

**ISO 19604:2018**  
**NBN ISO 19604:2021**

 **NBN**



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**Fine ceramics (advanced ceramics, advanced technical ceramics)  
– Mechanical properties of ceramic composites at high  
temperature – Determination of stress-rupture time diagram  
under constant tensile loading (ISO 19604:2018)**

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Valid from 26-05-2021

ICS: 81.060.30



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**Fine ceramics (advanced ceramics,  
advanced technical ceramics) —  
Mechanical properties of ceramic  
composites at high temperature —  
Determination of stress-rupture time  
diagram under constant tensile loading**

*Céramiques techniques (céramiques avancées, céramiques techniques avancées) — Propriétés mécaniques des composites à matrice céramique à température élevée sous air et à pression atmosphérique — Détermination du diagramme contrainte temps de rupture sous chargement constant en traction*



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Published in Switzerland

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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](http://www.iso.org/directives)).

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For an explanation on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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





# Fine ceramics (advanced ceramics, advanced technical ceramics) — Mechanical properties of ceramic composites at high temperature — Determination of stress-rupture time diagram under constant tensile loading

## 1 Scope

This document specifies the conditions for determination of the stress-rupture time diagram of continuous fibre-reinforced ceramic matrix composites (including carbon fibre-reinforced carbon matrix composite) at high temperature in air, vacuum and inert gas atmospheres under constant tensile loading.

This document applies to all ceramic matrix composites with continuous fibre reinforcement: unidirectional (1D), bidirectional (2D) and tridirectional (xD, with  $2 < x \leq 3$ ), loaded along one principal axis of reinforcement.

NOTE 1 In most cases, ceramic matrix composites to be used at high temperature in air are coated with an antioxidation coating.

NOTE 2 Since the main purpose of the test is to obtain the stress-rupture time data, the deformation measurement is not mandatory.

## 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 3611, *Geometrical product specifications (GPS) — Dimensional measuring equipment: Micrometers for external measurements — Design and metrological characteristics*

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

ISO 17161, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Ceramic composites — Determination of the degree of misalignment in uniaxial mechanical tests*

ISO 20507, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Vocabulary*

IEC 60584-1, *Thermocouples — Part 1: Reference tables*

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

## 3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in ISO 20507 and the following 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/>