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**GB 45831-2025**

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**Light sources for power-driven vehicles - Safety requirements**

机动车用光源 安全性要求

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## 1 Scope

GB 45831-2025 is the Chinese national standard on light sources for power-driven vehicles - safety requirements, in the field of road vehicles engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 30 May 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2026. Classification: ICS 43.040.20, CCS T38. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the same type determination, general requirements, filament light source requirements, gas discharge light source requirements, LED light source requirements and inspection rules for light sources for power-driven vehicles, and describes the corresponding test methods. This document applies to substitute light sources installed in road lighting and light signaling devices of categories M, N, O and L power-driven vehicles.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 4599, Road illumination devices and systems for motor vehicles

GB 4785, Prescription for installation of the external lighting and light-signalling devices for motor vehicles and their trailers

GB/T 26178-2010, The measurement of luminous flux

GB/T 45603-2025, Specification of categories of light sources for power-driven vehicles

IEC 60061-1, Lamp caps and holders together with gauges for the control of interchangeability and safety - Part

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB 4785 and GB/T 45603-2025 as well as the following apply.

3.1 category of light sources Standardized naming based on standardized light source design features.

Note. Each light source type has a prescribed name, such as. H4, P21W, T4W, PY21W, RR10W, D2S, LW2, LY3 and LR1.

3.2 LED substitute light source LED light source type having a paired filament light source type, which is provided with a lamp cap having a different lamp cap positioning key structure from that of the corresponding filament light source type.

## 4 Type identification

Light sources that do not differ in the following main aspects are of the same type. -- Light source type. -- Manufacturer. -- Glass bulb design and/or lamp cap of filament light sources and gas discharge light sources, and structure of LED light sources. For filament light sources and gas discharge light sources, the selective yellow glass bulb or the additional selective yellow outer glass bulb is only used to change the color of the emitted light without changing other characteristics and does not constitute a change in the type of light source. -- Nominal voltage. -- Type of filament light sources (ordinary filament light sources and halogen filament light sources).

### 5.1 Marking

5.1.1 Filament light source marking The filament light source shall be marked with the following symbols on its lamp cap or glass bulb (if the symbol is marked on the glass bulb, it shall not have an adverse effect on its optical performance). -- Trademark of the manufacturer or seller.

#### 5.1.4 Inspection method of marking The markings in 5.1.1 ~

5.1.3 shall be clear and durable, and shall be inspected by the following methods. -- The markings are clear and can be visually inspected; -- To test the durability of the marking, use a soft cloth dampened with water to wipe the marked area on the unburned light source with for 15 seconds. After the test, determine whether the marking is still clear.

5.2 Glass bulb or optical surface For light source glass bulb or optical surface of the LED light source, there shall be no scratches or spots that may affect its efficiency and optical performance by visual inspection. For filament light sources with coated glass bulbs, after aging according to 6.1, the glass bulb surface shall be gently wiped with a cotton cloth soaked in a mixed solution of 70% heptane and 30% toluene by volume. After 5 minutes, visually inspect the glass bulb surface, and there shall be no obvious changes. For gas discharge light sources with colored (outer) glass bulbs, after working for 15 hours at the test voltage, the surface of the glass bulb shall be gently wiped with a cotton cloth soaked in a mixed solution of 70% heptane and 30% toluene by volume. After 5 minutes, visually inspect the glass bulb surface, and there shall be no obvious changes.

### 5.3 Lamp cap

5.3.1 The light source shall be equipped with a lamp cap as specified in GB/T 45603- 2025 and comply with the provisions of the corresponding lamp cap data sheet in IEC 60061-1.

5.3.2 The lamp cap shall be subjected to visual inspection and dimensional inspection and may be inserted into a lamp holder complying with IEC 60061-2 for trial installation test.

5.3.3 The lamp cap shall be firmly fixed on the light source glass bulb or the bracket of the LED light source.

## 6 Filament light source requirements and test methods

6.1 Aging The filament light source shall first be aged at the test voltage for 1 hour. For double- filament filament light sources, each filament shall be aged separately. For filament light sources specified for more than one test voltage, the highest test voltage shall be used for aging. The tests in 6.2 ~

6.6 shall be carried out after the filament light source has been aged.

### 6.2 Filament position and size

6.2.1 The geometric shape, position and size of the filament shall comply with the provisions of filament light source data sheet in GB/T 45603-2025.

6.2.2 The position and size of the filament shall be measured according to the method in Appendix A, unless otherwise specified in the filament light source data sheet in GB/T 45603-2025.

6.2.3 When measuring the position and size of the filament, the filament light source shall be ignited at 90% ~ 100% of the test voltage. For filament light sources with multiple test voltages specified, the highest test voltage value shall be used to measure the position and size of the filament.

### 6.3 Color

6.3.1 The color of light emitted by a filament light source shall be white, unless otherwise specified in GB/T 45603-2025.

6.3.2 The chromaticity range of the emitted light shall comply with the provisions of GB 4785.

6.3.3 The color of the emitted light shall be measured according to the method in Appendix B. Each measured value shall be within the specified chromaticity range (for the consistency requirements of checking amber and red products, at least 80% of the measurement points shall be within the specified chromaticity range). Furthermore, for filament light sources emitting white light, the deviation of the measured value from a