subjected to the test in 5.2.10.3.

h) The minimum insulation thickness shall be selected to withstand the voltage stress occurring, see Table X.1.

i) IEC 60228 specifies that the requirement associated with the nominal conductor cross-section is a maximum resistance value, not a physical measure of the area. For nominal sizes of 0.5 mm^2 and above, these values are listed in IEC 60228. For lower cross-sections the resistance value needs to be calculated accordingly.