

BUREAU OF INDIAN STANDARDS
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Draft Indian Standard

Luminaires – Part 1: General Requirements and Tests

(Second Revision)

(ICS 29.140. 40)

Illumination Engineering and Luminaries
Sectional Committee, ETD 49

Last date for comments- 25 December 2024

NATIONAL FOREWORD

This draft Indian Standard (Part 1) (Second Revision) which is identical with IEC 60598-1: 2024 ‘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 Luminaries Sectional Committee and approval of the Electrotechnical Division Council.

This standard was originally published in year 1982 and subsequently revised in year 2014 to align it with the IEC 60598-1: 2003. The second revision has been undertaken to align it with the latest version of IEC 60598-1: 2024.

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:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
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IEC 60068-2-6, 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: 2023, Environmental testing – Part 2-14: Tests – Test N: Change of temperature	IS/IEC 60068-2-14 : 2023 Environmental Testing Part 2 Tests Section 14 Test N: Change of Temperature (<i>first revision</i>)	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/ IEC 60068-2-31 : 2008 Environmental testing: Part 7 tests :: Sec 3 test Ec: rough handling shocks, primarily for equipment - Types specimens (First Revision)	Identical
IEC 60068-2-75, Environmental testing – Part 2-75: Tests – Test Eh: Hammer test	IS 9000 (Part 7/Sec 7) : 2020/ IEC 60068-2-75 : 2014 Environmental Testing Part 7 Tests Section 7 Test Eh: Hammer tests (First Revision)	Identical
IEC 60085, Electrical insulation – Thermal evaluation and designation	IS 1271 : 2012/ IEC 60085 : 2007 Electrical insulation — Thermal evaluation and designation (<i>second revision</i>)	Identical
IEC 60112: 2020, Method for the determination of the proof and the comparative tracking indices of solid insulating materials	IS 2824: 2007/ IEC 60112 :2003 Method for the determination of the proof and the comparative tracking indices of solid insulating materials (<i>second revision</i>)	Identical
IEC 60155, Glow-starters for fluorescent lamps	IS 2215 : 2006 Starters for fluorescent lamps (<i>third revision</i>)	Modified/Technically Equivalent
IEC 60238:2016, Edison screw lamp holders	IS 10276 (Part 1) : 2024/ IEC 60238: 2016 Edison Screw Lamp holders (<i>first revision</i>)	Identical
IEC 60335-1:2020, Household and similar electrical appliances – Safety – Part 1: General requirements	IS 302 (Part 1) : 2024/ IEC 60335-1:2020 Safety of household and similar electrical appliances: Part 1 general requirements (<i>seventh revision</i>)	Identical
IEC 60360 Standard method of measurement of lamp cap temperature rise	IS 8913 : 1978/ IEC 60360 : 1971 Standard method of measurement of lamp cap temperature rise	Identical
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	Modified/Technically Equivalent
IEC 60529, Degrees of protection provided by	IS/IEC 60529 : 2001 Degrees of protection provided by enclosures	Identical

enclosures (IP Code)	(IP Code)	
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	Modified/Technically Equivalent
IEC 60662 High-pressure sodium vapour lamps – Performance specifications	IS 9974 (Part 1) : 1981/ IEC 60662 Specification for high pressure sodium vapour lamps: Part 1 general requirements and tests	Identical
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/ IEC 60664-4 : 2005 Insulation Coordination for Equipment Within Low-voltage Systems Part 4 Consideration of High-frequency Voltage Stress (First Revision)	Identical
IEC 60669-1 Switches for household and similar fixed-electrical installations – Part 1: General requirements	IS 3854: 2023 Switches for Domestic and Similar Purposes - Specification (<i>third revision</i>)	Modified/Technically Equivalent
IEC 60669-2-1, Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic control devices	IS/IEC 60669-2-1 : 2008 Switches for Household and Similar Fixed Electrical Installations Part 2 Particular Requirements Section 1 Electronic Switches	Identical
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: Glowing hot-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 (<i>first revision</i>)	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 (<i>first revision</i>)	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 (<i>second revision</i>)	Modified/Technically Equivalent
IEC 61051-2:2021 Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors	IS/QC 420100: 1994 Varistors for use in electronic equipment. - Sectional specification for surge suppression varistors	Identical
IEC 61058-1:2016, Switches	IS/IEC 61058-1 : 2016 Switches for	Identical

for appliances – Part 1: General requirements	appliances: Part 1 general requirements (<i>first revision</i>)	
IEC 61058-1-1, Switches for appliances – Part 1-1: Requirements for mechanical switches	IS/IEC 61058-1-1 : 2016 Switches for Appliances Part 1 General Requirements Section 1 Particular Requirements for Mechanical Switches	Identical
IEC 61058-1-2, Switches for appliances – Part 1-2: Requirements for electronic switches	IS/IEC 61058-1-2 : 2016 Switches for Appliances Part 1 General Requirements Section 2 Particular Requirements for Electronics Switches	Identical
IEC 61167, Metal halide lamps – Performance specification	IS 16148 : 2014/ IEC 61167:2011 Metal halide lamps Performance - specification	Identical
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	Modified/Technically Equivalent
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/ IEC 61643-11 : 2011 Low - Voltage surge protective devices: Part 11 surge protective devices connected to low - Voltage power systems - Requirements and test methods	Identical
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	IS 16046 (Part 2) : 2018/ IEC 62133-2 : 2017 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 (<i>second revision</i>)	Identical
IEC 62368-1:2018, Audio/video, information and communication technology equipment – Part 1: Safety requirements	IS/IEC 62368-1 : 2018 Audio / Video, Information and Communication Technology Equipment Part 1 Safety Requirements (<i>first revision</i>)	Identical
IEC TR 62778:2014, Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	IS 16661 : 2019/IEC/TR 62778 : 2014 Application of IS 16108/IEC 62471 for the assessment of blue light hazard to light sources and luminaires	Identical
ISO 3864-1, Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs and safety markings	IS 16449 (Part 1) : 2018/ ISO 3864-1 : 2011 Graphical Symbols — Safety Colours and Safety Signs Part 1 Design Principles for Safety Signs and Safety Markings	Identical
ISO 7000, Graphical symbols for use on equipment –	IS 16450 : 2023/ ISO 7000:2019 Graphical Symbols for Use on	Identical

Registered symbols, available at https://www.graphical-symbols.info/equipment	Equipment Registered Symbols	
ISO 8124-1:2022, Safety of toys – Part 1: Safety aspects related to mechanical and physical properties	IS 9873 (Part 1) : 2019/ ISO 8124-1 :2018 Safety of toys: Part 1 safety aspects related to mechanical and physical properties (<i>fourth revision</i>)	Identical

The technical committee has reviewed the provision of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
IEC 60061-2	Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lamp holders
IEC 60061-3	Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges
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 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.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 60603 (all parts)	Connectors for frequencies below 3 MHz for use with printed boards
IEC 60684 (all parts)	Flexible insulating sleeving
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 61058-2-1	Switches for appliances – Part 2-1: Particular requirements for cord switches
IEC 61249 (all parts)	Materials for printed boards and other interconnecting structures
IEC 61347 (all parts)	Lamp controlgear
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 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 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 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 (*second revision*)’. 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 their document has not been enclosed as there are identical with the corresponding IEC standards for details, please refer the corresponding IEC 60598-1: 2024 or kindly contact:

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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 $25^{\circ}\pm 10^{\circ}$ C.

A-2 Cl 4.18 Resistance to Corrosion

As per Indian conditions, corrosion test temperature conditions shall be considered as $27^{\circ}\pm 5^{\circ}$ C.

A-3 Table 11 Substitute the following for the existing:

Table 11 – Supply cord
(Clause 8.2.2)

Sl. No. (1)	Luminaire (2)	Rubber (3)	PVC (4)	HFFR Cable (5)	FS Cable (6)
i)	Ordinary class I luminaires	IS 9968-1 ^b	IS 694 ^b	IS 17048 ^{a,b}	IS 17505-1 ^b
ii)	Ordinary class II luminaires	IS 9968-1 ^b	IS 694 ^b	IS 17048 ^{a,b}	IS 17505-1 ^b
iii)	Luminaires other than ordinary class I and II	IS 9968-1 ^b	IS 694 ^b	IS 17048 ^{a,b}	IS 17505-1 ^b
iv)	Portable rough service luminaires	IS 9968-1 ^b			
v)	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 12 Substitute the following for the existing:

Table 12– Wiring Dimension
(Clause 8.2.2)

SI No.	Condition	Minimum nominal conductor cross-section ⁱ (mm ²)	
		Ordinary luminaire	Other than ordinary luminaire
(1)	(2)	(3)	(4)
i)	General		
ii)	a) Conventional (designed for incandescent and gas discharge light source technologies) Product	0.75	1.0
iii)	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)
iv)	Declared to be “For indoor use only”, in accordance with 6.4.15.		
v)	a) Conventional (designed for incandescent and gas discharge light source technologies) Product	0.75	0.75
vi)	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)
vii)	When luminaire is provided with a 6/16 A socket outlet.	1.5	1.5
viii)	Class III luminaires or SELV or PELV circuits connections between parts of other luminaire types, with 2 A maximum rated current	0.4 ^{ac}	0.4 ^{ac}
ix)	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 ^{abc}	0.2 ^{abc}

x)	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}
<p>^a Provided that current-carrying capacity and mechanical properties are adequate.</p> <p>^b Able to withstand the normal and short circuit current provided by the associated controlgear.</p> <p>^c Compliance is checked by inspection and by the test in 8.2.10.</p> <p>^d Selected in relation to the maximum available current, compliance is checked by the test in 8.4.</p> <p>^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.</p> <p>^f Controlgear output voltage not exceeding 12 V RMS or 30 V ripple free DC.</p> <p>^g To check mechanical properties, the conductor assembly, fixed to the luminaire, shall be subjected to the test in 8.2.10.4.</p> <p>^h The minimum insulation thickness shall be selected to withstand the voltage stress occurring, see Table T.1.</p> <p>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 mm² and above, these values are listed in IEC 60228. For lower cross-sections the resistance value needs to be calculated accordingly.</p>			