

PÄEVAVALGUS HOONETES

Daylight in buildings

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 17037:2019+A1:2021 sisaldab Euroopa standardi EN 17037:2018+A1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 17037:2019+A1:2021 consists of the English text of the European standard EN 17037:2018+A1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 22.12.2021.	Date of Availability of the European standard is 22.12.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.160.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autoriõiguse kaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about standards copyright protection, please contact the Estonian Centre for Standardisation and Accreditation: Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Daylight in buildings

Lumière naturelle dans les bâtiments

Tageslicht in Gebäuden

This European Standard was approved by CEN on 29 July 2018 and includes Corrigendum 1 issued by CEN on 13 October 2021 and Amendment 1 approved by CEN on 24 August 2021.

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, 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 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

Contents	Page
European foreword	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Symbols and abbreviations	10
5 Assessment of daylight in interior spaces	12
5.1 Daylight Provision	12
5.1.1 General	12
5.1.2 Criteria for daylight provision	12
5.1.3 Daylight Provision Calculation Methods	13
5.1.4 Verification of daylight provision	13
5.2 Assessment for view out	13
5.2.1 General	13
5.2.2 Criteria for view out	14
5.2.3 Verification of view out	14
5.3 Exposure to sunlight	14
5.3.1 General	14
5.3.2 Criteria for exposure to sunlight	14
5.3.3 Verification of sunlight duration	14
5.4 Protection from glare	15
5.4.1 General	15
5.4.2 Criteria for protection from glare	15
5.4.3 Verification for protection from glare	15
Annex A (informative) Recommendations	16

A.1	General	16
A.2	Recommendations for daylight provision in a space.....	16
A.3	Recommendations for view	20
A.4	Recommendation for exposure to sunlight.....	21
A.5	Recommendation for glare protection	21
Annex B	(informative) Daylight.....	23
B.1	General	23
B.2	Calculation grids	23
B.3	Calculation methods.....	24
B.3.1	General	24
B.3.2	Calculation method using daylight factor (method 1)	24
B.3.3	Calculation method using illuminance level (method 2)	25
B.4	Daylight availability.....	25
B.5	Validation of actual daylighting performance	26
Annex C	(informative) View out.....	27
C.1	General	27
C.2	Quality of view out.....	27
C.3	Width of view out.....	27
C.4	Verification of view out	32
C.4.1	Simplified verification method.....	32
C.4.2	Advanced verification method.....	33
Annex D	(informative) Exposure to sunlight	36
D.1	General	36
D.2	Principle of assessment of hours of sunlight.....	36
D.3	Method using software	38
D.4	Method using manual geometric constructions	40
D.5	Determination of the position of the sun in the sky.....	40
D.6	Evaluation rules for sunlight duration	45

D.7	Sunlight duration in the reference point <i>P</i>	47
D.7.1	Example	47
D.7.2	Calculation	47
D.7.3	Result	47
D.8	On-site verification of duration of exposure to sunlight	49
Annex E (informative)	Glare	50
E.1	General	50
E.2	Daylight Glare Probability	50
E.3	Annual evaluation	51
E.3.1	General	51
E.3.2	Simplified annual glare evaluation	52
E.3.2.1	General	52
E.3.2.2	Solar protection device being opaque in the extended and close position	53
E.3.2.3	Solar protection device where the curtain is made of textile, film or perforated opaque material	53
E.3.2.4	Non-diffusing glazing device with a low variable light transmittance (e.g. electrochromic glazing)	56
E.3.2.5	Sunshine zones	59
E.4	Reflections or veiling glare	60
E.5	Verification of the glare protection capability of shadings	60
Annex F (informative)	A-deviations	63
Annex G (normative)	▮ A1 ▮ Special national conditions ▮ A1 ▮	64
Bibliography		65

European foreword

This document (EN 17037:2018+A1:2021) has been prepared by Technical Committee CEN/TC 169 "Light and Lighting", the secretariat of which is held by DIN.

This document includes the corrigendum EN 17037:2018/AC:2021 issued by CEN on 13 October 2021, which corrects symbol " d_w " in Table 1, the table reference in the 5th paragraph of E.3.1 and replaces Table E.8.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags AC AC.

This document includes Amendment 1 approved by CEN on 24 August 2021 (BT C150/2021).

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

This document supersedes EN 17037:2018 and EN 17037:2018/AC:2021.

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 June 2022, and conflicting national standards shall be withdrawn at the latest by June 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.

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

Daylight should be a significant source of illumination for all spaces with daylight opening(s). Daylight is strongly favoured by building occupants as a way to adequately illuminate the indoor surfaces, and to save energy for electrical lighting.

Daylight can provide significant quantities of light indoors, with high colour rendering and variability, changing through the day and the seasons. Daylight openings provide views and connection to the outside and contribute to the psychological well-being of occupants. A daylight opening can also provide exposure to sunlight indoors, which is important, for example, in dwellings, hospital wards and nurseries. In a space, where activities comparable to reading, writing or using display devices are carried out, a shading device should be provided to reduce visual discomfort. The standard addresses daylighting performance over the year. Daylight should illuminate spaces during a significant fraction of the annual daylight hours over the year. Daylight provision depends firstly on the availability of daylight outside (i.e. the prevailing climate at the site) and, thereafter, the environment surrounding the building, the components immediate around the daylight opening and the configuration of the interior spaces.

This standard encourages building designers to assess and ensure successfully daylit spaces. It also allows building designers and developers to target ambitions with respect to daylighting, as well as addressing other issues related to daylight design, such as view out, protection against glare, and exposure to sunlight.

1 Scope

This document specifies elements for achieving, by means of natural light, an adequate subjective impression of lightness indoors, and for providing an adequate view out. In addition, recommendations for the duration of sunshine exposure within occupied rooms are given.

This document gives information on how to use daylighting to provide lighting within interiors, and how to limit glare. This document defines metrics used for the evaluation of daylighting conditions and gives principles of calculation and verification. These principles allow to address the issue of variability of daylight over the days and the year.

This document applies to all spaces that may be regularly occupied by people for extended periods except where daylighting is contrary to the nature and role of the actual work done.

The specification of lighting requirements for humans in indoor work places including visual tasks are given in EN 12464-1 and are not part of this document.

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.

EN 12216, *Shutters, external blinds, internal blinds — Terminology, glossary and definitions*

EN 12464-1, *Light and lighting — Lighting of work places — Part 1: Indoor work places*

EN 12665:2018, *Light and lighting — Basic terms and criteria for specifying lighting requirements*

EN 14501:2005, *Blinds and shutters — Thermal and visual comfort — Performance characteristics and classification*

ISO 15469:2004, *Spatial distribution of daylight — CIE standard general sky*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12665:2018 and the following apply.

3.1

daylight

visible part of global solar radiation

Note 1 to entry: Also defined as part of global solar radiation capable of causing a visual sensation [CIE ILV 278].

[SOURCE: EN 12665:2018, 3.4.7, modified – note to entry added]