

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Luminaires – **iTeh STANDARD PREVIEW**
Part 2-24: Particular requirements – Luminaires with limited surface
(standards.iteh.ai)
temperatures

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Partie 2-24: Exigences particulières – Luminaires avec surfaces à températures
limitées



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LUMINAIRES –

**Part 2-24: Particular requirements –
Luminaires with limited surface temperatures**

FOREWORD

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International Standard IEC 60598-2-24 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

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

This second edition cancels and replaces the first edition published in 1997. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) change of required degree of protection from IP6X to IP4X to harmonize with the international wiring rules;
- b) temperature limits introduced for glass surface of any light source exposed to risk of dust.

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

FDIS	Report on voting
34D/1094/FDIS	34D/1100/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.

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

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

In this standard, the following print types are used:

- requirements: roman type.
- *test specifications: italic type.*
- notes: smaller roman type.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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- withdrawn,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.

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LUMINAIRES –

Part 2-24: Particular requirements – Luminaires with limited surface temperatures

24.1 Scope

This part of the IEC 60598 series specifies requirements for luminaires intended for use where the necessity of limited temperature on the outer surface exists, due to the risk of thermal effects, combustion or degradation of materials but where the risk of explosion in the atmosphere does not exist. The luminaires are for use with electric light sources on supply voltages not exceeding 1 000 V.

This standard specifically excludes requirements for luminaires for use in explosive gas atmospheres and explosive dust atmospheres.

24.2 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 60364-4-42, *Low-voltage electrical installations – Part 4-42: Protection for safety – Protection against thermal effects*
<http://standards.iteh.ai/catalog/standards/sist/723de6ea-5811-4001-8a8c-4a6b70b7d1bd/iec-60598-2-24-2013>

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

ISO 4225:1994, *Air quality – General aspects – Vocabulary*

24.3 General test requirements

The provisions of Section 0 in IEC 60598-1 apply. The tests described in each appropriate section of IEC 60598-1 shall be carried out in the order listed in this standard.

24.4 Terms and definitions

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

24.4.1

dust

small solid particles in the atmosphere which settle out under their own weight, but which may remain suspended in air for some time (includes dust and grit as defined in ISO 4225)

24.4.2

explosive gas atmosphere

mixture with air, under atmospheric conditions, of flammable substances in the form of gas or vapour which, after ignition, permits self sustaining flame propagation

[SOURCE: IEC 60050-426:2008, 426-01-07]

24.4.3

explosive dust atmosphere

a mixture with air, under atmospheric conditions, of flammable substances in the form of dust, fibres or flyings which, after ignition, permits self-sustaining propagation

[SOURCE: IEC 60050-426:2008, 426-01-08]

24.5 Classification of luminaires

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

Additionally luminaires complying with this section are classified suitable for use in locations specified in IEC 60364-4-42 as follows.

- a) For use in environments where no unusual accumulation of dust is expected.
- b) For use in environments where an accumulation of non-conductive dust on the luminaire may be expected.
- c) For use in environments where an accumulation of conductive dust on the luminaire may be expected.

24.6 Marking

The provisions of Section 3 of IEC 60598-1 apply together with the following requirements.

24.6.1 Luminaires shall be marked with the  symbol (see Figure 1). This marking shall be visible and meet the requirements of 3.2 c) of IEC 60598-1.

<https://standards.iteh.ai/catalog/standards/sist/723de6ea-5811-4001-8a8c-4a6b70b7d1bd/iec-60598-2-24-2013>

Figure 1 – Symbol for luminaires with limited surface temperatures

24.6.2 From the manufacturers literature it shall be evident to which location the luminaire is intended in accordance with the luminaires classification as given in 24.5 of this standard.

24.7 Construction

The provisions of Section 4 of IEC 60598-1 apply, together with the requirements of 24.7.1 and 24.7.2 below.

24.7.1 Luminaires shall be provided with an enclosure providing a degree of protection of at least IP4X or in the presence of dust, IP5X or in the presence of conductive dust, IP6X.

For certain locations the international wiring rules may require at least IP5X or IP6X (see IEC 60364-4-42).

Compliance is checked by inspection.

24.7.2 Surfaces where dust may accumulate and all surfaces greater than 7,5 mm wide and non-vertical surfaces shall comply with the requirements of horizontal surfaces.

Vertical surfaces not complying with spacing requirements in 24.13 shall comply with the limits for horizontal surfaces.

Compliance is checked by inspection.

24.8 Creepage distances and clearances

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

24.9 Provision for earthing

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

24.10 Terminals and electrical connections

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

24.11 External and internal wiring


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

24.12 Protection against electric shock

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


24.13 Endurance test and thermal test

The provisions of Section 12 of IEC 60598-1 apply, together with the requirements of 24.13.1 to 24.13.3 below.

Luminaires with the  symbol shall be subjected to the relevant tests given in 12.4, 12.5, 12.6 and 12.7 of Section 12 of IEC 60598-1 after the test(s) given in 9.2 but before the test(s) given in 9.3 of Section 9 of IEC 60598-1 specified in 24.14 of this standard.

Where the gap between vertical surfaces is less than 30 mm, the temperature limit for horizontal surfaces shall apply.

24.13.1 Temperature limits – Normal operation


For luminaires with the  symbol, a temperature of 90 °C on all horizontal surfaces of the luminaire exposed to the accumulation of dust shall not be exceeded, at 1,06 times the rated voltage and, on all vertical external surfaces, the maximum temperature shall not exceed 150 °C at 1,06 times the rated voltage.

If a luminaire has an outer surface likely to be positioned against part of a building (wall or similar), with a temperature higher than 90 °C, but not exceeding 150 °C, the luminaire shall be provided with mounting instructions cautioning against such positioning.


The temperature of any part of the glass surface of any light source shall not exceed 150 °C. Only applicable for light sources exposed to risk of dust.

NOTE Light sources in luminaires which are rated IP5X or less are expected to be exposed to risk of dust accumulation.


24.13.2 Temperature limits – Abnormal operation

For luminaires with the  symbol, the requirements of 12.5.1 of Section 12 of IEC 60598-1 and 24.13.1 above apply.

24.13.3 Temperature limits – Fault conditions

For luminaires with the  symbol, the requirements of 12.6 of Section 12 of IEC 60598-1 apply with the addition that temperatures on horizontal surfaces of the luminaire exposed to the accumulation of dust shall not exceed 115 °C. In addition the temperature of 24.13.1 above applies for all vertical external surfaces and the glass surfaces of the light source.

24.14 Resistance to dust, solid objects and moisture

The provisions of Section 9 of IEC 60598-1 apply. For luminaires with the  symbol, the order of tests specified in Section 9 of IEC 60598-1 shall be as specified in 24.13.

24.15 Insulation resistance and electric strength

The provisions of Section 10 of IEC 60598-1 apply.
<https://standards.iteh.ai/catalog/standards/sist/723de6ea-5811-4001-8a8c-4a6b70b7d1bd/iec-60598-2-24-2013>

24.16 Resistance to heat, fire and tracking

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

Bibliography

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <http://www.electropedia.org>).

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