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# Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of photocatalytic activity of surfaces in an aqueous medium by degradation of methylene blue

*Céramiques techniques — Détermination de l'activité photocatalytique des surfaces dans un milieu aqueux par dégradation du bleu de méthylène*

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# Contents

Page

**Foreword** ... **iv**

**1 Scope** ... **1**

**2 Normative references** ... **1**

**3 Terms and definitions** ... **1**

**4 Symbols and abbreviations** ... **2**

**5 Principle** ... **3**

**6 Apparatus** ... **3**
6.1 General ... 3
6.2 Measuring device ... 3
6.3 Glass pane ... 3
6.4 Light source ... 3
6.5 UV radiometer ... 3
6.6 Photometer or UV/visible spectrometer ... 4
6.7 Measuring cuvette ... 4
6.8 Magnetic stirrer ... 4

**7 Calibration** ... **4**

**8 Testing and conditioning solutions** ... **4**

**9 Preparation of the test specimens** ... **4**

**10 Preparation of the measurement** ... **5**

**11 Measurement procedure** ... **5**
11.1 General ... 5
11.2 Testing with intermittently stirred test cylinders (method A) ... 6
11.3 Testing with continuously stirred test cells (method B) ... 6

**12 Evaluation of results** ... **6**
12.1 General ... 6
12.2 Specific degradation rate $R$ ... 6
12.3 Photon irradiance $E_P$ ... 7
12.4 Average irradiance $E_{av}$ ... 7
12.5 Average photon irradiance $E_{P,av}$ ... 7
12.6 Specific photocatalytic activity $P_{MB}$ ... 7
12.7 Photonic efficiency $\zeta_{MB}$ ... 7

**13 Precision** ... **7**
13.1 Repeatability ... 7
13.2 Reproducibility ... 7

**14 Test report** ... **8**

**Annex A** (informative) **Example of an evaluation** ... **9**

**Annex B** (informative) **Examples of measuring devices** ... **11**

**Annex C** (informative) **Interlaboratory test results** ... **13**

**Bibliography** ... **14**

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# Foreword

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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 document 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).

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

This second edition cancels and replaces the first edition (ISO 10678:2010), which has been technically revised.

The main changes are as follows:

— normative references have been updated;

— procedures for “Testing with intermittently stirred test cylinders” and “Testing with continuously stirred test cells” as “method A” and “method B” have been clarified and the whole document has been revised accordingly;

— precision data and interlaboratory test results for both methods have been updated and included in Annex C;

— document has been editorially revised.

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.

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# Fine ceramics (advanced ceramics, advanced technical ceramics) — Determination of photocatalytic activity of surfaces in an aqueous medium by degradation of methylene blue

## 1 Scope

This document specifies a method for the determination of the photocatalytic activity of surfaces by means of degradation of methylene blue (MB) in an aqueous medium under artificial irradiation, and characterises photocatalytically active surfaces with respect to their activity for degradation of dissolved organic molecules under radiant exposure to ultraviolet light.

This document does not apply for the characterization of surfaces with respect to their photocatalytic activity under visible light. A correlation of photocatalytic activity with the removal of direct soiling, the degradation of gaseous molecules in the environmental air or the antimicrobial efficacy can exist, especially for surfaces with low photonic efficiency.

## 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 10677, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Ultraviolet light source for testing semiconducting photocatalytic materials*

## 3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

**3.1**
**specific photocatalytic activity**
$P_{MB}$
measure for the photochemical conversion

Note 1 to entry: $P_{MB}$ is expressed in moles per square metre and hour [mol/(m$^2$·h)].

**3.2**
**photonic efficiency**
$\zeta_{MB}$
measure for the selectivity of the incident photons for methylene blue decolouration

Note 1 to entry: It is assumed that one photon is sufficient for the decolouration of a molecule.

Note 2 to entry: $\zeta_{MB}$ is expressed as a percentage of the incident photons.

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