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**Hygienic requirements of lighting design and setting in
primary and middle school**

中小学校普通教室照明设计安装卫生要求

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Hygienic requirements of lighting design and setting in primary and middle school

1 Scope

This standard specifies the hygiene requirements for desktop and blackboard surface illuminance, the hygiene requirements for the design and installation of classroom lighting, the hygiene requirements for the design and installation of blackboard lighting in primary and middle school.

This standard applies to ordinary primary and middle schools. Secondary vocational schools and technical schools may refer to this standard.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 5700 Measurement methods for lighting

GB 7000.1 Luminaires - Part 1: General requirements and tests

GB 7000.201 Luminaires - Part 2-1: Particular requirements - Fixed general purpose luminaires

GB 7793 Hygienic standard for day lighting and artificial lighting for middle and elementary school

GB/T 17743 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

JGJ/T 119 Standard for terminology of architectural lighting

CIE 117 Discomfortable Glare in Interior Lighting

3 Terms and definitions

The terms and definitions defined in JGJ/T 119, as well as the following terms and definitions, apply to this document.

Note 2: Rewrite from JGJ/T 119-2008, definition 2.3.28.

3.5

Unified glare rating

UGR

It is a psychological parameter, that measures the subjective reaction of discomfort caused by light emitted by lighting devices in an indoor visual environment to the human eye. Its value can be calculated according to the unified glare rating formula of the International Commission on Illuminance (CIE).

Note: Rewrite from JGJ/T 119-2008, definition 2.2.25.

3.6

Lighting power density

LPD

The actual power consumed by lighting per unit area (including light sources, ballasts or transformers, etc.), in watts per square meter (W/m^2).

3.7

Maintained average illuminance

The average illuminance on the specified surface shall not be lower than this value. It is the average illuminance on a specified surface at the time when the lighting device must be maintained.

Note: Rewrite from JGJ/T 119-2008, definition 3.2.8.

3.8

Uniformity ratio of luminance

The ratio of minimum illuminance to average illuminance on a specified surface.

Note: Rewrite from JGJ/T 119-2008, definition 3.2.10.

3.9

Direct glare

Glare produced by luminous objects in the field of vision, especially close to the line of sight.

4 Hygienic requirements for classroom desktop and blackboard illuminance

4.1 The maintained average illuminance of classroom desktop is not less than 300 lx; the uniformity ratio of luminance is not less than 0.7.

4.2 The maintained average illuminance of classroom blackboard is not less than 500 lx; the uniformity ratio of luminance is not less than 0.8.

4.3 The classroom lighting measurement method shall be implemented in accordance with GB/T 5700.

5 Hygienic requirements for classroom lighting design and installation

5.1 Luminaires

5.1.1 It shall comply with the requirements of GB 7000.1, GB 7000.201, GB/T 17743.

5.1.2 Suspended grille luminaires should be used; the luminaire efficiency shall not be less than 60%.

5.1.3 The unified glare rating (UGR) should not be greater than 19. The calculation method of the unified glare rating (UGR) is implemented in accordance with CIE 117.

5.2 Ballast

Electronic ballasts shall be used.

5.3 Light source

It should use narrow tube-shaped rare earth three-primary color fluorescent luminaires, which have a color temperature of 3300 K ~ 5300 K, a color rendering index of not less than 80, less than 26 mm. It should be replaced uniformly according to the design life of the light source.

5.4 Installation

Use the hanging rod installation method and distribute it evenly in the longitudinal direction of the classroom (the long axis of the luminaires is perpendicular to the blackboard). The lighting power density of the classroom shall not be higher than 11 W/m²; it should be lower than 9 W/m² in areas where conditions permit. The vertical distance (g) between the luminaire and the desk shall not be less than 1700 mm, see Figure 1.

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