1. Record Nr. UNINA9910828094303321

Titolo	Failure criteria in fibre reinforced polymer composites [[electronic resource]] : the World-Wide Failure Exercise / / edited by M.J. Hinton, A.S. Kaddour, P.D. Soden
Pubbl/distr/stampa	Amsterdam ; ; San Diego, CA ; ; Oxford, : Elsevier, 2004
ISBN	1-281-11872-9 9786611118723 0-08-053157-1
Edizione	[1st ed.]
Descrizione fisica	1 online resource (1269 p.)
Altri autori (Persone)	HintonM. J (Mike J.) KaddourA. S SodenP. D (Peter D.)
Disciplina	620.1920287
Soggetti	Polymeric composites - Fatigue Fibrous composites - Fatigue Laminated materials - Fatigue
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"This volume contains 34 previously published papers from the journal Special issue composites science and technology and four new papers."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Failure Criteria in Fibre Reinforced Polymer Composites: The World-Wide Failure Exercise; Copyright Page; Contents; Preface; About the editors; Section 1: The World-Wide Failure Exercise: Its Origin, Concept And Content; Chapter 1.1 The world-wide failure exercise: Its origin, concept and content; Section 2: Test Cases, Lamina Data and Experimental Results Under Biaxial Loads; Chapter 2.1 Lamina properties, lay-up configurations and loading conditions for a range of fibre reinforced composite laminates Chapter 2.2 Biaxial test results for strength and deformation of a range of E-glass and carbon fibre reinforced composite laminates: Failure exercise benchmark dataSection 3: Description of the Individual Failure Theories by their Originators; Chapter 3.1 Prediction of composite laminate fracture: Micromechanics and progressive fracture; Chapter 3.2 Failure criteria for use in the design environment; Chapter 3.3 Stress-based Grant-Sanders method for predicting failure of composite

laminates; Chapter 3.4 Predicting transverse crack formation in cross-ply laminates
Chapter 3.5 Predictions of the original and truncated maximum-strain failure models for certain fibrous composite laminatesChapter 3.6 Predictions of a generalized maximum-shear-stress failure criterion for certain fibrous composite laminates; Chapter 3.7 Failure analysis of FRP laminates by means of physically based phenomenological models; Chapter 3.8 Prediction of laminate failure with the Rotem failure criterion; Chapter 3.9 Prediction of failure envelopes and stress/strain behavior of composite laminates; Chapter 3.10 A progressive quadratic failure criterion for a laminate
Chapter 3.11 A strain-energy based failure criterion for non-linear analysis of composite laminates subjected to biaxial loadingChapter 3.12 The strength of multilayered composites under a plane-stress state; Chapter 3.13 Predicting the nonlinear response and progressive failure of composite laminates; Chapter 3.14 The predictive capability of failure mode concept-based strength criteria for multidirectional laminates; Chapter 3.15 Composite laminate failure analysis using multicontinuum theory
Chapter 3.16 A bridging model prediction of the ultimate strength of composite laminates subjected to biaxial loadsChapter 3.17 Expanding the capabilities of the Ten-Percent Rule for predicting the strength of fibre-polymer composites; Section 4: A Comparative Study of Failure Theories and Predictions for Fibre Polymer Composite Laminates: Part (A); Chapter 4.1 A comparative study of failure theories and predictions for fibre polymer composite laminates: Part (A); Section 5: Comparison Between the Individual Theoretical Predictions and Experimental Results
Chapter 5.1 Application of progressive fracture analysis for predicting failure envelopes and stress-strain behaviors of composite laminates: A comparison with experimental results

Sommario/riassunto

Fiber reinforced polymer composites are an extremely broad and versatile class of material.Their high strength coupled with lightweight leads to their use wherever structural efficiency is at a premium. Applications can be found in aircraft, process plants, sporting goods and military equipment. However they are heterogeneous in construction and antisotropic, which makes making strength prediction extremely difficult especially compared to that of a metal. This book brings together the results of a 12year worldwide failure exercise encompassing 19 theories in a single volume