International Standard

ISO 19618

Fine ceramics (advanced ceramics, advanced technical ceramics) — Measurement method for normal spectral emissivity using blackbody reference with an FTIR spectrometer

Céramiques techniques — Méthode de mesure de l'émissivité spectrale normale au moyen d'un corps noir de référence par spectrométrie infrarouge à transformée de Fourier (IRTF)

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Foreword

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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 19618:2017), which has been technically revised.

The main changes are as follows:

— correction of the procedure for the linearity verification of the FTIR system in 7.3;

— addition of the thermal history of the specimen to the items to be reported in Clauses 6 and 11;

— correction of the terms to be used for the calculations in Clause 10.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Measurement method for normal spectral emissivity using blackbody reference with an FTIR spectrometer

1 Scope

This document specifies a method used for the determination of normal spectral emissivity and normal quasi-total emissivity of fine ceramics using blackbody reference with a Fourier transform infrared spectrometer (FTIR) at elevated temperatures. This method is applicable to fine ceramics, ceramic matrix composites, and continuous fibre-reinforced ceramic matrix composites which are opaque and highly non-reflective at wavelengths between 1,67 µm and 25 µm. The applicable temperature range is approximately 350 K to 1 100 K.

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.

IEC 60584-2, *Thermocouples — Part 2: Tolerances*

IEC 60751, *Industrial platinum resistance thermometers and platinum temperature sensors*

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
emissivity
ε
ratio of the radiant emittance of a substance (specimen) to the radiant emittance of a *blackbody* (3.2) at the same temperature

3.2
blackbody
ideal thermal radiator that absorbs all incident radiation completely, whatever the wavelength, direction of incidence or polarization

3.3
spectral emissivity
$\varepsilon_{s,\lambda,T}$
emissivity (3.1) of a specimen at a defined wavelength λ and temperature T

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