



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 50034-2024

Replacing GB 50034-2013

Standard for lighting design of buildings

建筑照明设计标准

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Foreword

This document was issued on 12 March 2024 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 August 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

The document runs to 74 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

It replaces GB 50034-2013, which is superseded.

1 Scope

GB/T 50034 is the Chinese lighting design standard for buildings, the document every lighting layout in the country is designed and checked against. It sets the illuminance required on the working plane for each type of space across dwellings, offices, shops, hotels, schools, hospitals, industrial buildings, public and transport buildings, and with it the quality criteria that decide whether that illuminance is usable: the uniformity, the unified glare rating, the colour rendering index and the correlated colour temperature, the requirement to avoid flicker and stroboscopic effect, and the reflectance of the surfaces. It then sets the lighting power density limits, which are the energy conservation half of the standard and the part a design is most often failed on, together with the requirements on daylighting integration, on lighting control and on maintenance and the maintenance factor. The 2024 edition replaces GB 50034-2013 and, notably, moves the standard from mandatory GB to recommended GB/T as the mandatory provisions migrate into the new engineering codes. For a lighting designer, an architect or a plan checker in China, this is the reference.

1.0.1 This standard is hereby formulated with a view to implementing national technical and economic policies in lighting design of buildings, meeting the functional requirements of buildings, being conducive to production, work, study, life, and physical and mental health, achieving advanced technology, economic rationality, safe use, energy conservation and environmental protection, and convenient maintenance, and promoting green lights and healthful lighting.

1.0.2 This standard is applicable to the indoor lighting design of constructed, extended, renovated and decorated civil buildings and industrial buildings and the outdoor functional lighting design within the boundaries of such buildings.

1.0.3 In addition to this standard, the lighting design of buildings shall also comply with those stipulated in the current relevant standards of the nation.

2 Terms

2.0.1 green lights

lighting that is safe and comfortable, energy-saving and environmentally friendly, and conducive to improving people's production, work and study efficiency and quality of life, and protecting physical and mental health

2.0.2 healthful lighting

lighting designed to improve the quality of the light environment based on visual and non-visual effects, contributing to the physical and mental health of people

2.0.3 visual task

process of observing details and targets presented in front of a background during work and activities

2.0.4 luminous flux

luminous quantity derived based on the effect of radiation on a standard photometric observer, expressed in lumens (lm), $1\text{lm}=1\text{cd}\cdot 1\text{sr}$. For photopic vision:

(2.0.4)

where,

$d\Phi_{\lambda}/d\lambda$ --the spectral distribution of the radiant flux;

$V(\lambda)$ --the spectral luminous efficiency;

K_m --the maximum spectral luminous efficacy of radiation, lm/W. In the case of monochromatic radiation, the K_m value under photopic vision conditions is 683lm/W (when $\lambda=555\text{nm}$).

2.0.5 luminous intensity

luminous intensity of an illuminator in a given direction, which is the quotient of the luminous flux $d\Phi$ transmitted by the illuminator in the solid angle element $d\Omega$ in that direction divided by the solid angle element, that is, the luminous flux per unit solid angle, expressed in candelas (cd), $1\text{cd}=1\text{lm}/\text{sr}$

2.0.6 luminance

a measure defined by the equation $L=d^2\Phi/(dA\cdot\cos\theta\cdot d\Omega)$, expressed in candelas per square meter (cd/m^2)

where,

$d\Phi$ --the luminous flux transmitted by the beam element from a given point and propagating within the solid angle $d\Omega$ including the given direction, lm;

dA--the beam cross-sectional area including the given point, m²;

theta--the angle between the normal of the beam section and the beam direction.

2.0.7 illuminance

quotient of the luminous flux dPhi incident on the surface element containing the point divided by the area dA of the surface element, expressed in luxes (lx), 1lx=1lm/m²

2.0.8 average illuminance

average value of illuminance at all points on a specified surface

2.0.9 maintained average illuminance

average illuminance on a specified surface when the lighting device must be maintained

2.0.10 semi-cylindrical illuminance (Esc)

illuminance produced by a light source on an imaginary small half cylindrical surface at a given point in space, where the cylinder axis is usually vertical, and the half cylinder is oriented in the inner normal direction of its flat back

2.0.11 reference plane

plane on which illuminance is measured or specified

2.0.12 working plane

plane on whose surface the work is performed

2.0.13 recognized objective

objects and details to be recognized

2.0.14 maintenance factor

ratio of the average illuminance or average luminance produced on a specified surface by the lighting device after a certain period of use to the average illuminance or average luminance obtained on the same surface when such device is newly installed under the same conditions

2.0.15 general lighting

uniform lighting set up to illuminate the entire place

2.0.16 localized general lighting

uniform lighting set up to illuminate specific area(s) in the workplace

2.0.17 local lighting

lighting set up to illuminate a local area for a specific visual work