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

GB/T 24461-2023

Replacing GB/T 24461-2009

Technical requirements for luminaries used for cleanroom

洁净室用灯具技术要求

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Foreword

This document was issued on 28 December 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 July 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 29.140, Chinese classification K72.

It replaces GB/T 24461-2009, which is superseded.

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document replaces GB/T 24461-2009 "Technical Requirements for Lamps for Clean

Rooms". Compared with GB/T 24461-2009, except for structural adjustments

In addition to general and editorial changes, the main technical changes are as follows.

- a) Modified the scope of application of the standard (see Chapter 1, Chapter 1 of the.2009 edition);
- b) Added five terms and definitions. "transient light artifact", "fluctuation depth", "flicker", "stroboscopic effect" and "lumen maintenance life" (see 3.6~3.10), the definitions of the four terms "clean room", "clean area", "cleanliness" and "clean room lamps" have been changed (see 3.1, 3.2, 3.4, 3.5,.2009 version 4.1, 4.2, 4.4, 4.5);
- c) Deleted the classification of lamps (see Chapter 5 of the.2009 edition), creepage distances and clearances (see Chapter 8 of the.2009 edition), and grounding regulations (see Chapter 9 of the.2009 edition), terminal blocks (see Chapter 10 of the.2009 edition), external wiring and internal wiring (see Chapter 11 of the.2009 edition), protection against electric shock (see Chapter 12 of the.2009 edition), durability test and thermal test (see Chapter 12 of the.2009 edition) Chapter 13 of the.2009 edition), dust protection, protection against solid foreign objects and water resistance (see Chapter 14 of the.2009 edition), insulation resistance and electrical strength (see Chapter 15 of the.2009 edition), heat resistance, fire resistance and marking resistance (see Chapter 16 of the.2009 edition);
- d) Changed the general requirements (see Chapter 4, Chapter 3 of the.2009 edition);
- e) Changed the relevant requirements for marking (see 5.1, Chapter 6 of the.2009 edition);
- f) Changed the relevant requirements for structure (see 5.2, Chapter 7 of the.2009 edition);
- g) Added requirements and test methods for luminous flux maintenance life (see 5.3 and 6.3);
- h) Added requirements and test methods for electromagnetic compatibility (see 5.4 and 6.4);
- i) Added requirements and test methods for transient optical artifacts (see 5.5 and 6.5);
- j) Added brightness limit requirements and test methods (see 5.6, 6.6).

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

This document is proposed by China Light Industry Federation.

This document is under the jurisdiction of the National Lighting Appliances Standardization Technical Committee (SAC/TC224).

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The previous versions of this document and the documents it replaces are as follows.

---First published as GB/T 24461-2009 in.2009;

---This is the first revision.

Technical requirements for lamps for clean rooms

1 Scope

GB/T 24461-2023 applies to luminaires used where the air is controlled: recessed fittings and fixed ceiling-mounted fittings that use an electric light source and run on a supply voltage not exceeding 1000 V, installed in cleanrooms or in places with similar cleanliness requirements. Clause 4 carries the general requirements. Clause 5 divides the technical requirements into six headings - marking, structure, luminous maintenance life, electromagnetic compatibility, transient light artifacts, and brightness limitation - and clause 6 gives a test method for each of the six, in the same order, so that nothing is required which cannot be verified. What that list says about the product is that a cleanroom fitting is assessed on how it behaves in the room rather than on light output alone: entering a classified room to change a lamp is a disruption in itself, which is why maintained output over life stands as a heading of its own, and the instruments and the people working under the fitting are why interference, flicker and glare are weighted beside it. Terms are drawn from GB/T 7000.1-2023, GB/T 9468, GB/T 31897.1, GB/T 31897.201-2016, GB 50034 and GB/T 2900.65. It replaces the 2009 edition. For luminaire manufacturers, cleanroom contractors, and the pharmaceutical, electronics and food plants that specify the fittings.

This document specifies recessed luminaires for clean rooms and ceiling-mounted fixed

luminaires that use electric light sources and have a power supply voltage not exceeding 1000V.

The technical requirements for lamps (hereinafter referred to as "lamps") describe the corresponding test methods.

This document applies to lamps installed in places with cleanliness requirements or similar places.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 2900.65 Electrical terminology lighting

GB/T 7000.1-2023 Luminaires Part 1. General requirements and tests

GB/T 7000.201 Luminaires Part 2-1. Fixed general purpose luminaires with special requirements

GB/T 7000.202 Luminaires Part 2-2. Recessed luminaires with special requirements

GB/T 9468 General requirements for goniophotometric measurement of lamps

GB 17625.1 Electromagnetic compatibility limits Part 1. Harmonic current emission limits (Equipment input current $\leq 16\text{A}$ per phase)

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

GB/T 18595-2014 Electromagnetic compatibility and immunity requirements for general lighting equipment

GB/T 25915.4-2010 Clean rooms and related controlled environments Part 4. Design, construction, start-up

GB/T 31897.1 Lamp performance Part 1. General requirements

GB/T 31897.201-2016 Lamp performance Part 2-1. Special requirements for LED lamps

GB/T 33721-2017 Reliability test method for LED lamps

GB 50034 architectural lighting design standards