



**NSAI**  
Standards

Irish Standard  
I.S. EN 12665:2018

# Light and lighting - Basic terms and criteria for specifying lighting requirements

**I.S. EN 12665:2018**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 12665:2018

*Published:*

2018-06-20

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2018-07-08

ICS number:

01.040.91

91.160.01

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN 12665:2018 is the adopted Irish version of the European Document EN 12665:2018, Light and lighting - Basic terms and criteria for specifying lighting requirements

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

**EUROPEAN STANDARD**

**EN 12665**

**NORME EUROPÉENNE**

**EUROPÄISCHE NORM**

June 2018

ICS 01.040.91; 91.160.01

Supersedes EN 12665:2011

English Version

## Light and lighting - Basic terms and criteria for specifying lighting requirements

Lumière et éclairage - Termes de base et critères pour la spécification des exigences en éclairage

Licht und Beleuchtung - Grundlegende Begriffe und Kriterien für die Festlegung von Anforderungen an die Beleuchtung

This European Standard was approved by CEN on 8 February 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>
<b>Introduction .....</b>	<b>4</b>
<b>1 Scope .....</b>	<b>5</b>
<b>2 Normative references .....</b>	<b>5</b>
<b>3 Terms and definitions .....</b>	<b>5</b>
<b>3.1 Eye and vision.....</b>	<b>5</b>
<b>3.2 Light and colour .....</b>	<b>8</b>
<b>3.3 Lighting equipment .....</b>	<b>23</b>
<b>3.4 Daylight.....</b>	<b>33</b>
<b>3.5 Lighting installations .....</b>	<b>35</b>
<b>3.6 Lighting measurements .....</b>	<b>47</b>
<b>4 Framework for the specification of lighting requirements .....</b>	<b>49</b>
<b>4.1 General.....</b>	<b>49</b>
<b>4.2 Illuminance.....</b>	<b>49</b>
<b>4.3 Luminance .....</b>	<b>49</b>
<b>4.4 Glare.....</b>	<b>49</b>
<b>4.4.1 Disability glare .....</b>	<b>49</b>
<b>4.4.2 Discomfort glare.....</b>	<b>49</b>
<b>4.5 Colour .....</b>	<b>50</b>
<b>4.5.1 Colour rendering.....</b>	<b>50</b>
<b>4.5.2 Light source colour.....</b>	<b>50</b>
<b>4.6 Energy.....</b>	<b>50</b>
<b>4.7 Maintenance.....</b>	<b>50</b>
<b>4.7.1 Maintenance.....</b>	<b>50</b>
<b>4.7.2 Maintenance factor.....</b>	<b>50</b>
<b>4.8 Measurements and calculations .....</b>	<b>50</b>
<b>Annex A (informative) Additional explanation of defined terms .....</b>	<b>51</b>
<b>Annex B (informative) Index of terms .....</b>	<b>54</b>
<b>Bibliography.....</b>	<b>63</b>

## **European foreword**

This document (EN 12665:2018) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document will supersede EN 12665:2011.

The main technical changes in this revision are the inclusion of terms previously absent, collated from:

- EN 1837;
- EN 1838;
- EN 12193;
- EN 12464;
- EN 13032;
- EN 13201; and
- EN 15193.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**EN 12665:2018 (E)****Introduction**

This European Standard specifies a basic framework intended to be used for the specification of lighting requirements.

Where a term is contained in CIE Publication CIE S 017/E:2011 ILV, *International Lighting Vocabulary* or IEC 60050-845, *International Electrotechnical Vocabulary, Chapter 845: Lighting*, a reference is given to the equivalent term where the terms in both documents are, for all practical purposes, identical. For some terms additional explanation is given in informative Annex A. An index of terms is given in informative Annex B.

The lighting requirements for a space are determined by the need to provide:

- adequate illumination for safety and movement;
- conditions that will facilitate visual performance and colour perception; and
- acceptable visual comfort for the occupants in the space.

The relative importance of these factors will vary for different applications. This basic framework covers aspects in the field of vision, photometry and colorimetry, involving natural and man-made optical radiation over the UV, the visible and the IR regions of the spectrum, and application subjects covering all usages of light, indoors and outdoors, including environmental, energy and sustainability requirements and aesthetics and non- image forming biological aspects.

Peculiar and specific terms can be defined in application standards.

Considerations should also be given to the energy used by lighting and to maintenance.

The parameters that need to be specified to ensure good visual conditions and an efficient lighting installation are common to many applications. These are dealt with in Clause 4 of this standard.

LED terms and definitions already existing within EN 62504 have not been included in this standard.

For terms and definitions concerning daylight openings within a building envelope the following standards may also be consulted:

EN 12216, Shutters, external blinds, internal blinds - Terminology, glossary and definitions

EN 12519, Windows and pedestrian doors - Terminology



## 1 Scope

This document defines basic terms and definitions for use in all lighting applications. This document also sets out a framework for the specification of lighting requirements, giving details of aspects that are to be considered when setting those requirements.

## 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 60050-845:1987, *International Electrotechnical Vocabulary — Chapter 845: Lighting*

CIE S 017/E:2011, *ILV: International Lighting Vocabulary*

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1 Eye and vision

#### 3.1.1

##### **adaptation**

process by which the state of the visual system is modified by previous and present exposure to stimuli that can have various luminances, spectral distributions and angular subtenses

Note 1 to entry: The terms light adaptation and dark adaptation are also used, the former when the luminances of the stimuli are of at least several candelas per square metre, and the latter when the luminances are of less than some hundredths of a candela per square metre.

Note 2 to entry: Adaptation to specific spatial frequencies, orientations, sizes, etc. are recognized as being included in this definition.

[SOURCE: IEC 60050-845:1987 845-02-07 / CIE S 017/E:2011; 17-18]

#### 3.1.2

##### **accommodation**

adjustment of the dioptric power of the crystalline lens by which the image of an object, at a given distance, is focused on the retina

[SOURCE: IEC 60050-845:1987 845-02-44 / CIE S 017/E:2011; 17-10]

#### 3.1.3

##### **visual acuity**

##### **visual resolution**

<qualitatively> capacity for seeing distinctly fine details that have very small angular separation

[SOURCE: IEC 60050-845:1987 845-02-43 / CIE S 017/E:2011; 17-1403, modified - quantitative definition detached, see 3.1.15]

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-