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NATIONAL STANDARD
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中华人民共和国国家标准

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GB 50034-2013

Standard for Lighting Design of Buildings
建筑照明设计标准

Issued on: November 29, 2013

Implemented on: June 1, 2014

Jointly Issued by the Ministry of Housing and Urban-Rural Development (MOHURD) and the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) of the People's Republic of China

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Announcement of the Ministry of Housing and Urban-Rural
Development on Publishing the National Standard of "Standard for
Lighting Design of Buildings"

"Standard for Lighting Design of Buildings" (GB 50034-2013) has been approved as a national standard and shall be implemented from June 1, 2014. Thereinto, Articles 6.3.3~6.3.7 and Articles 6.3.9~6.3.15 are compulsory which must be strictly enforced. The former national standard "Standard for Lighting Design of Buildings" (GB 50034-2004) shall be abolished simultaneously.

Authorized by the Standard Rating Research Institute, this standard is published and distributed by China Architecture and Building Press.

Ministry of Housing and Urban-Rural Development of the People's Republic of China
November 29, 2013

Foreword

This standard is revised from the former standard of "Standard for Lighting Design of Buildings" (GB 50034-2004) by China Academy of Building Research jointly with the relevant organization according to the requirements of "Notification of Notice on Printing Development and Revision Plan of National Engineering Construction Standards and Codes in 2011" (JIANBIAO [2011], No. 17) issued by the Ministry of Housing and Urban-Rural Development,

During the process of preparing this standard, the standard drafting group, through extensive investigation, careful summarization of practical experience, reference to relevant international and foreign advanced standards and on the basis of widely soliciting opinions, finalizes this standard finally through review.

This standard includes 7 chapters and 2 appendixes with the main contents as follows: general, terms and definitions, basic requirements, lighting quality and quantity, lighting standard value, lighting energy conservation and lighting distribution and control etc.

The main technical contents revised in this standard are: the lighting power density limit specified in former standard is modified; the lighting power density limit for public buildings such as library, reading, exhibition, traffic and finance is supplemented; the service range of incandescent lamp is more strictly restricted; the technical requirements for the light emitting diode lamp applicable to indoor lighting is added; The lighting standard value for areas such as science and technology hall, gallery, financial building, dormitory, senior housing and apartment is supplemented; the control technology requirements for lighting energy conservation is supplemented and improved; the method and scope for the glare assessment is supplemented and improved and the name of public building is specified and unified.

The provisions printed in bold type in this standard are compulsory and must be enforced strictly.

Ministry of Housing and Urban-Rural Development is in charge of the administration of this standard and the explanation of the compulsory provisions; China Academy of Building Research is responsible for the explanation of specific technical contents. Any opinion or advice is kindly requested to be sent to China Academy of Building Research (Address: No.30 North 3rd Ring East Road, Chaoyang District, Beijing, 100013, China).

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Contents

1	General	1
2	Terms	2
3	Basic Rules	6
4	Lighting Quality and Quantity.....	10
5.	Standard Lighting Value	14
6.	Lighting Energy Conservation.....	40
7.	Lighting Distribution and Control.....	48
	Appendix A Unified Glare Rating (UGR)	51
	Appendix B Glare Rating (GR).....	56
	Explanation of Wording in This Standard	57
	List of Quoted Standards	58

Standard for Lighting Design of Buildings

建筑照明设计标准

1 General

1.0.1 This standard is established to implement the national laws & regulations and technical & economic policies in architectural lighting design, to meet the building function requirements so as to be conducive to economy and rationality manufacturing, working, study, life and physical and mental health, to realize the advanced technology, economic rationality, usage safety, energy conservation and environmental protection, maintenance convenience and to improve the application of green lighting.

1.0.2 This standard is applicable to lighting design of constructed, renovated, extended and decorative residential buildings, public and industrial buildings.

1.0.3 The architectural lighting design shall not only comply with the requirements of this standard, but also comply with those in the current relevant ones of the nation.

2 Terms

2.0.1 Green lights

The lighting which can conserve energy, protect environment and physical and mental health, and be beneficial to improve people's production, working, learning efficiency and quality of life.

2.0.2 Visual task

The process to observe the detail and target presenting in front of the background during work and activity.

2.0.3 Luminous flux

The derived luminous quantity according to the effect of radiation to standard luminance observer, lm, 1lm=1cd·1sr. As for photopicvision:

$$\Phi = K_m \int_0^{\infty} \frac{d\Phi_e(\lambda)}{d\lambda} V(\lambda) d\lambda \quad (2.0.3)$$

Where,

$d\Phi_e(\lambda)/d\lambda$ - the spectrum distribution of radiation flux;

$V(\lambda)$ - the spectrum (view) efficiency;

K_m - the maximum of radiant spectrum (view) efficiency, lm/W. Under photopicvision condition, $K_m=683$ lm/W ($\lambda=555$ nm).

2.0.4 Luminous intensity

The luminous intensity of luminophor in assigned direction is the quotient of the luminous flux $d\Phi$ transmitted within the solid angle element ($d\Omega$) in this direction divided by such solid angle element, namely the luminous flux of unit solid angle, cd, 1cd=1lm/sr.

2.0.5 Luminance

Calculated according to $L=d^2\Phi/(dA \cdot \cos\theta \cdot d\Omega)$, cd/m².

Where,

$d\Phi$ - the luminous flux transmitting from the light beam element of assigned point, including those within the solid angle ($d\Omega$) in assigned direction, lm;

dA - the sectional area of beam (including assigned point), m²;

θ - the included angle between normal line of beam section and beam direction.

2.0.6 Illuminance

The quotient of luminous flux ($d\Phi$) shooting on the surface element containing this point divided by the area of this surface element, lx, 1lx=1lm/m².

2.0.7 Average illuminance

The average illuminance value of all points on the specified surface.

2.0.8 Maintained average illuminance

The average illuminance on the specified surface where the lighting device must be maintained.

2.0.9 Reference surface

The surface for measuring or specifying the illuminance.

2.0.10 Working plane

The plane for conducting work on its surface.

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