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

GB/T 13786-2022

Replacing GB/T 13786-1992

Artificial daylight illumination for cotton classing rooms

棉花分级室的模拟昼光照明

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1. Structure and Drafting Rules for Standardization Documents" drafting. This document replaces GB/T 13786-1992 "Simulated Daylight Illumination for Cotton Grading Room". Compared with GB/T 13786-1992, except In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Changed "Subject Content and Scope of Application" to "Scope" and changed relevant content (see Chapter 1, Chapter 1 of the.1992 edition);
 - b) Changed "Terms" to "Terms and Definitions" and changed relevant content (see Chapter 3, Chapter 3 of the.1992 edition);
 - c) Changed the lighting quality content (see Chapter 4, Chapter 4 of the.1992 edition);
 - d) Changed "illuminance" to "illumination intensity", added the index of illuminance uniformity and changed relevant content (see Chapter 5, Chapter 5 of the.1992 edition);
 - e) Changed the lighting conditions (see Chapter 6, Chapter 6 of the.1992 edition);
 - f) Change "installation method" to "technical requirements and installation method of lighting unit", and change relevant content (see Chapter 7, Chapter 7 of the.1992 edition);
 - g) Changed the environment color (see Chapter 8, Chapter 8 of the.1992 edition);
 - h) Changed the maintenance of lighting equipment (see Chapter 9, Chapter 9 of the.1992 edition);
 - i) Changed the appendix "Illuminating light color quality characteristics for cotton grading" and made it clear as a normative appendix (see Appendix A, Appendix A of the.1992 edition);
 - j) Deleted the appendix "Installation method of lamps" (see Appendix B of the.1992 edition).
- Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents. This document is

proposed and managed by the National Fiber Standardization Technical Committee (SAC/TC513). This document is drafted by: China Fiber Quality Monitoring Center, Dezhou Fiber Inspection Institute, Shandong Fiber Quality Monitoring Center, Hebei Fiber Uygur Quality Monitoring Center, Xinjiang Uygur Autonomous Region Fiber Textile Product Quality Supervision and Inspection Research Center, Institute of Semiconductors, Chinese Academy of Sciences, Beijing Bofeilai Technology Co., Ltd., Beijing Entry-Exit Inspection and Quarantine Association. The main drafters of this document. Lei Lei, Wen Qikun, Zhang Lezhu, Zhang Yubing, Du Zhanyuan, Liu Huan, Yang Hua, Jia Dong, Qu Dongwei. The release status of previous versions of this document and the documents it replaces are as follows:

---First published as GB/T 13786-1992 in.1992;

--- This is the first revision.

1 Scope

China's national standard for the artificial daylight lighting of cotton classing rooms - the rooms in which cotton is graded by eye, and one of the very few standards that exists to make a human judgement repeatable. It specifies the technical requirements for the lighting quality, the illuminance, the lighting conditions and the luminaires of simulated daylight illumination in cotton classing rooms, together with the installation method, the environmental colour and the maintenance of the lighting equipment. It applies to cotton classing rooms. Cotton is graded partly by instrument and partly by a classer looking at it, and the colour grade in particular - the whiteness and the yellowness of the lint - is assessed visually against physical standards. Colour judgement depends entirely on the light: the same sample seen under a warm lamp and under a cool one is a different colour, and a classer comparing a sample with a reference under mismatched or uneven light will grade it wrongly and consistently. Since the grade sets the price of the crop, that is a commercial error made at national scale. The standard therefore fixes the light: the correlated colour temperature and the spectral quality of the source, which must approximate north daylight, the colour rendering, the illuminance on the classing surface and its uniformity, the absence of glare and of shadow, and the geometry of the installation relative to the surface and to the classer. It also fixes what surrounds the light: the colours of the walls, ceiling and furnishings, because a coloured surface nearby reflects onto the sample and shifts its apparent colour. And it sets the maintenance, since lamps shift in colour as they age and a room that met the standard when it was built does not necessarily meet it three years later. Issued on 12 October 2022 and in force since 1 May 2023, it replaces GB/T 13786-1992.

This document specifies the technical requirements and requirements for the lighting quality, light intensity, lighting conditions, and lighting units of the simulated daylight lighting in the cotton grading room. Installation method, environmental color, maintenance of

lighting equipment and other technical requirements. This document applies to cotton grading rooms.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Spectral density as a function of wavelength. [Source: GB/T 5698-2001, 3.3, with modification]

3.2 A specific relative spectral power distribution incident on an object as specified by the International Commission on Illumination (CIE).

Note. Including the standard illuminant D75 (daylight with a correlated color temperature of about 7504K). [Source: GB/T 5698-2001, 4.85, modified]

3.3 color temperaturecolor temperature T_c When the chromaticity of the light source is the same as that of the perfect radiator at a certain temperature, the absolute temperature of the perfect radiator.

Note. The unit is Kelvin (K). [Source: GB/T 5698-2001, 4.88, modified]

3.4 T_{cp} When the chromaticity point of the light source is not on the black body locus, the chromaticity of the light source is the closest to that of a complete radiator at a certain temperature, or in a uniform The absolute temperature of the perfect radiator when the color difference distance on the chromaticity diagram is the smallest.

Note. The unit is Kelvin (K). [Source: GB/T 5698-2001, 4.89, modified]

3.5 Color rendering index color rendering index A measure of the color rendering of a light source.