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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Horticultural lighting – LED packages for horticultural lighting – Part 1: Specification sheet

Eclairage horticole – Boîtiers LED pour l'éclairage horticole – Partie 1: Feuille de spécification



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HORTICULTURAL LIGHTING – LED PACKAGES FOR HORTICULTURAL LIGHTING –

Part 1: Specification sheet

FOREWORD

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IEC 63403-1 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
34/1142/FDIS	34/1161/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.

A list of all parts in the IEC 63403 series, published under the general title *Horticultural lighting – LED packages for horticultural lighting*, can be found on the IEC website.

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- withdrawn, or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.

HORTICULTURAL LIGHTING – LED PACKAGES FOR HORTICULTURAL LIGHTING –

Part 1: Specification sheet

1 Scope

This part of IEC 63403 specifies the requirements for specification sheets relating to LED packages designed for horticultural lighting purposes.

LED packages designed for horticultural lighting purposes in this document can be designed for emission of white light or emission of optical radiation at specified wavelengths.

LED packages for horticultural lighting purposes are usually designed into LED modules or luminaires.

This document does not contain compliance criteria, which can be affected by module or luminaire design, and are assumed to be plant species and growth stage dependent.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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

3.1
LED package
single electric component comprising principally at least one LED die

Note 1 to entry: An LED package does not include the control unit of the control gear, does not include a cap, is not connected directly to the supply voltage and does not include active electronic components.

Note 2 to entry: An LED package is a discrete component and part of the LED module or LED lamp.

Note 3 to entry: An LED package can include one or more of the following:

- optical elements;
- light converters (phosphors);
- thermal, mechanical, and electric interfaces;
- components to address ESD concerns.

[SOURCE: IEC 60050-845:2020, 845-27-065]

3.2
junction temperature
t_j
temperature at the p-n junction

Note 1 to entry: Junction temperature is expressed in degree Celsius (°C).

[SOURCE: IEC 60050-845:2020, 845-27-068]

3.3
bin
<property of LED dies or LED packages> specification of an LED die or LED package, or a set thereof, by means of a range of performance characteristics

Note 1 to entry: The characteristic can include chromaticity, photometric, radiometric, and electrical performance.

Note 2 to entry: The designation of a bin is often referred to as the "bin code".

[SOURCE: IEC 60050-845:2020, 845-27-066]

3.4
family
<of LED packages> set of LED packages characterized by common features

3.5
brand name
name used by a manufacturer to distinguish its products from products made by other manufacturers

3.6
centroid wavelength
λ_c
wavelength at the weighted centre of a spectrum

Note 1 to entry: The centroid wavelength is the weighted average of each wavelength and can be calculated as

$$\lambda_c = \frac{\int_0^\infty \lambda \cdot S(\lambda)\, d\lambda}{\int_0^\infty S(\lambda)\, d\lambda}$$

where λ is the wavelength and $S(\lambda)$ is the spectral power distribution.

Note 2 to entry: The centroid wavelength is normally used for LED packages based on LED die(s) emitting nearly monochromatic radiation.

3.7
dominant wavelength
<of a colour stimulus> wavelength of the monochromatic stimulus that, when additively mixed in suitable proportions with the specified achromatic stimulus, matches the colour stimulus considered in the CIE 1931 x, y chromaticity diagram

Note 1 to entry: The dominant wavelength is expressed in nanometre (nm).

[SOURCE: IEC 60050-845:2020, 845-23-062, modified – Note 1 to entry has been deleted.]

3.8
photon flux efficacy
photon flux emitted divided by the electrical input power of the LED