
**Fine ceramics (advanced ceramics,
advanced technical ceramics) —
Determination of bacterial reduction
rate by semiconducting photocatalytic
materials under indoor lighting
environment — Semi-dry method
for estimating antibacterial activity
on the actual environmental bacteria
contamination surface**



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document applies to testing the antibacterial activity of indoor-light-active photocatalytic ceramics and other materials, produced by either coating or mixing of a light-active photocatalyst in a simulated indoor lighting environment. The International Standard for testing the antibacterial activity of photocatalytic materials has been published as ISO 27447 and the International Standard for testing the antibacterial activity of indoor-light-active photocatalytic materials has been published as ISO 17094.

Recently, it was discovered that antibacterial activities by indoor-light-active photocatalyst showed different results between the ISO 17094 testing in a laboratory and the evaluation in a real environment. Thus, the ISO 17094 testing method should be complemented by a testing method that simulates an indoor lighting environment.

ISO 17094 is one of the best methods for measuring the potential of antibacterial activity using photocatalysts. This document can measure the reduction rate of living bacteria by testing with impure substances similar to an indoor lighting environment.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of bacterial reduction rate by semiconducting photocatalytic materials under indoor lighting environment — Semi-dry method for estimating antibacterial activity on the actual environmental bacteria contamination surface

WARNING — Handling and manipulation of microorganisms that are potentially hazardous requires a high degree of technical competence. Only personnel trained in microbiological techniques should carry out tests.

1 Scope

This document establishes a test method for determining the antibacterial activity of materials containing an indoor-light-active photocatalytic material on the surface. The antibacterial reduction rate is determined by measuring the survival of bacteria after illumination with indoor light. This test assumes a surface with high potential of possible person contact with bacteria. This test is designed to evaluate the suppression of contact infection of bacteria using an indoor-light-active photocatalytic material under indoor lighting environment.

It is intended for use with different kinds of indoor-light-active photocatalytic materials used in construction, for example, flat sheets, board or plate shapes, which are the basic forms of materials for various applications. It is not applicable to powder, granular, or porous indoor-light-active photocatalytic materials, as well as cloths or textiles.

It is applicable to indoor-light-active photocatalytic materials produced for antibacterial application. Other types of indoor-light-active photocatalytic materials applications, i.e. decomposition of water contaminants, self-cleaning, antifogging, and air purification, are non-applicable by this method.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14605, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Light source for testing semiconducting photocatalytic materials used under indoor lighting environment*

ISO 17094:2014, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for antibacterial activity of semiconducting photocatalytic materials under indoor lighting environment*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>