



Designation: C 1291 – 00a

Standard Test Method for Elevated Temperature Tensile Creep Strain, Creep Strain Rate, and Creep Time-to-Failure for Advanced Monolithic Ceramics¹

This standard is issued under the fixed designation C 1291; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of tensile creep strain, creep strain rate, and creep time-to-failure for advanced monolithic ceramics at elevated temperatures, typically between 1073 and 2073 K. A variety of specimen geometries are included. The creep strain at a fixed temperature is evaluated from direct measurements of the gage length extension over the time of the test. The minimum creep strain rate, which may be invariant with time, is evaluated as a function of temperature and applied stress. Creep time-to-failure is also included in this test method.

1.2 This test method is for use with advanced ceramics that behave as macroscopically isotropic, homogeneous, continuous materials. While this test method is intended for use on monolithic ceramics, whisker- or particle-reinforced composite ceramics as well as low-volume-fraction discontinuous fiber-reinforced composite ceramics may also meet these macroscopic behavior assumptions. Continuous fiber-reinforced ceramic composites (CFCCs) do not behave as macroscopically isotropic, homogeneous, continuous materials, and application of this test method to these materials is not recommended.

1.3 The values in SI units are to be regarded as the standard (see Practice E 380).

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

¹ This test method is under the jurisdiction of ASTM Committee C-28 on Advanced Ceramics and is the direct responsibility of Subcommittee C28.01 on Properties and Performance.

Current edition approved ~~June~~ Oct. 10, 2000. Published ~~October 2000~~ January 2001. Originally published as C 1291 – 95. Last previous edition ~~1291 – 95^{ε1}~~ 1291 – 00.