



BSI Standards Publication

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

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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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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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.

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ISO 10678 was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

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 International Standard specifies a method for the determination of the photocatalytic activity of surfaces by degradation of the dye molecule methylene blue (MB) in aqueous solution using artificial ultraviolet (UV) radiation, and characterizes the ability of photoactive surfaces to degrade dissolved organic molecules on ultraviolet radiation.

The test method specified is also applicable to evaluation of the specific photocatalytic self-cleaning activity of surfaces covered with respective coatings.

This method is not applicable to characterizing the photoactivity of surfaces on visible illumination, regarding direct soiling, degradation of gaseous molecules and the determination of antimicrobial photoactivity of surfaces.

NOTE Correlations between these different kinds of photocatalytic activity can, however, exist, in particular at surfaces exhibiting low photonic efficiencies.

2 Terms and definitions

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

2.1

specific photocatalytic activity

P_{MB}
measure of the photochemical conversion

NOTE Specific photocatalytic activity is expressed in moles per square metre and hour [mol/(m²h)].

2.2

photonic efficiency

ζ_{MB}
measure of the selectivity of the incident photons to induce the decolourization of methylene blue

NOTE 1 Photonic efficiency is expressed as a percentage of the incident photon flux.

NOTE 2 It is assumed that one photon can induce the decolourization of one dye molecule.

2.3

test solution

aqueous methylene blue solution used to determine the photocatalytic activity of surfaces