

ICS 81.060.30

CCS Q 30



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

GB/T 45761-2025

**Determination of antiviral activity of photocatalytic materials
under indoor lighting environment - Test method using
bacteriophage Q-beta**

室内照明环境下光催化材料抗病毒活性的测定 Q-β噬菌体测试法

(English Translation)

Issued on: June 30, 2025

Implemented on: January 1, 2026

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Symbols
5 Principle
6 Materials
6.1 Test microorganisms and their preparation
6.2 Culture medium
7 Instruments and Equipment
7.1 Test Equipment
7.2 Covering film
7.3 Moisturizing glass
7.4 Glass tube or glass rod
7.5 filter paper
7.6 Light Source
7.7 UV cut-off filter
7.8 Lux meter
7.9 Centrifuge
7.10 Sterile filter
8 Sample
9 Test Procedure
9.1 Testing Process
9.2 Bacterial suspension preparation procedure
9.3 Phage Solution Preparation Procedure
9.4 Indoor Light-Response Photocatalytic Antiviral Activity Test Procedure
9.5 Indoor lighting conditions
9.6 Phage titer test
10 Result calculation
10.1 General
10.2 Determination of test validity
10.3 Calculation of indoor light-responsive photocatalytic antiviral activity

10.4 Calculation of non-indoor light-responsive photocatalytic antiviral activity

11 Test Report

Reference

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 is equivalent to ISO 18071:2016 "Fine ceramics (advanced ceramics, advanced technical ceramics) - Semiconductors for indoor lighting environments" Determination of antiviral activity of photocatalytic materials by Q-beta phage test method.

The following minimal editorial changes have been made to this document.

--- To coordinate with the existing standard, the name of the standard is changed to "Determination of antiviral activity of photocatalytic materials under indoor lighting conditions" Bacteria Test Method;

--- Added Note 2 to the "Principles" chapter (see Chapter 5);

--- Added introductory words for the items (see 6.1.2, 6.1.3, 8, 9.2, 9.3, 9.4, 9.6).

1 Scope

This document specifies the method for testing the antiviral activity of indoor light-responsive photocatalysts or materials with indoor light-responsive photocatalyst films on their surfaces.

This method determines the antiviral activity of Q-beta phage by counting the decrease in its titer after light exposure.

Note: In the test method, Q-beta phage replaces influenza virus as the test microorganism.

This document is applicable to different types of indoor light-responsive photocatalytic materials in the field of building materials, various application material substrates including sheet, plate, flat Plate-like, excluding powder, granular or porous indoor light-responsive photocatalytic materials.

This document is applicable to indoor light-responsive photocatalytic materials with antiviral properties, and is not applicable to materials with antibacterial properties, antifungal properties, etc.

Materials with other uses such as energy conservation, water pollutant degradation, self-cleaning, anti-fog and air purification properties.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

ISO 14605 Fine ceramics (advanced ceramics, advanced technical ceramics) - Light sources for testing semiconductor photocatalytic materials under indoor lighting conditions

ISO 27447 Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for antimicrobial activity of semiconductor photocatalytic materials

ISO 80000-1 Quantities and units - Part 1: General

3 Terms and Definitions

The following terms and definitions apply to this document.

3.3

Ordinary lighting environment with pure artificial light source

3.1 Photocatalyst

Under the stimulation of certain light sources, substances that can produce catalytic functions include decomposition and removal of pollutants in air and water, deodorization, and disease resistance. Virus, anti-bacteria, anti-fungal, self-cleaning and anti-fog, etc.

3.2 Indoor-light-activephotocatalyst

Photocatalysts excited by artificial light sources for general lighting (such as indoor lighting environments).