IEC 60598-2-2

Edition 4.0 2023-01
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

Luminaires –
Part 2-2: Particular requirements – Recessed luminaires and recessed air-handling luminaires



IEC 60598-2-2:2023-01 CMV(en)



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.140.50

ISBN 978-2-8322-6371-6

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LUMINAIRES –

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This commented version (CMV) of the official standard IEC 60598-2-2:2023 edition 4.0 allows the user to identify the changes made to the previous IEC 60598-2-2:2011 edition 3.0. Furthermore, comments from IEC SC 34D experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 60598-2-2 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34:Lighting. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2011. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition (there are no major technical changes, see Annex D):

a) The requirements specific to recessed luminaries given in IEC 60598-1 are now incorporated in this Part 2-2.
b) The requirements for air-handling luminaires given in IEC 60598-2-19 are now incorporated in this Part 2-2.
c) The references to Part 1 have been updated.

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

Draft	Report on voting
34D/1681/FDIS	34D/1688/RVD

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

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

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

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

This Part 2-2 is to be used in conjunction with the latest edition of IEC 60598-1 and its amendment(s). It was established on the basis of the ninth edition (2020).

NOTE 1 When "Part 1" is mentioned in this document, it refers to IEC 60598-1.

NOTE 2 In this document, the following print type is used:

– compliance statements: *in italic type*.

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

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

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LUMINAIRES –

Part 2-2: Particular requirements – Recessed luminaires and recessed air-handling luminaires

2.1 Scope

This part of IEC 60598 specifies requirements for recessed luminaires incorporating electric light sources for operation from supply voltages up to 1 000 V. ~~This section does not apply to air-handling or liquid-cooled luminaires.~~ It also specifies requirements for recessed air-handling luminaires for use with a ventilation duct or ventilated space (plenum).

NOTE The expressions "ventilation" and "ventilated" in this document refer to forced ventilation.

2.2 Normative references

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

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

2.3 Terms and definitions

For the purposes of this document, the terms and definitions given in Part 1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

2.3.1
air-handling luminaire 2
luminaire specially designed for use in association with an air conditioning system

Note 1 to entry: The air can pass either through the lamp chamber or through separate passages.

Note 2 to entry: For an explanation of the significance of t_a as applied to air-handling luminaires, see Annex C.

2.3.2
static operation 3
operation of a luminaire when not handling either forced supply or extract air but permitting natural convection

2.4 General test requirements

The provisions of Section 0 of Part 1 apply. The tests described in each appropriate section of Part 1 shall be carried out in the order listed in this document.

A procedure measuring ambient temperature in an installation is given in Annex A.

NOTE Annex A provides additional information on how ambient temperature is considered within the recessed cavity area relative to the t_a marking of the luminaire.

2.5 Classification of luminaires

Luminaires shall be classified in accordance with the provisions of Section 2 of Part 1.

2.6 Marking 4

2.6.1 The provisions of Section 3 of Part 1 apply, together with the requirements of 2.6.2, 2.6.3 and 2.6.4.

The following information shall be distinctly and durably marked on the luminaire and be visible during installation or behind a cover or part which is removed during installation.

2.6.2 For recessed luminaires with two IP ratings, both ratings shall be visible during installation and it shall be obvious to which parts of the luminaire the ratings refer. The relevant information shall be provided even if the rating is IP20 or the lower rating is specified as ordinary.

2.6.3 Where applicable, the relevant symbol for recessed luminaires not suitable for direct mounting on normally flammable surfaces shall be distinctly and durably marked on the luminaire and be visible during installation or behind a cover or part which is removed during installation.

When marked, this symbol shall be explained on the luminaire or in the manufacturer's instructions provided with the luminaire.

The minimum size of the symbol shall be 25 mm for each side. See Figure 1.



Figure 1 – Symbol for luminaires not suitable for direct mounting on normally flammable surfaces (suitable only for mounting on non-combustible surfaces)

2.6.4 Where applicable, the relevant symbol for luminaires not suitable for covering with thermally insulated material shall be distinctly and durably marked on the luminaire and be visible during installation or behind a cover or part which is removed during installation.

When marked, this symbol shall be explained on the luminaire or in the manufacturer's instructions provided with the luminaire.

The minimum size of the symbol shall be 25 mm for each side. See Figure 2.



Figure 2 – Symbol for luminaires not suitable for covering with thermally insulating material

2.7 Construction

The provisions of Section 4 of Part 1 apply.

2.8 Creepage distances and clearances

The provisions of Section 11 of Part 1 apply.

2.9 Provision for earthing

The provisions of Section 7 of Part 1 apply.

2.10 Terminals

The provisions of Sections 14 and 15 of Part 1 apply.

2.11 External and internal wiring

The provisions of Section 5 of Part 1 apply, together with the following.

Flexible cables or cords used as a means of connection to the supply, when supplied by the luminaire manufacturer, shall be at least equal in their mechanical and electrical properties to those specified in the IEC 60227 series or the IEC 60245 series and shall be capable of withstanding without deterioration the highest temperature to which they ~~may~~ can be exposed under normal conditions of use. Materials other than PVC and rubber are suitable if the above requirements are met.

Compliance shall be checked by the tests specified in Clause 2.13.

NOTE The use of flexible cables and cords with recessed luminaires is appropriate for the following reasons:

1) The flexible cable or cord cannot be easily touched as it is normally out of reach within the recess.
2) To facilitate installation of the luminaire into the recess.
3) To permit the adjustment of settable and adjustable recessed luminaires.

2.12 Protection against electric shock

The provisions of Section 8 of Part 1 apply, together with the following.

The parts of the luminaire and components within the ceiling space or cavity shall provide the same degree of protection against electric shock as the luminaire parts below the ceiling space.

NOTE The ceiling space or cavity is regarded as accessible for installation and maintenance, and the barriers do not provide adequate protection against electric shock.

Compliance is checked by inspection.

2.13 Endurance tests and thermal tests

2.13.1 The provisions of Section 12 of Part 1 apply, together with the following requirements.

2.13.2 The luminaire shall be mounted and tested according to Annex B. **5**

Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of Clauses 12.4, 12.5, 12.6 and 12.7 of Section 12 of Part 1 after the test(s) of Clause 9.2 but before the test(s) of Clause 9.3 of Section 9 of Part 1 specified in Clause 2.14 of this document.

2.13.3 Wiring, for connection to the supply, which passes into or can touch the luminaire, shall not reach an unsafe temperature.

Compliance shall be checked by the following tests:

The luminaire is connected to the supply using the cable provided with the luminaire or using a cable in accordance with the marking on the luminaire or, if not marked, as specified in the manufacturer's instruction sheet; otherwise PVC cable complying with the IEC 60227 series is used.

The hottest point is found (along the internal route or on the outer surface of the luminaire) with which the cable is likely to lie in contact during normal service. The cable is lightly held in contact at this point and the temperature of the insulation at the point of contact is measured as described in Annex K of Part 1.

The operating temperature of the cable shall not exceed the limits given in Table 1.

~~*Luminaires with an IP classification greater than IP20 shall be subjected to the relevant tests of Clauses 12.4, 12.5, 12.6 and 12.7 of Section 12 of IEC 60598-1 after the test(s) of Clause 9.2 but before the test(s) of Clause 9.3 of Section 9 of IEC 60598-1 specified in Clause 2.14 of this section of IEC 60598-2.*~~

Table 1 – Operating temperature of cable

Designation of cable	Limit of operating temperature
Cable (including sleeves) provided with the luminaire	The maximum temperature specified in Table 12.2 of Part 1
Cable not provided with the luminaire:	
a) luminaires with cable temperature marking	The marked temperature
b) luminaires without cable temperature marking	The maximum temperature specified in Table 12.2 of Part 1 for ordinary PVC not subject to mechanical stress

2.13.4 The test for air-handling luminaires is made under static operating conditions. **6**

When testing air-handling luminaires with stubs for connection of ventilation ducts, the stubs are suitably connected to the sides or to the top of the test box according to the installation instructions.

a) Normal operating conditions: During the test, the temperature of upward facing surfaces within the main air path shall not exceed 100 °C, except that for surfaces of light sources, the temperature shall not exceed 150 °C.

a) Abnormal operating conditions: The temperature of the convection air when leaving the luminaire shall not exceed 100 °C. During the test, the temperature of upward facing surfaces within the main air path shall not exceed 130 °C except that for surfaces of light sources, the temperature shall not exceed 150 °C.

2.14 Resistance to dust and moisture

2.14.1 The provisions of Section 9 of Part 1 apply, as well as the following.

2.14.2 For luminaires with an IP classification greater than IP20, the order of the tests specified in Section 9 of Part 1 shall be as specified in Clause 2.13 of this document.

2.14.3 **7** For recessed luminaires, the parts in the recess and the parts protruding from the recess shall each be tested according to their IP classification as indicated in the manufacturer's mounting instructions. A box encapsulating the part in the recess can be necessary.

NOTE The claimed IP rating is only applicable to the enclosure of the luminaire. In the case of a recessed luminaire, the IP rating of the luminaire does not protect the integrity of any seals outside of the luminaire, e.g. between the lower and upper parts of the ceiling.

2.15 Insulation resistance and electric strength

The provisions of Section 10 of Part 1 apply.

2.16 Resistance to heat, fire and tracking

The provisions of Section 13 of Part 1 apply.