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Measuring methods of lamps for
general lighting

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Lighting Manufacturers Association (JLMA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS C 7801:2014**), which has been technically revised.

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Measuring methods of lamps for general lighting

Introduction

This Japanese Industrial Standard was established in 1975, and has gone through six revisions including this one. In the revision of 2009, the scope was focused on the optical tests as the common test methods of light source, the content was reviewed and the title was revised to “Measuring methods of lamps for general lighting”. The last revision was made in 2014, and the revision at this time is to respond to the progress in LED products and the advances in photometric technology.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies the measuring methods of luminous quantity of lamps for general lighting such as total luminous flux and luminous intensity, and quantities related to the light-source colour.

This Standard is also applicable to the photometry of bulb-type LED lamps. See **JIS C 8152-1** for the photometry of LED packages, **JIS C 8152-2** for the photometry of LED modules and LED light engines, and **JIS C 8105-5** for the photometry of LED luminaires etc. using a light distribution measuring device.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 1609-1 *Illuminance meters Part 1: General measuring instruments*

JIS C 62504 *General lighting—Light emitting diode (LED) products and related equipment—Terms and definitions*

JIS Z 8103 *Glossary of terms used in measurement*

JIS Z 8113 *Lighting vocabulary*

JIS Z 8120 *Glossary of optical terms*

JIS Z 8724 *Methods of colour measurement—Light-source colour*

JIS Z 8725 *Methods for determining distribution temperature and colour temperature or correlated colour temperature of light sources*

JIS Z 8726 *Method of specifying colour rendering properties of light sources*

JIS Z 8781-1 *Colorimetry—Part 1: CIE standard colorimetric observers*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS Z 8103**, **JIS Z 8113**, **JIS Z 8120** and **JIS C 62504**, and the following apply.

3.1

lamps for general lighting

generic term of an incandescent lamp, a discharge lamp and a solid-state light-emitting device intended for lighting

3.2

rated value

numerical value specified in a product standard for the lamp characteristic under the lighting conditions

When not specified in the standard, the manufacturer or the responsible distributor shall offer.

3.3

input voltage

voltage input to the test circuit specified in a product standard corresponding to the type of light source

3.4

input current

current input to the test circuit specified in a product standard corresponding to the type of light source

3.5

input power

power input to the test circuit specified in a product standard corresponding to the type of light source

3.6

lamp voltage

voltage input to a cap or an input terminal of light source in the test circuit specified in a product standard corresponding to the type of light source

NOTE An input voltage, not a lamp voltage, shall be used for the electric condition of light source equipped with a ballast.

3.7

lamp current

current input to a cap or an input terminal of light source in the test circuit specified in a product standard corresponding to the type of light source

NOTE An input current, not a lamp current, shall be used for the electric condition of light source equipped with a ballast.

3.8

lamp power

power input to a cap or an input terminal of light source in the test circuit specified in a product standard corresponding to the type of light source

NOTE An input power, not a lamp power, shall be used for the electric condition of light source equipped with a ballast.

3.9

electric condition for test

lighting electric condition of light source specified in a product standard, in which the electric characteristics (rated values) such as input voltage, input current, input power, lamp voltage, lamp current and lamp power are specified

3.10

standard light source

light source of which total luminous flux, luminous intensity etc. have been calibrated, used as a reference for comparison in photometry

3.11

self-absorption correction factor

factor used for the correction of integrating sphere efficiency that is defined as the rate of the total luminous flux of a lit light source transmitted to the photodetector and varies depending on the installation or removal of a light source, lighting jig etc. inside the integrating sphere

In the measurement of total luminous flux, this factor corrects the difference in the photodetector output between when a standard light source is installed and when a light source under test is installed.

3.12

LED light engine

light source unit of an LED luminaire consisting of LED packages or LED modules arranged in planar or steric alignment together with a lighting device, and also of multiple mechanical, electrical/electronic and optical components

Some are without a lighting device.

3.13

bulb-type LED lamp

LED device of such a structure that one or more LEDs, controlgears and Type E, Type B or Type GX53 cap are integrated

NOTE It may be referred to as retrofit LED lamp.

4 Lighting method of light source

4.1 General

The lighting method of a light source under test shall be in accordance with the method specified in an individual product standard, except the case specified by the manufacturer etc. The lighting method of standard light source shall be in accordance with the method used in the calibration of standard light source.

NOTE Examples of individual product standard are shown below.

- Tungsten filament lamps for general lighting purposes (Annex A of **JIS C 7501**)
- Small incandescent lamps for household use (Annex A of **JIS C 7523**)
- Reflector incandescent lamps (Annex A of **JIS C 7525**)
- Tungsten halogen lamps (non-vehicle) (Annex A of **JIS C 7527**)
- Ball lamps (Annex 1 of **JIS C 7530**)
- High-pressure mercury vapour lamps (Annex B of **JIS C 7604**)
- Low pressure sodium vapour lamps (Clause 9 of **JIS C 7610**)
- Double-capped fluorescent lamps (Annex B of **JIS C 7617-2**)
- Single-capped fluorescent lamps (including circular type) (Annex B of **JIS C 7618-2**)
- Self-ballasted fluorescent lamps for general lighting services (Annex A of **JIS C 7620-2**)
- High-pressure sodium vapour lamps (Clause 8 of **JIS C 7621**)
- Metal halide lamps (Annex B and Annex E of **JIS C 7623**)
- Self-ballasted LED-lamps for general lighting services (Annex A of **JIS C 8157**)

4.2 Lighting conditions

The lighting conditions of standard light source and light source under test shall be as follows, except the case specified by the manufacturer etc.

- a) The standard light source and the light source under test shall be lit under the electric condition for test.
- b) In order to confirm that the lighting state of standard light source and light source under test is stable and represented, the electric characteristics other than the electric condition for test shall be measured as necessary.
- c) For the light source affected by temperature, the temperature environmental condition shall be kept constant during lighting.
- d) The measurement shall be started after confirming that electric characteristics and optical power are stabilized. When the stabilization time of lighting is specified in a product standard, the specified condition shall be used.

5 Conditions and states of measuring equipment and test site

5.1 Conditions and states of power supply, electric meter and electric circuit

The power supply, electric meter and electric circuit shall be as follows, except the case specified by the manufacturer etc.

- a) The lighting device of light source under test shall satisfy the performances specified in a product standard.