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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for thermal fatigue of fine ceramics substrate

Céramiques techniques — Méthode d'essai de la fatigue thermique des substrats des céramiques techniques

Reference number
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Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

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

4 Testing machine and equipment ... **2**
4.1 Thermal cycling testing equipment ... 2
4.2 Four-point bending strength testing equipment ... 2
4.3 Supports for four-point bending strength testing ... 2
4.4 Micrometre callipers ... 2
4.5 Vernier callipers ... 2

5 Test specimens ... **2**
5.1 Test specimen form and dimensions ... 2
5.1.1 General ... 2
5.1.2 Fine ceramics plate thickness t and metal plate thickness t_m ... 2
5.2 Number of test specimens ... 3

6 Testing methods ... **3**
6.1 Test specimen dimension measurements ... 3
6.2 Thermal fatigue (thermal cycling) testing methods ... 3
6.2.1 Thermal fatigue (thermal cycling) conditions ... 4
6.2.2 Low-temperature tank inside T_A and high-temperature tank inside T_B ... 4
6.2.3 Number of cycles in thermal fatigue N ... 4
6.2.4 Each exposure time t_1 to low temperature and high temperature ... 4
6.2.5 Transfer time t_2 ... 4
6.2.6 Temperature recovery time t_s ... 4
6.2.7 Single cycle ... 5
6.3 Testing methods of four-point bending strength ... 5
6.3.1 Distance between inner fulcrums (inner span) and distance between outer fulcrums (outer span) ... 5
6.3.2 Crosshead speed and fracture load ... 6
6.3.3 Measurement of load-displacement ... 6
6.4 Four-point bending strength testing for virgin specimens not exposed to thermal cycling 6

7 Calculation of test results ... **7**
7.1 Calculation of four-point bending strength ... 7
7.2 Calculation of mean values and standard deviations ... 7
7.3 Residual strength ratio ... 7
7.3.1 Calculation of residual strength ratio ... 7
7.3.2 Residual strength ratio – Thermal cycle number plots ... 8

8 Test report ... **9**
8.1 Items to be reported ... 9
8.2 Additional items to be reported ... 9

Annex A (informative) **Calculation of stress intensity factor at fracture** ... **10**

Bibliography ... **15**

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Foreword

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The committee responsible for this document is ISO/TC 206, *Fine ceramics*.

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Fine ceramics (advanced ceramics, advanced technical ceramics) — Test method for thermal fatigue of fine ceramics substrate

1 Scope

This International Standard describes the test methods for determining thermal fatigue property of fine ceramic substrates applied to power modules, electronic control unit and similar devices.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4287, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

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

ISO 13385-1, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Part 1: Callipers; Design and metrological characteristics*

ISO 80000-1, *Quantities and units — Part 1: General*

3 Terms and definitions

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

3.1
ceramic substrate
electrical circuits substrate which joined the metal plate to ceramics, applied to power modules and similar devices

3.2
thermal cycling
temperature which is simply and cyclically repeated between a specific high value and a specific low value

3.3
four-point bending strength
maximum value of stress generated in a test specimen obtained by a four-point bending test

3.4
residual strength ratio
value ($\sigma_b / \overline{\sigma_{b0}}$) of four-point bending strength of a test specimen exposed to thermal cycling (σ_b) divided by the mean four-point bending strength of test specimens not exposed to thermal cycling ($N = 0$) ($\overline{\sigma_{b0}}$)

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