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## Horticultural lighting - Luminaires for horticultural lighting - Safety

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC 63545 has been prepared by IEC technical committee 34: Lighting. It is an International Standard.

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

| Draft | Report on voting |
|---|---|
| 34/1419/FDIS | 34/1432/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/publications.

This document is to be used in conjunction with the relevant corresponding document of the IEC 60598-2 series for general lighting purpose, as follows:

– IEC 60598-2-1 Fixed general purpose luminaires, or
– IEC 60598-2-2 Recessed luminaires, or
– IEC 60598-2-4 Portable general purpose luminaires, or
– IEC 60598-2-5 Floodlights, or
– IEC 60598-2-20 Lighting chains, or
– IEC 60598-2-21 Rope lights.

Note that for each particular use case and for the purposes of this document, one single relevant reference document from the IEC 60598-2 series shall be applied, and no mixing between the various documents in the IEC 60598-2 series shall occur.

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– withdrawn, or
– revised.

# INTRODUCTION

This document acknowledges the need for safety specifications for horticultural luminaires, which are considered as additional requirements or different requirements when comparing with the similar type of luminaires used for general lighting purposes.

Compared with the safety requirements for general lighting purpose luminaires, the differences for horticultural luminaires are mainly derived based on the following considerations:

– change of environmental conditions for the application: Horticultural luminaires are normally used indoors, but with the purpose of horticulture cultivation, the environmental conditions are normally severe.

– change of application purpose from vision sensation to horticulture use. Photobiological safety requirements and UV resistance requirements are developed based on this change in application purposes.

The provisions in this document represent the technical knowledge of experts from the field of horticultural lighting and are developed in close context with IEC 60598-1 and the corresponding document of the IEC 60598-2 series.

## 1 Scope

This document specifies safety requirements for horticultural luminaires, incorporating electric light sources for operation from supply voltage up to 1 000 V.

## 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 60068-2-11, *Environmental testing - Part 2-11: Tests - Test Ka: Salt mist*

IEC 60598-1:2024, *Luminaires - Part 1: General requirements and tests*

IEC 60598-2-1, *Luminaires - Part 2-1: Particular requirements - Fixed general purpose luminaires*

IEC 60598-2-2, *Luminaires - Part 2-2: Particular requirements - Recessed luminaires and recessed air-handling luminaires*

IEC 60598-2-4, *Luminaires - Part 2-4: Particular requirements - Portable general purpose luminaires*

IEC 60598-2-5, *Luminaires - Part 2-5: Particular requirements - Floodlights*

IEC 60598-2-20, *Luminaires - Part 2-20: Particular requirements - Lighting chains*

IEC 60598-2-21, *Luminaires - Part 2-21: Particular requirements - Rope lights*

IEC 60730-1:2022, *Automatic electrical controls - Part 1: General requirements*

IEC 62471:2006, *Photobiological safety of lamps and lamp systems*

IEC 62471-7:2023, *Photobiological safety of lamps and lamp systems - Part 7: Light sources and luminaires primarily emitting visible radiation*

# Bibliography

IEC 60050-195:2021, *International Electrotechnical Vocabulary (IEV) - Part 195: Earthing and protection against electric shock,* available at https://www.electropedia.org

IEC 60050-851:2008, *International Electrotechnical Vocabulary (IEV) - Part 851: Electric welding,* available at https://www.electropedia.org

IEC 60127-1, *Miniature fuses - Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60364-7-705, *Low-voltage electrical installations - Part 7-705: Requirements for special installations or locations - Agricultural and horticultural premises*

IEC 60417, *Graphical symbols for use on equipment,* available at http://www.graphical-symbols.info/equipment

IEC 60730-2-9, *Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing controls*

IEC 60812, *Failure modes and effects analysis (FMEA and FMECA)*

UL 8802:2023, *Ultraviolet (UV) Germicidal Equipment and Systems*

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