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

GB/T 46580-2025

**Test method for air-purification performance of photocatalytic
materials and products - Removal of formaldehyde**

光催化材料及制品空气净化性能测试方法 甲醛的去除

(English Translation)

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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 is modified to adopt ISO 22197-4:2021 "Fine ceramics (advanced ceramics, advanced technical ceramics) - Semiconductor photocatalytic materials - Air".

Test methods for purification performance, Part 4: Formaldehyde removal.

This document has undergone the following structural adjustments compared to ISO 22197-4:2021.

---The symbols and descriptions in Chapter 4 of ISO 22197-4:2021 are listed in a table, numbered Table 1.

The table numbering for Chapter 10 (Table 1) will be reassigned to Table 2.

---Adjust the content of 8.2.1 in ISO 22197-4:2021 to after 8.2.3.

The technical differences between this document and ISO 22197-4:2021, and the reasons therefor, are as follows.

---ISO 10677 has been replaced with the normatively referenced GB/T 30809 (see 6.4), adopting the local light source standard to adapt to my country's technological level.

The technology is readily available, easy to implement, and has lower testing costs;

---The graph in ISO 22197-4:2021, "Figure 3 Formaldehyde concentration during the test," has been replaced with a graph based on data tested according to the methods described in this document.

Example graph showing changes over time (see 8.1), the experimental light source parameters were changed to ensure data representativeness;

---ISO/IEC 17025 has been replaced with the normatively referenced GB/T 27025 (see Chapter 11), adopting the Chinese laboratory competence accreditation standard.

Standards to improve operability.

The following editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Test Methods for Air Purification Performance of Photocatalytic Materials and Products - Formaldehyde Removal".

remove";

---Added national standard sources for some terms (see 3.1, 3.2, 3.6);

---ISO 6145-7 has been replaced by GB/T 5275.7 (see 6.2), which is cited in the informational reference.

---Added methods for collecting formaldehyde gas and detecting its concentration (see Appendix A, based on ISO 16000-3, see 6.5) to facilitate...

implement.

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 by the China Building Materials Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Ceramics (SAC/TC194).

1 Scope

This document describes the determination of photocatalysts under conditions of continuous exposure to simulated air pollutants and long-wave ultraviolet (UV) radiation.

Or, materials with a photocatalytic film on their surface (usually composed of semiconductor metal oxides such as titanium dioxide or other ceramic materials) have good air purification properties.

The experimental method.

This document applies to flat, thin, and sheet-like building materials, and also to structural filter materials such as honeycomb, woven, and non-woven fabrics.

Materials, as well as plastic or paper materials containing ceramics and composite materials.

This document does not apply to powdered or granular photocatalytic materials.

The test methods used in this document are applicable to the air purification performance testing of photocatalytic materials, but not to other properties of photocatalytic materials.

The determination of properties such as water pollutant degradation, self-cleaning, anti-fogging or antibacterial properties.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

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

This document.

GB/T 27025 General requirements for the competence of testing and calibration laboratories (GB/T 27025-2019, ISO/IEC 17025:2017) IDT) GB/T 30809 Ultraviolet light source for performance testing of photocatalytic materials ISO 16000-3 Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor and laboratory air

3 Terms and Definitions

The following terms and definitions apply to this document.

Photocatalyst

Substances that can produce photocatalytic effects under certain light source excitation include those that decompose and remove pollutants from air and water, deodorize, and have antibacterial properties.

Features include self-cleaning and anti-fogging.

[Source. GB/T 42265-2022, 3.1] 3.2 Materials that contain or use photocatalysts and have photocatalytic properties.

[Source. GB/T 42265-2022, 3.2]