

ICS 29.140.99

CCS K71



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

GB/T 43017-2023

Green product assessment - Lighting products

绿色产品评价 照明产品

Issued on: September 7, 2023

Implemented on: April 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Assessment requirements
 - 4.1 Basic requirements
 - 4.2 Requirements for assessment indicators...
- Annex A
- Annex B

1 Scope

GB/T 43017-2023 is the green product assessment standard for lighting products. Lighting was the first mass product category China converted almost entirely to LED, and the environmental question has moved with it: the energy used in service is no longer the whole story once efficacy is high, so the assessment has to weigh the materials, the mercury and rare earth content, the recyclability and the lifetime against the energy. It also has to address flicker, which is invisible, unregulated in much of the market and produced by the cheapest drivers. The standard sets the assessment requirements, comprising the basic requirements and the assessment indicator requirements, and the assessment method, with normative annexes giving the calculation method for annual carbon reduction and the detection method for flicker depth. It applies to light sources including reflector and non-directional self-ballasted LED lamps, and to luminaires, and took effect on 1 April 2024.

This document specifies the assessment requirements and methods for green lighting products. This document applies to the green product assessment for light sources (including reflective self-ballasted LED lamps, non-directional self-ballasted LED lamps) and lamps (including LED panel lamps, LED downlights, LED lamps for road and tunnel lighting, and LED floodlights).

2 Normative references

The following referenced documents are indispensable for the application 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.

GB/T 191, Packaging and storage marks

GB/T 2423.17, Environmental testing for electric and electronic products - Part 2. Test

method - Test Ka. Salt mist

GB 7000.1, Luminaires -- Part

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 20861, GB/T 24826, GB/T 24908, GB/T 29294, GB/T 29296, GB/T 37637, GB 38450, GB/T 33761 apply.

4.1 Basic requirements

4.1.1 Manufacturing enterprises have had no major quality, safety and environmental accidents in the past three years, and have no bad records in national and local energy-saving and low-carbon inspections.

4.1.2 Manufacturing enterprises shall establish, implement, maintain and continuously improve quality management systems, energy management systems, environmental management systems and occupational health and safety management systems in accordance with GB/T 19001, GB/T 23331, GB/T 24001 and GB/T 45001, respectively.

4.1.3 Advanced technology and processes shall be used for production. Technologies, processes, equipment and related materials that are restricted, eliminated or banned by relevant national and local government departments shall not be used.

4.1.4 The pollutant discharge of manufacturing enterprises shall meet the requirements of national and local pollutant discharge standards. The total amount of pollutants shall

Annex A

(normative) Calculation method for annual carbon reduction A.1 Basic instructions A.1.1 The annual carbon reduction amount in this document is calculated based on the electrical energy consumption during the use of lighting products. It is based on the annual service volume provided by the product. A.1.2 The annual carbon reduction is assessed for a single lighting product. A.1.3 The annual carbon reduction is assessed under standardized usage conditions that reflect the typical annual usage duration under common domestic user behavior patterns. The estimated annual carbon reduction is not specific to the actual annual carbon reduction of a lighting product under the personalized use conditions of a specific user. A.2 Calculation method for annual carbon reduction The annual carbon reduction is calculated according to formula (A.1). Where, ER - The annual carbon reduction of the product to be evaluated, in kilograms of carbon dioxide (kgCO₂); P - Product rated power, in kilowatts (kW); T - The annual usage time of the product, according to Table A.1, in hours (h); Eff_t - The initial light efficacy value of the product, in lumens per watt (lm/W); Eff_b - Limited value of energy efficiency indicator for products of the same specifications, taken according to Table A.2, in lumens per watt (lm/W); EF - Power grid emission factor, in tons of carbon dioxide per megawatt hour [tCO₂/(MW·h)]; the data value

is 0.5810. NOTE. The value of the power grid emission factor data is 0.5810. The source is the "Notice on Key Work Related to the Management of Enterprise Greenhouse Gas Emission Reports in 2022" by the General Office of the Ministry of Ecology and Environment (Climate Letter [2022] No. 111 of

Annex B

(normative) Detection method for fluctuation depth

B.1 Basic principle Measure the light output waveform of the sample. Calculate the frequency and fluctuation depth of the sample under test based on the light output waveform.

B.2 Measurement of light output waveform

B.2.1 Measuring instrument The measuring instrument consists of a light sensor, amplifier, anti-aliasing filter, data collector and data processing unit. The light sensor and signal resolution of the measuring instrument shall meet the requirements of GB/T 42064. The output of the measuring instrument shall vary linearly with the received optical signal and shall not have a zero offset. The measuring instrument shall have an anti-aliasing filter with a cutoff frequency $\geq$