IEC 60598-2-5

Edition 3.0 2015-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Luminaires –
Part 2-5: Particular requirements – Floodlights

Luminaires –
Partie 2-5: Exigences particulières – Projecteurs

IEC 60598-2-5:2015-08(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LUMINAIRES –

Part 2-5: Particular requirements – Floodlights

FOREWORD

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International Standard IEC 60598-2-5 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

This third edition cancels and replaces the second edition published in 1998, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: it introduces requirements for the glass breaking test.

The text of this standard is based on the following documents:

FDIS	Report on voting
34D/1172/FDIS	34D/1180/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard is to be read in conjunction with IEC 60598-1: *Luminaires – Part 1: General requirements and tests*.

A list of all the parts in the IEC 60598 series, published under the general title *Luminaires* can be found on the IEC website.

NOTE In this standard, 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 publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The mechanical stress on floodlights is similar to the mechanical stress on luminaires for road and street lighting. Because of this reason this standard contains an update to align the mechanical and breakage test requirements on flat and curved glass with IEC 60598-2-3.

LUMINAIRES –

Part 2-5: Particular requirements – Floodlights

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.

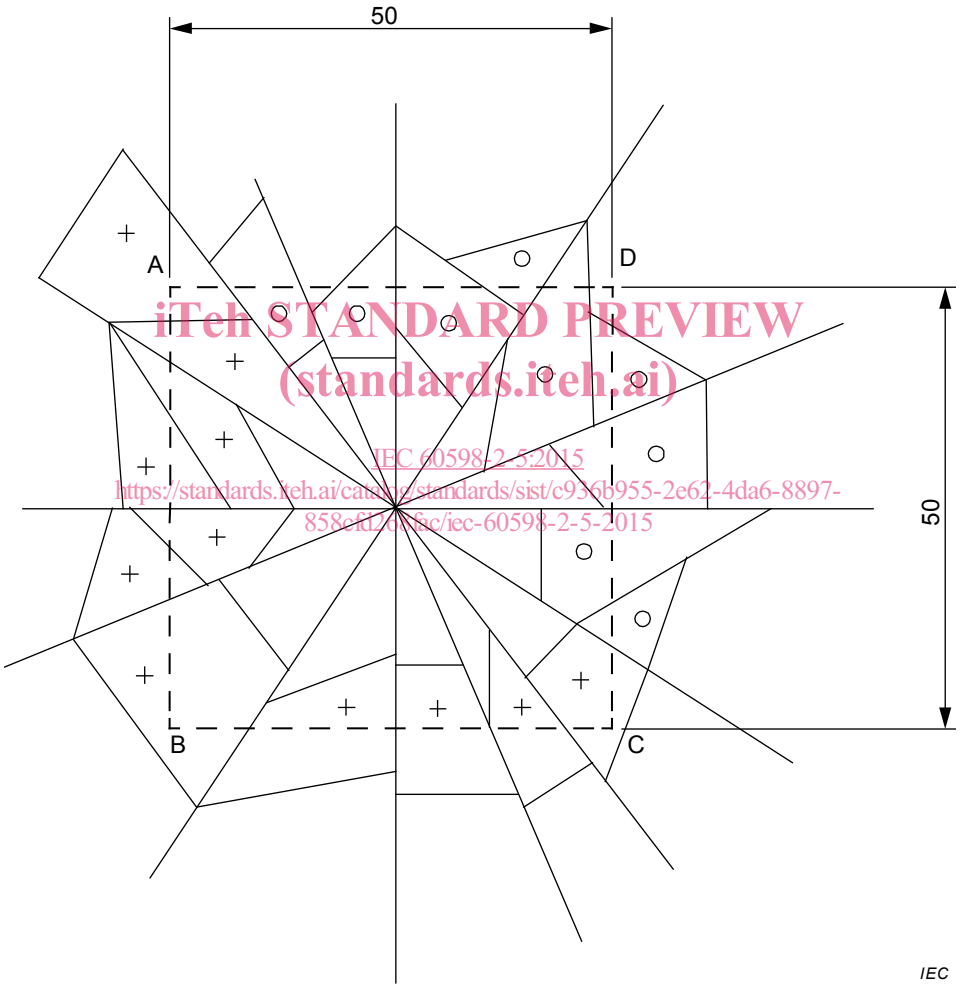
For formed glass, the glass component part shall be supported on all the surfaces (example of testing method could be the use of material like sand or a mould). The thickness of the material used as a support surface shall be more than 30 mm. The face of the glass shall be completely covered with an 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.