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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 17749-2026

Replacing GB/T 17749-2008

Methods for specifying whiteness

白度的表示方法

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Foreword

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 17749-2008 "Methods for Representing Whiteness". Compared with GB/T 17749-2008, the main differences are in structural adjustments and editing. Aside from the logical changes, the main technical changes are as follows:

a) The scope of application has been changed (see Chapter 1, Chapter 1 of the.2008 edition);

b) Added the terms Hunter whiteness and wet whiteness (see 3.4, 3.5);

c) Added a test report mode (see 4.1);

d) A method for measuring wet whiteness has been added (see 5.3). Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the China Building Materials Federation. This document was drafted by: Building Materials Industry Technology Supervision and Research Center, Guilin Guiguang Talc Development Co., Ltd., and Taiyuan University of Technology. China Building Materials Federation, Beijing Aobotai Technology Co., Ltd., Beijing University of Technology, China Building Materials Academy Co., Ltd. Guangdong Sanen Technology Co., Ltd., Shanghai Yuanxi Instrument Co., Ltd., Changshu Suchang Engineering Quality Testing Co., Ltd., China Railway Jingcheng Engineering Testing Co., Ltd., China Railway 22nd Bureau Group Co., Ltd. Rail Transit Engineering Branch, Caipu Technology (Zhejiang) Co., Ltd., Hangzhou Daji Optoelectronic Instruments Co., Ltd., Guangzhou Lantai Instruments Co., Ltd., National Institute of Metrology, Jinghong Jianyan (Beijing) Technology Co., Ltd., Beijing Jianyan Bohe Technology Co., Ltd. The main drafters of this document are. Wang Huan, Li Guangqiang, Yu Yang, Zhu Zhe, Wang Luyu, Liu Yun, Ke Guoju, Kong Shaoqi, Feng Ruixue, Lu Wei, and Li Guoyan. Zhao Yan, Huang Daquan, Yuan Jing, Sun Ruoduan, Zhang

Xiaoxiao, Han Lei, Han Mingshan, Hao Yunan, Yuan Kun, Shi Zhihua, Gao Xin, Tan Junfeng, Yang Peng, Su Chaoyang Su Hao, Yang Cheng, Gao Yangyang, Li Qiang, Chen Lu. The release history of this document and the document it replaces is as follows:

---First published as GB/T 17749-1999 in.1999, and revised for the first time in.2008;

---This is the second revision. Methods of representing whiteness

1.Scope This document specifies the method for representing the whiteness of an object. This document applies to the representation of white and near-white object colors. This document does not apply to samples with obvious color (such as W< 18 or TW exceeding ±3.0) and special surfaces such as metals and pearlescent surfaces.

4 Methods for measuring color

4.1 Illuminating Object and Standard Colorimetric Observer The standard colorimetric observer shall conform to the requirements of GB/T 3977 and shall adopt the CIE 1931 standard colorimetric observer or the CIE 1964 standard colorimetric observer. Observer. The illuminator shall comply with the provisions of GB/T 3978, and the standard illuminator D65 should be used. Whiteness measurements should specify whether specular reflection (SCI) is included or specular reflection (SCE) is excluded.

4.2 Non-fluorescent color The spectral measurements of non-fluorescent colors shall be performed in accordance with GB/T 3979, and the tristimulus values X, Y, Z or X10, Y10, Z10 shall be calculated. The direct reading method for non-fluorescent tristimulus values shall be performed according to GB/T 3979, directly measuring the tristimulus values X, Y, Z or X10. Y10, Z10. To obtain a more uniform whiteness value in the color space, the tristimulus values X, Y, Z or X10, Y10, Z10 can be converted to CIE1976 (L*, We use a* and b* to represent colors.

4.3 Fluorescent color Fluorescence spectroscopy measurements and tristimulus value direct reading (colorimeter) measurements shall be performed in accordance with the provisions of GB/T 9340.

5 Methods for measuring whiteness

5.1 Non-fluorescent color For whiteness measurement of non-fluorescent samples, measure the spectral reflectance factor or tristimulus values X, Y, Z or X10, Y10, Z10 as specified in 4.2. Calculate W or W10 and the pale hue index TW or TW10 according to the provisions of Chapter 6.

5.2 Fluorescent color For the measurement of the whiteness of fluorescent samples, the tristimulus values X, Y, Z or X10, Y10, Z10 are measured according to the provisions of 4.3, and calculated according to the provisions of Chapter 6. Calculate W or W10 and the pale hue index TW or TW10. To obtain a more uniform whiteness value in the color space, the

tristimulus values X, Y, Z or X10, Y10, Z10 can be converted to CIE1976 (L*, We use a* and b* to represent colors.

5.3 Measurement of wet whiteness The wet whiteness shall be measured in accordance with the provisions of section

4.7 of GB/T 15344-2020.

6.1 Calculation method of whiteness

6.1.1 Whiteness W or W10 is calculated according to formula (1) or formula (2) respectively.

6.1.2 Other main whiteness calculation formulas are shown in Appendix A.

6.2 Calculation method of palatability index The paleness index TW or TW,10 is calculated according to formula (3) or formula (4) respectively.

6.3 Scope of application of whiteness and paleness index This document presents the CIE (2004) recommended evaluation formula for neutral white. The experimental basis for establishing the pale tint formula is shown in Figure

1.Pale tint lines It is a nearly parallel line with a dominant wavelength of 466nm. The whiteness formula is not applicable to colored samples. The whiteness W in formulas (1) to (4) and W10, the Pale Tone Index (TW), and TW,10 are applicable to samples in the following ranges.

7 Methods of expressing whiteness

7.1 Representation of Whiteness Whiteness is expressed using the values of W and W10, or W10 and TW,10, calculated according to the provisions of Chapter 6, with the numbers rounded to one decimal place.

7.2 Additional Records Additional records for the measured values include. the instruments used for measurement, the measurement method, and the lighting conditions for observation.