DIN EN 12464-1

ICS 91.160.10

Supersedes
DIN EN 12464-1:2011-08

Light and lighting – Lighting of work places – Part 1: Indoor work places; English version EN 12464-1:2021, English translation of DIN EN 12464-1:2021-11

Licht und Beleuchtung –
Beleuchtung von Arbeitsstätten –
Teil 1: Arbeitsstätten in Innenräumen;
Englische Fassung EN 12464-1:2021,
Englische Übersetzung von DIN EN 12464-1:2021-11

Lumière et éclairage –
Éclairage des lieux de travail –
Partie 1: Lieux de travail intérieurs;
Version anglaise EN 12464-1:2021,
Traduction anglaise de DIN EN 12464-1:2021-11

Document comprises 121 pages

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original shall be considered authoritative.

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A comma is used as the decimal marker.

National foreword

This document (EN 12464-1:2021) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, Working Group WG 2 “Lighting of work places” (Secretariat: DIN, Germany).

The responsible German body involved in its preparation was *DIN-Normenausschuss Lichttechnik* (DIN Standards Committee Lighting Technology), Working Committee NA 058-00-04 AA “Artificial indoor lighting”.

Health and safety

In Germany, basic requirements for lighting with regard to the safety and health of employees at work are not regulated in this standard but in the *Arbeitsstättenverordnung (ArbStättV)* (German Workplace Ordinance). All workplaces fall within the scope of the *ArbStättV*. The general requirements of the *ArbStättV* regarding lighting are further specified in the workplace regulation ASR A3.4 “Lighting”.

Further guidance on the subject of lighting is provided in specialist publications issued by the accident insurance institutions, for example DGUV Information 215-210 “Natural and artificial lighting in workplaces”, DGUV Information 215-442 “Lighting in offices” and DGUV Information 215-220 “Non-visual effects of light on people”. The accident prevention regulation “Principles of prevention” (DGUV Regulation 1) refers to the *ArbStättV*.

If the planning and/or operation of lighting systems in workplaces is carried out exclusively in accordance with this standard, this may result in non-compliance with the above-mentioned state requirements or the requirements of the accident insurance institutions for lighting. Additional or deviating requirements of ASR A3.4 to this standard concern in particular:

— the grouping of the visual task areas into one work area;

— the extension of the immediate surrounding area to the rest of the space;

— the minimum illuminance levels for some workplaces;

— the uniformity of the illuminance levels.

The DIN documents corresponding to the documents referred to in this document are as follows:

IEC TR 61547-1:2020	DIN EN 61547 Supplement 1 (VDE 0875-15-2 Supplement 1):2021-03
IEC TR 63158:2018	DIN IEC/TR 63158 (DIN SPEC 43197):2019-06
ISO 3864-1	DIN ISO 3864-1

Amendments

This standard differs from DIN EN 12464-1:2011-08 as follows:

a) the needs of the users are better reflected by an additional level of recommendations, which are placed next to the minimum requirements in the tables in Clause 6. The already existing requirements of 4.3.3 thus take on greater significance;

b) the effects of visual and non-visual effects of light are explained in the new Annex C;

c) the requirements for walls, ceilings and cylindrical illuminance levels are moved from the main text to the tables in Clause 6 to improve visibility and user-friendliness;

d) a new chapter on considerations for design (Clause 5) provides guidance on how to apply the requirements when designing lighting for visual tasks and activities in a space;

e) the relationship between the visual task area and its immediate surroundings and the background area is listed in more detail (4.3.3, 4.3.4, 4.3.5);

f) the requirements regarding glare have been further clarified to improve usability, including an explanation of screening in 4.5. Recommended procedures for unified glare rating (UGR) in unusual situations have been added in a new Annex B;

g) flickering and stroboscopic effects have been updated (4.8);

h) the standard has been editorially revised;

i) a new Annex D has been introduced, which contains examples for the derivation of requirements in different applications (office/industrial) for the planning of lighting.

Previous editions

DIN 5035: 1935-11, 1953-07, 1963-08
DIN 67505-1: 1962-07
DIN 67505-2: 1962-06
DIN 5035-1: 1972-01, 1979-10, 1990-06
DIN 5035-2: 1972-01, 1979-10, 1990-06, 1990-09
DIN 5035-3: 1974-02, 1988-09
DIN 67505: 1975-10, 1986-09
DIN 67528: 1976-05, 1993-12
DIN 5035-4: 1983-02
DIN 5035-7: 1988-09
DIN EN 12464-1: 2003-03, 2011-08

National Annex NA
(informative)

Bibliography

DIN EN 61547 Supplement 1 (VDE 0875-15-2 Supplement 1):2021-03, *Equipment for general lighting purposes — EMC immunity requirements; Supplement 1: Objective light flickermeter and voltage fluctuation immunity test method (IEC TR 61547-1:2020)*

DIN IEC/TR 63158 (DIN SPEC 43197):2019-06, *Equipment for general lighting purposes — Objective test method for stroboscopic effects of lighting equipment (IEC TR 63158:2018 + COR1:2018)*

DIN ISO 3864-1 *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Light and lighting - Lighting of work places - Part 1: Indoor work places

Lumière et éclairage - Éclairage des lieux de travail - Partie 1: Lieux de travail intérieurs

Licht und Beleuchtung - Beleuchtung von Arbeitsstätten - Teil 1: Arbeitsstätten in Innenräumen

This European Standard was approved by CEN on 9 May 2021.

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

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

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European foreword

This document (EN 12464-1:2021) 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 February 2022, and conflicting national standards shall be withdrawn at the latest by February 2022.

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 supersedes EN 12464-1:2011.

The original standard EN 12464-1:2002 was already further developed in its first revision EN 12464-1:2011. It specifies the requirements for good lighting solutions rather than giving design guidelines. With the experience of applying the standard next steps are taken in the development of this new edition and human and user needs are given broader acknowledgement. Lighting requirements for task areas to fulfil visual tasks are given a close relation to the space in which they are carried out. Technologically LED has taken over as the main light source from previous technologies. The main changes with respect to the previous edition are:

— The recommendations given in the tables in Clause 7 take user needs more into account than in the past. Thus, the requirements for necessary illuminance according to Clause 7 are more differentiated.

— The impact of visual and non-visual (non-image forming) effects of light on people's performance and well-being are elaborated in the new informative Annex B.

— Requirements for walls, ceilings and cylindrical illuminances are moved from the main text to the tables in Clause 7 for increased visibility and usability.

— A new chapter on design considerations (Clause 6) gives advice on how to apply the requirements when designing lighting for visual tasks and activities within a space.

— Relation between task area and its immediate surround and the background area is more detailed (5.3.3, 5.3.4, 5.3.5).

— Glare requirements have been clarified for improved usability including clarification for shielding in 5.5 and recommended practices for UGR in non-standard situations has been added in a new informative Annex A.

— Flicker and stroboscopic effect is updated (5.8).

— A new informative Annex C is introduced including examples on how to derive the requirements in different applications (office/industry) for designing lighting.

— A new informative Annex D is introduced to provide additional information on the specific requirements for railway installations that are given in Table 61.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Adequate and appropriate lighting enables people to perform visual tasks efficiently and accurately including tasks performed over a prolonged time period or of a repetitive nature. The degree of visibility and comfort required in a wide range of work places is governed by the type and duration of the activity. The lighting also affects circadian rhythms and mood as well as improving our performance and well-being.

The final designed, installed and operated lighting system should provide efficient and effective good quality lighting for the user needs tailored to their visual capacity, e.g. elderly users in workplaces.

It is important that all clauses of this document are followed although the target values for lighting criteria and specific requirements, depending of each type of task/activity, are tabulated in the schedule of lighting requirements (see Clause 7).

This document reflects the generally recognized best practice.