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BSI Standards Publication

Luminaires

Part 2-2: Particular requirements — Recessed luminaires

National foreword

This British Standard is the UK implementation of EN 60598-2-2:2012. It is identical to IEC 60598-2-2:2011. It supersedes BS EN 60598-2-2:1997, which will be withdrawn on 13 December 2014.

The UK participation in its preparation was entrusted by Technical Committee CPL/34, Lamps and Related Equipment, to Subcommittee CPL/34/4, Luminaires.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Luminaires -
Part 2-2: Particular requirements -
Recessed luminaires
(IEC 60598-2-2:2011)

Luminaires -
Partie 2-2: Règles particulières -
Luminaires encastrés
(CEI 60598-2-2:2011)

Leuchten -
Teil 2-2: Besondere Anforderungen -
Einbauleuchten
(IEC 60598-2-2:2011)

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Foreword

The text of document 34D/1030/FDIS, future edition 3 of IEC 60598-2-2, prepared by IEC/SC 34D, "Luminaires", of IEC/TC 34, "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60598-2-2:2012.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2012-09-13
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2014-12-13

This document supersedes EN 60598-2-2:1996 + A1:1997.

The changes introduced by EN 60598-2-2:2012 are those required to maintain consistency with later versions of EN 60598-1 that have been published since the previous edition of this standard.

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Endorsement notice

The text of the International Standard IEC 60598-2-2:2011 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	-	-
IEC 60245	Series	Rubber insulated cables - Rated voltages up to and including 450/750 V	-	-
IEC 60598-1 -	-	Luminaires - Part 1: General requirements and tests	EN 60598-1	-

CONTENTS

LUMINAIRES –

Part 2-2: Particular requirements – Recessed 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.

2.2 Normative references

The following referenced documents are indispensable for the application 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 General test requirements

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 section of part 2.

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

2.4 Definitions

For the purposes of this document, the definitions of Section 1 of IEC 60598-1 apply.

2.5 Classification of luminaires

Luminaires shall be classified in accordance with the provisions of Section 2 of IEC 60598-1.

2.6 Marking

The provisions of Section 3 of IEC 60598-1 apply.

2.7 Construction

The provisions of Section 4 of IEC 60598-1 apply.

2.8 Creepage distances and clearances

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

2.9 Provision for earthing

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

2.10 Terminals

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

2.11 External and internal wiring

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

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 IEC 60227 or IEC 60245 and shall be capable of withstanding without deterioration the highest temperature to which they may be exposed under normal conditions of use. Materials other than p.v.c. and rubber are suitable if the above requirements are met.

Compliance shall be checked by the tests specified in 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 IEC 60598-1 apply.

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

The provisions of Section 12 of IEC 60598-1 apply together with the requirements of 2.13.1.

2.13.1 Wiring, for connection to the supply, which passes into or can touch the luminaire shall not reach 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 IEC 60227 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 IEC 60598-1.

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 IEC 60598-1
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 IEC 60598-1 for ordinary PVC not subject to mechanical stress

2.14 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 Clause 2.13 of this section of IEC 60598-2.

2.15 Insulation resistance and electric strength

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

2.16 Resistance to heat, fire and tracking

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

Annex A
(informative)

Measurement of ambient temperature in an installation

Considerable care is needed in deciding whether a recessed luminaire is operating within its thermal limits in an existing lighting installation. It is even more difficult to predict whether a luminaire will be satisfactory in a proposed installation and a "mock-up" is usually required. In the past, there have been instances of overheating of luminaires, for example, overheating owing to the presence of heating services above the ceiling plane.

The following procedure is for measuring the ambient temperature in which the luminaire operate. The t_a rating of the luminaire should be at least equal to this ambient temperature. The ambient temperature is measured in the plane of the ceiling (or other mounting surface) at the mid-point of a typical cavity. It is important that all other luminaires in the installation and all other services which may affect the thermal conditions of the luminaire are operating. The cavity is covered above the measuring point to prevent a non-typical interchange of air and so that the cover may absorb extraneous heat which would be absorbed by the luminaire.

NOTE It may be convenient to insert for this purpose the shell of the luminaire.

The test recess used to measure operating temperatures of recessed luminaires is intended to represent the most onerous closed recess (without other heat source) which is likely to be experienced in service. A recessed luminaire should not be installed in a cavity with a volume smaller than that of the test recess, unless the manufacturer of the luminaire has verified that operation will be satisfactory.

The test recess may also approximate to the thermal conditions above a suspended ceiling if the larger air volume is offset by heat-emitting services. In a particular installation, more onerous thermal conditions than this may exist and it is, therefore, essential to carry out a practical check. Conversely, the space above the ceiling may have free air movement and no heat-emitting services; for such an installation, the t_a rating of the luminaire as determined in the test recess incorporates a temperature margin and the t_a rating may be exceeded if the manufacturer of the luminaire has verified that operation in the particular installation will be satisfactory.

During tests, to determine or check a t_a rating for a luminaire, measurements of ambient temperature are made inside the draught-proof enclosure and outside the test recess in accordance with Annex K of IEC 60598-1.

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