

ICS 79.020
CCS B 60

LY

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

LY/T 3138-2019

**Wood products method for assessment of colour fastness to
artificial light
(English Translation)**

Issued on: October 23, 2019

Implemented on: April 1, 2020

Issued by: State Forestry and Grassland Administration

Table of Contents

Foreword	
1 Scope	
2 Normative references	
3 Terms and definitions	
4 Principle	
5 Standard materials and test equipment	
6 Sample	
6.1 Sample size	
6.2 Moisture content of the sample	
6.3 Quantity requirements	
7 Test method	
7.1 Test device	
7.2 Test process	
8 Evaluation of light fastness and color fastness	
8.1 Color Difference Calculation	
8.2 Grade Evaluation of Lightfastness and Color Fastness	
9 Test report	

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Please note that some elements of this document may involve patents. The issuer of this document is not responsible for identifying these patents.

This standard was proposed and managed by the National Timber Standardization Technical Committee (SAC/TC 41).

This standard was drafted. Institute of Wood Industry, Chinese Academy of Forestry, Inner Mongolia Forest Industry Group Co., Ltd., Zhejiang Shiyu Wood Industry Co., Ltd., Zhejiang Yuhua Wood Industry Co., Ltd., National Engineering Research Center of Wood Industry, National Quality of Wood-based Panels and Wood and Bamboo Products Supervision and Inspection Center, Hebei Agricultural University, Del Future Technology Holdings Group Co., Ltd., Zhongshan Creative Players Home Co., Ltd., Shengxiang Group Co., Ltd., Dehua Bunny Decoration New Material Co., Ltd., Zhejiang Shenghua Yunfeng New Material Co., Ltd., Nanjing Forestry University Xue, Guangdong Runcheng

Chuangzhan Wood Industry Co., Ltd., Jiangsu Aimesen Wood Industry Co., Ltd., Qian'an Administrative Approval Bureau of Hebei Province, Yuanning Qingtai (North Beijing) Technology Co., Ltd., Dongguan Shengwei Electromechanical Equipment Technology Co., Ltd., Dongguan Huake Tony Instrument Co., Ltd., Daxingan, Inner Mongolia Ling Forestry School, Henan Jianuowei Wood Industry Co., Ltd.

1 Scope

This standard specifies the terms and definitions, principles, standard materials and test methods for determining the lightfastness (D65 light source) and color fastness of wood products Test equipment, samples, test procedures, rating and test reports.

This standard applies to the evaluation of lightfastness and color fastness of wood products under the D65 light source.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 250-2008 Gray sample card for textile color fastness test evaluation GB/T 730-2008 Textile Color Fastness Test Blue Wool Standard (1 ~ 7) Grade Quality Control GB/T 6151-2016 General rules of textile color fastness test GB/T 7921-2008 uniform color space and color difference formula GB/T 8427-2008 Textile color fastness test Artificial light color fastness. Xenon arc GB/T 28998-2012 Reorganized decorative materials

3 Terms and definitions

GB/T 250-2008, GB/T 6151-2016, GB/T 8427-2008, GB/T 28998-2012 and the following terms and definitions Applies to this document.

Wood products

Products made of wood or wood fiber through various mechanical processing. Mainly include wooden floors, wooden doors and windows, wooden furniture, Wooden building elements, etc.

Coluor fastness to light of wood products the ability of the surface color of wood products to resist the effects of light.

4 Principle

Using artificial light source (D65) equipment X25 xenon light attenuation meter that simulates sunlight exposure conditions, the wood product sample and a set of blue wool

standard samples Exposure under the set exposure conditions, using the blue wool standard sample and the gray discoloration card to evaluate the discoloration to obtain the color difference level.

The color index (L^* , a^* , b^*) of the wood product samples during the exposure period is periodically measured with a color measuring instrument, and the Color difference value (ΔE^*_{ab}), according to the color change of the sample and the color difference corresponding to the color fastness level of the gray sample card, determine the wood graded according to the gray sample card Product sample light fastness grade.

5 Standard materials and test equipment

5.1

Xenon light attenuation instrument.

5.2

Color measuring instrument.

5.3

The blue wool standard sample shall meet the requirements of GB/T 730-2008.

5.4

The gray sample card for assessing discoloration shall meet the requirements of GB/T 250-2008.

6.1 Sample size

The sample size shall meet the requirements of Table 1.

Table 1 Sample size requirements

In millimeters

Length width thickness 100.0 20.0 ~ 30.0 1.0 ~ 2.0 Note. Samples of other sizes can be made according to the requirements of the instrument.

Take 6 color measurement points on each sample, each color measurement point is marked with a circle with a diameter of 12 mm, see Figure 1.

Figure 1 Schematic diagram of color measurement point location

6.2 Moisture content of the sample

The moisture content of the sample is $(12 \pm 2)\%$.

6.3 Quantity requirements

Three samples were randomly selected from each sample.

7.1 Test device

Fix the sample and the blue wool standard on the test stand in the xenon light attenuation instrument, and cover half of the blue wool standard with opaque tin foil.

Samples were exposed to light at an irradiance of 42 W/m², a black standard temperature of 65 °C, and a relative humidity of 55%.

7.2 Test process

According to the requirements of Figure 1, the material color index (L^* , a^* , b^*) of each point before exposure was measured, and the average value (L^*_0 , a_0 , b_0)

0) As the sample

Initial wood color index, accurate to 0.01.

From time to time during the test, remove the blue wool standard sample, lift up the foil, and check the light effect of the blue wool standard sample. When the blue wool standard

2 When the degree of discoloration reaches level 3 of the gray sample card, record the exposure time and irradiation amount at this time, measure the material color index of each point on the sample, and average Value (L^*_1 , a_1 , b_1)

1) The color index for the first test is accurate to 0.01.

Continue to expose the blue wool standard sample 4 to the same degree of discoloration as the gray sample card 4 and record the exposure time and the amount of radiation.

Material color index of each point, take the average value (L^*_2 , a_2 , b_2)

2) The color index for the second test is accurate to 0.01.

When the degree of discoloration of the blue wool standard sample 6 reaches the gray sample card level 4, or the color difference produced by the most light-resistant sample reaches (3.4 ± 0.4) Within the range, terminate the test, record the exposure time and exposure, determine the material color index of each point on the sample, and take the average value (L^*_3 , a_3 , b_3)

Used as the material color index for the third test, accurate to 0.01.

8.1 Color Difference Calculation

Calculate the color difference between the original sample and the sample processed by the color fastness test. The color difference is calculated according to the formula of 5.1.3 in