भारतीय मानक
Indian Standard

IS 10322 (Part 5/Sec 5) : 2026
IEC 60598-2-5 : 2015

प्रदीपक

भाग 5 विवरणात्मक अपेक्षाएँ

अनुभाग 5 फ्लडलाइटस

(दूसरा पुनरीक्षण)

Luminaires

Part 5 Particular Requirements

Section 5 Floodlights

(Second Revision)

ICS 29.140.40

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NATIONAL FOREWORD

This Indian Standard (Part 5/Sec 5) (Second Revision) which is identical to IEC 60598-2-5 : 2015 'Luminaires — Part 2-5: Particular requirements — Floodlights' issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Illumination Engineering and luminaires Sectional Committee and approval of the Electrotechnical Division Council.

This standard was first published in year 1987 and subsequently revised in year 2013 to align it with the IEC 60598-2-5 : 1998. This revision has been bought out to align it with IEC 60598-2-5 : 2015.

This revision includes the following significant technical change with respect to the previous version:

a) Introduction of the requirements for the glass breaking test; and

b) References to IS 10322 (Part 1) have been updated

This standard covers the safety and photometric requirements of floodlights.

This standard is one among the series of Indian Standards which deals with luminaires. This series consists of the following parts and sections:

Part 1	General requirements
Part 5	Particular requirements,
Sec 1	Fixed general purpose luminaires
Sec 2	Recessed luminaires
Sec 3	Luminaires for road and street lighting
Sec 4	Portable general purpose luminaires
Sec 6	Handlamps
Sec 7	Lighting chains
Sec 8	Luminaries for emergency lighting
Sec 18	Luminaires for swimming pools and similar applications

This standard is to be read in conjunction with IS 10322 (Part 1) 'Luminaires: Part 1 General requirements'. For the sake of convenience, the clauses of this standard correspond to those of IS 10322 (Part 1), instead of reproducing full text of each clause; reference to relevant clauses of IS 10322 (Part 1) has been given.

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'; and

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.

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Indian Standard

LUMINAIRES

PART 5 PARTICULAR REQUIREMENTS

SECTION 5 FLOODLIGHTS

(Second Revision)

5.1 Scope

This part of IEC 60598 specifies requirements for floodlights for use with electrical light sources on supply voltages not exceeding 1 000 V.

5.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

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

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

5.3 Terms and definitions

For the purposes of this document , the terms and definitions given in IEC 60598-1, as well as the following apply.

5.3.1
floodlighting
lighting of a scene or an object, usually by projectors, in order to increase considerably its illuminance relative to its surroundings

Note 1 to entry: The difference in illumination between the subject and its surroundings may, alternatively, be achieved by colour.

5.3.2
floodlight
luminaire for floodlighting

Note 1 to entry: A floodlight can be for either exterior or interior use or for both.

5.4 Classification of luminaires

Luminaires shall be classified in accordance with the provisions of Section 2 of IEC 60598-1. The provisions of Section 0 of IEC 60598-1 apply. The tests described in each appropriate section of Part 1 shall be carried out in the order listed in this Part 2.

5.5 Marking

The provisions of Section 3 of IEC 60598-1 apply. In addition, the following information shall be provided in the instruction leaflet supplied with the luminaire, if applicable:

a) operating position, if not universal;

b) weight and overall dimensions of the floodlight;

c) maximum projected area of the floodlight;.

d) limitation of use indoors and/or outdoor;

e) maximum mounting height if ≤ 5 m, relevant to the selected method for protection against the falling of glass particles and the number of fixing devices.

5.6 Construction

The provisions of Section 4 of IEC 60598-1 apply together with the requirements of 5.6.1 to 5.6.8.

5.6.1 Floodlights for use outdoors shall have protection against the ingress of moisture at least equivalent to IPX3.

5.6.2 Lampholder brackets and lamp supports where used shall withstand normal usage throughout the life of the floodlight. They shall accept and retain lamps which are within the dimensional tolerances stated in the appropriate IEC publication where applicable, and locate the lamp or lamps in the designed relationship to the optical control devices in the floodlight.

5.6.3 When provision is made for alternative sizes of lamps or light centre positions, the adjusting means shall be positive and firmly retained in the selected position.

5.6.4 Refractors, reflectors or any other light controlling components shall be so marked or constructed that they can be fitted or replaced only in the correct relationship to the light source.

5.6.5 The means for attaching the floodlight to its support shall be appropriate to the weight of the floodlight.

For floodlights for use above ground level outdoors, the connection shall withstand wind speeds of 150 km/h on the projected surface of the floodlight assembly without undue deflection.

Fixings which carry the weight of the floodlight and internal accessories shall be provided with appropriate means to prevent the dislodgement of any part of the floodlight by vibration, either in service or during maintenance.

Parts of floodlights for mounting heights of 3 m or higher which are fixed other than with at least two devices, for example, screws or equivalent means of sufficient strength, shall have such extra protection as to prevent those parts falling and endangering persons, animals and surroundings, if a fixing device fails under normal conditions. The points of attachment which allow the floodlight to rotate and which are tested below are excluded from the requirements of this paragraph.

Compliance shall be checked by inspection and, for floodlights for use above ground level outdoors, by the additional following test.

The floodlight is mounted with its largest projected area as viewed in elevation lying in the horizontal plane, and with the means of attachment secured in accordance with the manufacturer's recommendations.

For floodlights for use above ground level outdoors, a constant evenly distributed load is applied for 10 min on the floodlight using sand-bags providing 2,4 kN per square metre of floodlight projected area. The floodlight is then turned 180° in the vertical plane, about the point of attachment, and the test is repeated.

During the test there shall be no failure or movement about the point of attachment and after either part of this test there shall be no permanent set exceeding 1°.

5.6.6 Where means for angular adjustment are provided, there shall be provision for positive locking after any such adjustments have been effected.

5.6.7 Floodlights for use outdoors shall be resistant to the vibrations which may occur during normal use.

5.6.8 In order to reduce the risk of injury caused by breaking glass, the following requirements, in relation to the intended mounting height of the luminaire, are applicable.

When luminaires are installed below 5 m, no additional requirements are requested on glass covers.

When luminaires are installed above 5 m, glass covers shall be:

a) constituted with a glass that fractures into small pieces,

b) constituted with a glass having a high impact shock resistance, or

c) protected by any means to retain glass fragments in case of breakage (e.g. guard, film coating).

Compliance is checked:

– *for a) by test and inspection according to 5.6.8.1;*

– *for b) by test and inspection according to 5.6.8.2;*

– *for c) by inspection.*

The luminaire manufacturer shall declare to the testing laboratory the method of protection used.

5.6.8.1 Protection by the use of glass that fractures into small pieces

Preconditioning of the luminaire and glass cover before testing is not required.

For flat glass, the glass component is supported over the whole area to ensure that particles will not be scattered upon fragmentation and that movement of the particles is prevented. Shatter the glass with a centre punch at a point 30 mm from the mid-point of one of the longer edges of glass towards the centre.

NOTE 1 A centre punch is a tool made of steel with a sharp point.

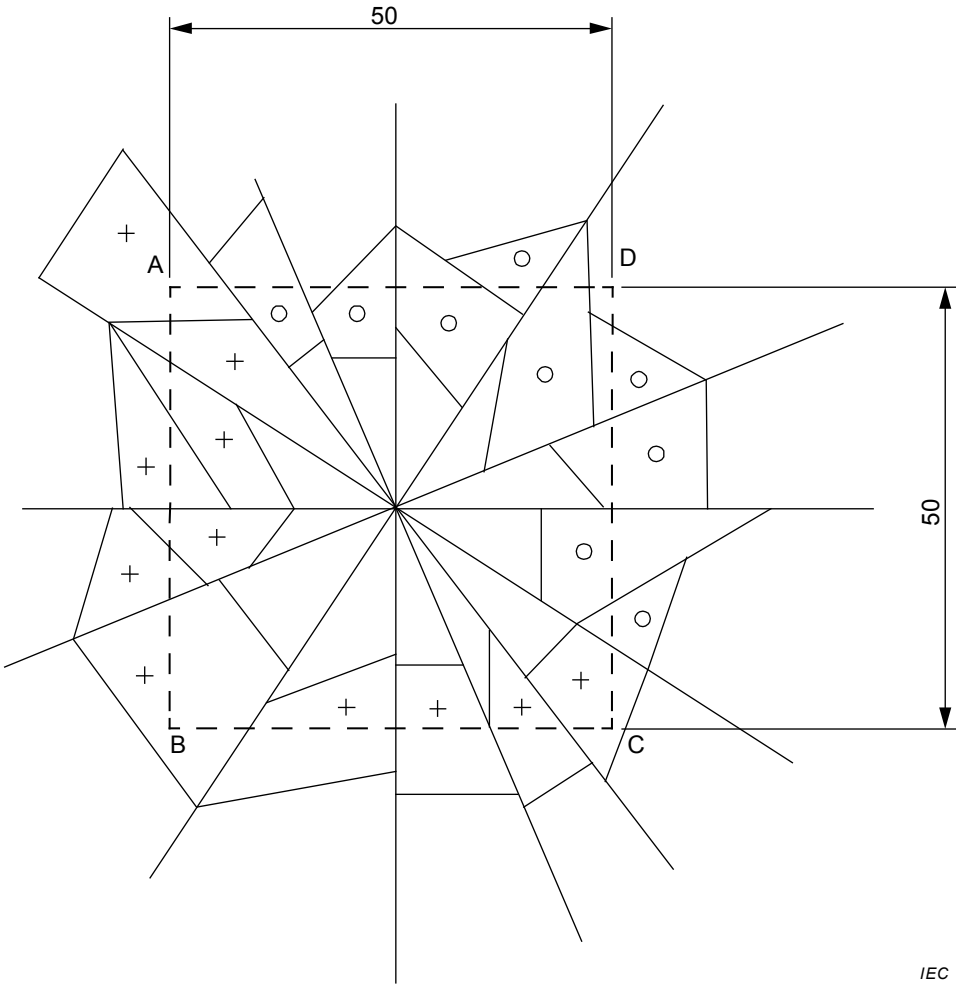
For formed glass, the glass component part shall be supported on all the surfaces (example of testing method could be the use of material like sand or a mould). The thickness of the material used as a support surface shall be more than 30 mm. The face of the glass shall be completely covered with an adhesive film in order to avoid any movement of the broken particles. Shatter the glass (from the inside or the outside) with a centre punch in the middle of the glass cover.

Within 5 min of fracture, count the particles in a 50 mm square, located approximately at the centre of the area of the coarsest fracture but always within the confines of the glass.

Compliance: A glass is deemed to have passed the test if the number of particles in the 50 mm square is more than 40; glass splinters and pieces less than the full thickness of the glass being excluded from the count. For glass of smaller size where a 50 mm × 50 mm area is not possible, the number of pieces necessary in the count is proportionately reduced. The size of the particles shall be less than 50 mm for all the dimensions.

In the count of the total number of particles in the 50 mm square, the particles in the centre of the square plus those at the edge shall be taken into account. In order to count particles at the edge of the square, it is recommended that all pieces intersected by two adjacent sides be included and all particles intersected by the two other sides be ignored (see Figure 1). Where possible, the area of measurement should not be within 30 mm of any edge, hole or machining of the glass or in a circle of 50 mm around the impact.

Dimensions in millimetres



+ Particles counted (intersected by two selected adjacent sides: AB/BC)

○ Particles not counted (not intersected by two selected adjacent sides: AB/BC)

Figure 1 – Counting particles at the edge of the square

NOTE 2 A suitable method of counting the particles is to place a square of 50 mm side, of transparent material over the glass and mark a spot of ink as each particle within the square counted.

NOTE 3 When the test sample remains as one sheet, the fragmentation lines would normally be used to indicate fractures and the size and number of particles would thus be evaluated, unless reinforcing or a film were employed.

5.6.8.2 Protection by the use of high impact resistant glass

5.6.8.2.1 Glass covers shall have high mechanical strength.

The luminaire and glass cover shall be preconditioned by the thermal endurance test of 12.3 of IEC 60598-1.

The test is performed on one sample and on the external face (opposite side of the lamp) of the glass mounted on the luminaire.

The testing procedure shall be in accordance with the IEC 62262, and the test apparatus used is the pendulum hammer or vertical hammer according to IEC 60068-2-75.

Compliance: The glass shall not be broken after a shock with impact energy of 5 J (equivalent to IK08 according to IEC 62262).

5.6.8.2.2 Glass covers shall not break into large pieces.

Glass covers shall be tested according the same testing procedure as 5.6.8.1.

Compliance: A glass is deemed to have passed the test if the number of particles in the 50 mm square is more than 20, glass splinters and pieces less than the full thickness of the glass being excluded from the count. For glass of smaller size where a 50 mm × 50 mm area is not possible, the number of pieces necessary in the count is proportionately reduced. The size of the particles shall be less than 50 mm for all the dimensions.

5.7 Creepage distances and clearances

The provisions of Section 11 of IEC 60598-1 apply.

5.8 Provision for earthing

The provisions of Section 7 of IEC 60598-1 apply.

5.9 Terminals

The provisions of Sections 14 and 15 of IEC 60598-1 apply.

5.10 External and internal wiring

The provisions of Section 5 of IEC 60598-1 apply.

5.11 Protection against electric shock

The provisions of Section 8 of IEC 60598-1 apply.

5.12 Endurance tests and thermal tests

Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of 12.4, 12.5, 12.6 and 12.7 of Section 12 of IEC 60598-1 after the test(s) of 9.2 but before the test(s) of 9.3 of Section 9 of IEC 60598-1 specified in 5.13 of this part of IEC 60598.

The provisions of Section 12 of IEC 60598-1 apply, but with the following modification.

5.12.1 When applying the limits of Section 12 of IEC 60598-1 to floodlights for use outdoors, 10 °C shall be deducted from the temperatures measured on the floodlight in the test enclosure to allow for the effects of natural air movement which occur in the working environment of the floodlight.

5.12.2 Glass covers shall be used within the thermal limits declared by the glass manufacturer. Thermal limits shall include the minimum and maximum temperature and the maximum Δt allowed on the glass.

NOTE Δt in this respect is the temperature difference which is allowed among two points (hottest and coldest spots) of the glass measured at the same time. The Δt value is specified by the glass manufacturer.

5.13 Resistance to dust and moisture

The provisions of Section 9 of IEC 60598-1 apply. For luminaires with an IP classification greater than IP20, the order of the tests specified in Section 9 of IEC 60598-1 shall be as specified in 5.12 of this part of IEC 60598.

5.14 Insulation resistance and electric strength

The provisions of Section 10 of IEC 60598-1 apply.

5.15 Resistance to heat, fire and tracking

The provisions of Section 13 of IEC 60598-1 apply.

Annex A
(informative)

Schedule of amended clauses containing more serious/critical requirements which require products to be retested

This new edition of IEC 60598-2-5 introduces no requirements that are more serious or critical. Consequently, floodlights which have been shown to comply with IEC 60598-2-5, second edition, can be accepted as complying with this new edition without retesting.

NOTE Where more serious/critical requirements are introduced in future amendments/editions of this standard, these clauses will be marked 'R' and scheduled in this annex.

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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 60068-2-75 Environmental testing — Part 2-75: Tests — Test Eh: Hammer tests	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 60598-1 Luminaires — Part 1: General requirements and tests	IS 10322 (Part 1) : 2026 Luminaires: Part 1 General requirements and tests (*second revision*) (IEC 60958-1 : 2024, MOD)	Modified
IEC 62262 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	IS 17050 : 2023/IEC 62262 : 2001 +AMD1 : 2021 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) (*first revision*)	Identical

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.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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