

ICS 91.100.01

CCS Q 10



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

**GB/T 16259-2026**

Replacing GB/T 16259-2008

**Artificial climate ageing test method for building materials**

建筑材料人工气候老化试验方法

**Issued on: May 25, 2026**

**Implemented on: December 1, 2026**

**Issued by: State Administration for Market Regulation;  
Standardization Administration of the PRC**

## Table of Contents

- 4 Principles
- 6 Test conditions
- 7 Samples
- 8 Test Procedure
- 8.4 Determination of color difference after exposure test

### 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 supersedes GB/T 16259-2008 "Test Methods for Accelerated Aging of Building Materials under Artificial Climate", and is consistent with GB/T 16259-2008. In comparison, aside from structural adjustments and editorial 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 terms and definitions (see Chapter 3);
- c) The principles have been changed (see Chapter 4, Chapter 3 of the.2008 edition);
- d) The requirements for the test apparatus have been changed (see Chapter 5, Chapter 4 of the.2008 edition);
- e) The test conditions were changed (see Chapter 6, Chapter 5 of the.2008 edition);
- f) The sample was modified (see Chapter 7, Chapter 6 in the.2008 edition);
- g) The test procedures have been changed (see Chapter 8, Chapter 7 of the.2008 edition);
- h) The test results were changed (see Chapter 9, Chapter 8 in the.2008 edition);
- i) The test report was amended (see Chapter 10, Chapter 9 of the.2008 edition). 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, Zhejiang Ruibang Kete Testing Co., Ltd., and China Railway 22nd Bureau Group. Group Co., Ltd., China Building Materials Federation, Shanghai Representative

Office of American Copanno Laboratory Equipment Company, Ningxia Jiaojian Transportation Science and Technology Research Institute Limited Company, Beijing Oriental Yuhong Waterproof Technology Co., Ltd., Xi'an University of Technology, Beihua Aerospace Industry College, China Construction Southwest Institute Photonics Technology (Sichuan) Co., Ltd., Beijing University of Technology, Qingdao University of Technology, Zhejiang University City College, Dongguan Weihuang Test Equipment Co., Ltd., Xinjiang Xin Aluminum Industry Co., Ltd., China National Testing & Inspection Holding Group Co., Ltd., Hunan Zhongda Design Institute Co., Ltd., Chongqing Youfit Technology Co., Ltd. Limited Company, Wuxi Sunan Test Equipment Co., Ltd., Guangdong Haida Instrument Co., Ltd., China Railway Engineering Design & Consulting Group Co., Ltd., Changshu Suzhou-Changzhou Engineering Quality Testing Co., Ltd., Beijing Aobotai Technology Co., Ltd., Wuxi Chihe Testing Instruments Co., Ltd., and Chongqing Susheng Sida Test Equipment Co., Ltd., Shanghai Yuanxi Instrument Co., Ltd., National Institute of Metrology, Jinghong Jianyan (Beijing) Technology Co., Ltd. Zhengzhou Huisheng Materials Technology Co., Ltd. The main drafters of this document are. Wang Huan, Yu Yang, Jian Xiaohong, Qu Huasheng, Liu Yiliang, Wang Luyu, Li Chunye, Jia Xiaolong, Tan Junfeng, and Yang Hongyan. Xue Xiao, Zhang Ye, Li Dongxue, Wang Xinquan, Li Yonghong, Tian Dan, Dong Jing, Wu Jiahao, Zou Kui, Dong Aimin, Liu Jianyou, Liu Yujun, Zhang Xiaoxiao, Wang He Zhu Zhe, Yang Jun, Hao Yunan, Shi Zhihua, Zhang Yinqi, Huang Zhenhua, Han Mingshan, Lin Shuying, Zhou Wei, Gu Zhengyu, Wang Long, Tian Huawei, Gao Liufeng Wang Qing, Han Lei, Li Huihui, Wu Fengbo, Yang Mei, Fan Jingjing, Chen Lu. The release history of this document and the document it replaces is as follows: --First published in.1996 as GB/T 16259-1996, and revised for the first time in.2008; --This is the second revision. Artificial Climate Aging Test Methods for Building Materials

1.Scope This document specifies the principles and testing methods for accelerated aging tests of building materials using xenon arc lamps (hereinafter referred to as "xenon lamps") as the light source under artificial climate conditions. Test apparatus, test conditions, test specimens, test procedures, test results, and test report. This document applies to the testing of artificial climate aging of building materials in areas exposed to sunlight radiation.

## 4 Principles

4.1 Using a xenon arc lamp with a suitable filter as the light source, the spectral radiance in the ultraviolet and visible regions of the total solar radiation spectrum was simulated. Illuminance.

4.2 Under controlled conditions, the samples were exposed to different levels of light, heat, relative humidity and water (see 4.4).

4.3 Optional variable exposure conditions.

c) Humidity when exposed to light;

- d) When humidity control is required, the relative humidity inside the test chamber during the dark cycle is controlled under xenon arc lamp illumination;
- e) Wetting method of the test sample (see 4.4);
- f) Wetting cycle;
- g) The relative duration of the xenon arc lamp illumination and dark period.

4.4 Wetting. Spray the test sample with softened/deionized water, immerse the sample in water, or condense water vapor on the exposed sample surface. This can be achieved in one way.

4.5 The test procedure includes the measurement of ultraviolet irradiance and ultraviolet radiation amount on the sample surface.

4.6 It is advisable to expose a similar material with known properties (control) to the test sample simultaneously to provide a comparative test.

4.7 Test results from exposures in different devices should not be compared unless established between the different devices used for testing that particular material. Appropriate statistical relationships.

5. Experimental Apparatus The test apparatus shall comply with the requirements of Chapter 5 of GB/T 16422.2-2022.

## 6 Test conditions

6.1 Exposure Cyclic Conditions During the experiment, the exposure cycles and irradiance levels should be determined according to Tables 1 and

2. Other irradiance levels may also be used with the consent of the relevant parties. Procedures such as horizontal and dark cycles, water spray cycles, etc., for exposures where the temperature and relative humidity of the test chamber are not controlled, should be noted in the test report.

6.2 Black Label Temperature and Black Panel Temperature For arbitration tests, the black-label temperature should be the primary parameter for temperature control. For routine tests, a black-label thermometer can be used instead of a black-label temperature gauge. The use of the thermometer should be noted in the test report. If other temperatures are agreed upon by the relevant parties, this should be noted in the test report.

## 7 Samples

7.1 Specifications The sample specifications should be determined according to the relevant product standards. The minimum size for appearance testing is preferably 75 mm x 152 mm; other dimensions may vary. The shape of the template will be agreed upon by the

relevant parties.

7.2 Quantity At least three parallel samples.

7.3 Preparation Prepare samples according to the relevant product standards.

## 8 Test Procedure

8.1 Sample Fixation If a sample may contaminate other samples, it should be tested separately. The specimens are fixed to the specimen holder of the equipment in a manner free from any external stress. A non-removable mark is made on each specimen, and... The location of the markings does not affect subsequent tests. A distribution map of the test samples can be created for easier inspection.

8.2 Exposure Test Before placing the specimens inside the test chamber, ensure the equipment is operating under the required test conditions (see Chapter 6). Set up the test chamber according to the selected exposure conditions. Set the equipment parameters to allow it to operate continuously under the required number of cycles and exposure conditions for the product. Maintain consistent test conditions throughout the exposure process. Changes should be made, and test interruptions caused by equipment maintenance and sample inspection should be minimized. Test samples are exposed according to the prescribed exposure period. If an irradiator is used, it is exposed simultaneously with the test samples. If necessary, [the following steps are taken]. Regularly inspect the test samples, avoiding touching or making any alterations to the test surface. After inspection, place the test samples with the original exposed side facing outwards. Return the sample rack or test chamber. The sample's light-facing side should face the light source. Whether the non-light-facing side should be shielded should be agreed upon by the relevant parties and stated in the report.

8.3 Measurement of Irradiation The irradiance of the exposed surface of the test sample is measured using an irradiator. When the test sample is exposed according to the irradiance dose, its exposure period is measured using the exposed surface area. Radiant energy per unit area. An irradiator with a wavelength range of 300 nm to 400 nm is selected, and the exposure period is measured in joules per... The unit of measurement is square meters ( $\text{J}/\text{m}^2$ ); or, if a fixed wavelength irradiator (e.g., 340 nm) is used, the exposure period is measured in joules per square meter (nanometers). [ $\text{J}/(\text{m}^2 \cdot \text{nm})$ ] represents the quantity.

### 8.4 Determination of color difference after exposure test

8.4.1 Preparations before color difference measurement When the exposure test time specified in the product standard or agreed upon by the relevant parties is reached, the test equipment shall be shut down and the sample removed from the test chamber. Remove the water droplets from the back of the container, then place it face up on the test bench to air dry for later use.