

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Horticultural lighting – LED packages for horticultural lighting –
Part 2: Binning**

**Éclairage horticole – Boîtiers LED pour l'éclairage horticole –
Partie 2: Tri**

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IEC 63403-2:2024

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IEC 63403-2 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
34/1141/FDIS	34/1162/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

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HORTICULTURAL LIGHTING LED PACKAGES FOR HORTICULTURAL LIGHTING –

Part 2: Binning

1 Scope

This part of IEC 63403 specifies the binning method for LED packages for horticultural lighting.

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 63403-1, *Horticultural lighting – LED packages for horticultural lighting – Specification sheet*

ISO/CIE 11664-1, *Colorimetry – Part 1: CIE Standard Colorimetric Observers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63403-1 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>

4 Measurement conditions

4.1 Temperature

Binning of the LED packages shall be conducted at a junction temperature of 85 °C by one of the following methods:

- a) binning according to the values measured at $t_j = 85$ °C;
- b) binning according to the values obtained by measurement at $t_j = 25$ °C followed by extrapolation to 85 °C.

4.2 Currents

For LED packages for horticultural lighting, the binning current shall be chosen from those listed in Table 1, based on the most common application for this LED package.

Table 1 – Binning currents

Number	Binning current $I_{f, \text{bin}}$
	mA
1	30
2	50
3	65
4	100
5	120
6	150
7	350
8	500
9	700
10	850
11	1 050
12	1 400
13	1 800

4.3 Pre-conditioning

Before starting the measurement procedure for binning, the LED package shall be stabilized at the selected junction temperature t_j of ± 5 °C.

5 Measurement

The measurement shall be performed according to the applicable CIE publications.

NOTE 1 The applicable CIE publications can be CIE 225:2017 for steady state measurement, or CIE 226:2017 for the high-speed measurement (transient measurement). An international standard for the optical measurement methods of LED package and LED arrays is also under development by CIE.

NOTE 2 The chosen optical measurement method has an effect on the junction temperature during the measurement.

6 Binning

6.1 Binning by forward voltage

The size of the forward voltage bins shall be no larger than 100 mV.

6.2 Binning by photon flux

The quantity of the emitted optical radiation shall be binned based on the photon flux or radiant flux.

The photon flux shall be expressed in $\mu\text{mol/s}$.

NOTE The photon flux expressed in photons/s is divided by Avogadro's number and multiplied by 10^6 to express the result in $\mu\text{mol/s}$.

6.3 Binning by chromaticity

6.3.1 Narrow-band emitters

Narrow-band emitters shall be binned based on the centroid wavelength or dominant wavelength.

6.3.2 Achromatic emitters

Achromatic emitters shall be binned based on the chromaticity coordinates according to ISO/CIE 11664-1.

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Bibliography

CIE 225:2017, *Optical Measurement of High-Power LEDs*

CIE 226:2017, *High-Speed Testing Methods for LEDs*

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