

ISO 22459:2024-08 (E)

Fine ceramics (advanced ceramics, advanced technical ceramics) - Reinforcement of ceramic composites - Determination of distribution of tensile strength and tensile strain to failure of filaments within a multifilament tow at ambient temperature

Contents		Page
Foreword		iv
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle	2
5	Significance and use	2
6	Apparatus	3
6.1	Tensile testing equipment	3
6.2	Data recording	4
7	Test specimen	4
7.1	General	4
7.2	Window type specimen	4
7.3	Cylindrical end type specimen	4
8	Test specimen preparation	5
8.1	General	5
8.2	Window type specimen	5
8.3	Cylindrical end type specimen	6
8.4	Number of test specimens	6
9	Test procedure	6
9.1	Determination of the initial cross-section area	6
9.2	Determination of the gauge length	6
9.3	Gripping	6
9.4	Selection of strain rate	7
9.5	Test procedure	7
9.6	Determination of load train compliance	7
9.7	Test validity	8
10	Calculation of results	8
10.1	Calculation of the load train compliance C_I	8
10.2	Calculation of probability of filament rupture P_j from the tests on specimens with a gauge length of 200 mm	10
10.2.1	Determination of the true origin	10
10.2.2	Construction of envelope curve and determination of instantaneous compliance $C_{t,j}$	10
10.2.3	Probability of filament rupture	11
10.3	Distribution of filament rupture strain	11
10.3.1	Calculation of filament rupture strain	11
10.3.2	Filament rupture strain distribution	11
10.4	Distribution of filament strength	12
10.4.1	Initial cross-section area	12
10.4.2	Calculation of filament strength	12

10.4.3	Filament strength distribution	13
10.4.4	Average filament strengths	13
10.4.5	Mean filament strength	14
11	Test report	14
Annex A (informative) Abstract of the handbook of mathematical functions		15
Bibliography		16