

## Creep Behavior Of Linear Low Density Polyethylene Films

*Principles of Composite Material Mechanics, Third Edition presents a unique blend of classical and contemporary mechanics of composites technologies. While continuing to cover classical methods, this edition also includes frequent references to current state-of-the-art composites technology and research findings. New to the Third Edition Many new worked-out example problems, homework problems, figures, and references An appendix on matrix concepts and operations Coverage of particle composites, nanocomposites, nanoenhancement of conventional fiber composites, and hybrid multiscale composites Expanded coverage of finite element modeling and test methods Easily accessible to students, this popular bestseller incorporates the most worked-out example problems and exercises of any available textbook on mechanics of composite materials. It offers a rich, comprehensive, and up-to-date foundation for students to begin their work in composite materials science and engineering. A solutions manual and PowerPoint presentations are available for qualifying instructors.*

*Three grades of high density polyethylene (HDPE) are tested for tensile, creep, and creep recovery, and creep properties determination. As a result of tensile tests, the materials were found to strain uniformly under constant strain rate to about 3% at 20 deg C which is well below the 12% yield point (YP). With creep tests, an attempt was made to explain and predict the effects of low loads and temperature on linear viscoelasticity (LVE) in these materials. When a creep curve plateaus (zero creep strain after a transient primary creep strain), strain recovery from the plateau is 100%. This combination of creep plateau and full recovery as another manifestation and definition of linear viscoelasticity is presented. The effort presented was only partially successful for HDPE as the creep apparatus has an error zone producing uncertain data precisely in the region where HDPE linear viscoelasticity is expected. However, from past research on the same creep apparatus, it was found that amorphous polycarbonate (PC) produces plateaus outside and above this error zone, from which full recovery occurs at strains up to 1% and stresses up to approximately 3300 psi (22.75 MPa). Keywords: Polyethylene, Mechanical properties, Linear viscoelasticity.*

Structural Plastics Design Manual

Proceedings of the 9th AEPA 2008, Daejeon, Korea, 20-24 October 2008

International Aerospace Abstracts

Research Paper PPL

Advanced Concrete Technology

This design manual is intended to assist the practicing engineer in the evaluation and use of plastics as structural materials. Consequently, it emphasizes those technological aspects of the broad class of materials which affect structural behavior and outlines the various categories of plain and modified plastics, noting their basic behavior under the conditions of stress, strain, time, and temperature that control design. It reviews fabrication processes and their effects on materials usage and characteristics, and considers influences of the environment that result in degradation of structural properties. Above all, it examines the design principles and practices applicable to plastics and composites when employed structurally.

Provides a short survey of recent advances in the mathematical modelling of the mechanical behavior of anisotropic solids under creep conditions, including principles, methods, and applications of tensor functions. Some examples for practical use are discussed, as well as experiments by the author to test the validity of the modelling. The monograph offers an overview of other experimental investigations in creep mechanics. Rules for specifying irreducible sets of tensor invariants, scalar coefficients in constitutive and evolutonal equations, and tensorial interpolation methods are also explained. The text has been re-examined and improved throughout.

Energy Research Abstracts

Reactor Technology

Structures: Properties, and Applications

Chemical Vapor Deposition ... International Conference

Scientific and Technical Aerospace Reports

Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training.

Previous studies have not verified the relationship between creep and defects in geomembranes. Thus, a series of creep tests using the Stepped Isothermal Method (SIM) was conducted to evaluate the synergism between creep and defects in Linear Low Density Polyethylene (LLDPE) geomembranes. Specifically, three different sizes of defects were used in this research: no defects, 1.6 mm in diameter, and 3.2 mm in diameter. In addition, two different load levels were applied to each sample: 18 %, and 27 % of the Ultimate Tensile Strength (UTS). We found that the creep behavior of LLDPE geomembranes is not significantly affected by the existence of defects. However, the axis of defects in geomembranes elongated during the creep test. These results imply that a leakage rate through a defect increases as time increases if geomembranes containing defects undergo creep condition. Future research is needed to verify the creep behavior of different types of geomembranes with various sizes and shapes of defects.

Journal of Testing and Evaluation

Mechanics of Paper Products

Government Reports Announcements & Index

NBS Special Publication

Publications of the National Institute of Standards and Technology ... Catalog

Six construction adhesives and a conventional polyvinyl acetate adhesive were placed under dead load at five stress levels and three temperatures for 2 months. The shear slip was measured after 10, 100, 1,000, 10,000, and 100,000 minutes (70 days) under load. The results show four general types of behavior. Three construction adhesives with crosslinking capability had fair resistance to creep and showed evidence that a creep limit might be reached under moderate dead load and environmental conditions. Two adhesives had very poor creep resistance and failed under moderate dead load and environmental conditions. The sixth adhesive was extremely flexible but with excellent recovery capability. A polyvinyl acetate adhesive was not observed to creep under the low humidity conditions of this study. Adhesives showing evidence of a creep limit may be useful for long-term design loads, but further study of their behavior, especially under varying moisture conditions, is required. (Author).

Describes the structure and mechanics of a wide range of cellular materials in botany, zoology, and medicine.

Volume 7 Composites, Impact, Statistics, and High-Temperature Phenomena

High Temperature Superconductors

Behavior of Construction Adhesives Under Long-Term Load

Publications of the National Bureau of Standards

Proceedings of Symposium 14 of the COSPAR Interdisciplinary Scientific Commission of the COSPAR Twenty-eighth Plenary Meeting Held in The Hague, The Netherlands, 25 June-6 July 1990

*Advanced Concrete Technology A thorough grounding in the science of concrete combined with the latest developments in the rapidly evolving field of concrete technology In the newly revised second edition of Advanced Concrete Technology, a distinguished team of academics and engineers delivers a state-of-the-art exploration of modern and advanced concrete technologies developed during the last decade. The book combines the essential concepts and theory of concrete with practical examples of material design, composition, processing, characterization, properties, and performance. The authors explain, in detail, the hardware and software of concrete, and offer readers discussions of the most recent advances in concrete technology, including, but not limited to, concrete recycling, nanotechnology, microstructural simulation, additive manufacturing, and non-destructive testing methods. This newest edition of Advanced Concrete Technology provides a sustained emphasis on sustainable and novel technologies, like new binders, 3D printing, and other advanced materials and techniques. Readers will also find: A thorough introduction to concrete, including its definition and its historical evolution as a material used in engineering and construction In-depth explorations of the materials for making concrete and the properties of fresh concrete Comprehensive discussions of the material structure of concrete, hardened concrete, and advanced cementitious composites Fulsome treatments of concrete fracture mechanics, non-destructive testing in concrete engineering, and future trends in concrete Perfect for undergraduate and graduate students studying civil or materials engineering—especially those taking classes in the properties of concrete or concrete technologies—as well as engineers in the concrete industry. Advanced Concrete Technology, 2nd Edition will also earn a place in the libraries of civil and materials engineers working in the industry.*

*This text provides the basic history, molecular structure and intrinsic properties, practical applications and future developments of polyethylene production and marketing - including recycling systems and metallocene technology. It describes commercial processing techniques used to convert raw polyethylene to finished products, emphasizing special properties and end-use applications.*

Conference Proceedings

Effect of Varied Extrusion Temperature on the Properties of a Zinc-copper-titanium Alloy

Journal of Research of the National Bureau of Standards

Engineering Plasticity and Its Applications from Nanoscale to Macroscale

Evaluation of Synergism Between Creep and Defects in a Low Linear Density Polyethylene (LLDPE) Geomembrane

The primary objective of the Asia-Pacific Conference on Engineering Plasticity and Its Applications (AEPA) is to provide a free forum for exchanging ideas and introducing the latest research findings in the field of engineering plasticity. This conference is unique among the related conferences in that it provides a forum for all fields of plasticity so that multi-disciplinary research works are encouraged. This proceedings volume consists of papers presented at AEPA2008, and covers the following categories in all fields of engineering plasticity: constitutive modeling; damage, fracture, fatigue and failure; dynamic loading and crash dynamics; engineering applications and case studies; experimental and numerical techniques; molecular dynamics; nano, meso, micro and crystal plasticity; phase transformations; plastic instability and strain localization; plasticity in advanced materials; plasticity in materials processing technology; plasticity in tribology; porous, cellular and composite materials; structural plasticity; superplasticity; and time-dependent deformation. Ranging from nanoscale to macroscale applications of engineering plasticity, this book touches upon fields as diverse as mechanical engineering, materials science, physics, chemistry and civil engineering.

This graduate level textbook focuses on the mechanical properties and performance of products made of fiber-based materials such as paper and board. The book aims to help students develop effective skills for solving problems of product performance and engineering challenges in new product development. Therefore the material is organized with a problem-based approach - a practical example of product performance is presented and then the relevant mechanics are analyzed to deduce which material properties control the performance.

The Next Generation in Scientific Ballooning

Principles of Composite Material Mechanics, Third Edition

Industrial Communication Technology Handbook, Second Edition

Mechanical Properties of Materials

Nonlinear Viscoelastic Properties of Bituminous Concretes

*This essential reference provides the most comprehensive presentation of state-of-the-art research being conducting worldwide today in this growing field of research and applications. HTS are currently being supported by numerous governmental and industrial initiatives in the USA and Asia and Europe to overcome energy distribution issues and are now being commercialised for power-delivery devices, such as power transmission lines and cables, motors, and generators. Applications in electric utilities include energy-storing devices to help industries avoid dips in electric power, current limiters, and long transmission lines. The technology is particularly thought out for highly-populated and densed areas. Both editors are leading experts in the field from the National Renewable Energy Laboratory and the Oak Ridge National Laboratory. This book can be used as a companion teaching tool, and also as a research and professional reference.*

*These volumes, 7 and 8, of Fracture Mechanics of Ceramics constitute the proceedings of an international symposium on the fracture mechanics of ceramic materials held at Virginia Polytechnic Institute and State University, Blacksburg, Virginia on June 19, 20 and 21, 1985. These proceedings constitute the fourth pair of volumes of a continuing series of conferences. The theme of this conference, as the previous three, focused on the mechanical behavior of ceramic materials in terms of the characteristics of cracks, particularly the roles which they assume in the fracture process. The 78 contributed papers by over 100 authors and co-authors represent the current state of the field. They address many of the theoretical and practical problems of interest to those concerned with brittle fracture. The program chairmen gratefully acknowledge the financial assistance for the Symposium provided by the EXXON Foundation, the Army Research Office, the Natio-al Science Foundation, and the Office of Naval Research. Without their support, this conference simply would not have been possible. The suggestions of Drs. J. C.*

*Hurt, R. C. Pohanka, and L. Toth were particularly helpful in assuring the success of this symposium. Special appreciation is extended to Professor J. I. Robertson, C. P. Miles Professor of History, whose presentation following the banquet on the American Civil War was very well received by the audience. Finally, we wish to also thank our joint secretaries, especially Karen Snider, for their patience and help in finally bringing these proceedings to press.*

Properties and Performance of Natural-Fibre Composites

Cellular Materials in Nature and Medicine

Fracture Mechanics of Ceramics

Applied Mechanics Reviews

Creep Mechanics

Viscoelastic properties of bituminous concretes have been studied by observing creep behavior under a large range of compressive stress levels and temperatures. Effect of air void content on the creep properties has been observed. Results indicate that the test materials display linear viscoelastic properties only at low stress levels and temperatures. Master creep compliance curves corresponding to the linear range were obtained using the time-temperature shift hypothesis. The nonlinear creep behavior that is for viscoelasticity theory and the creep compliance functions based upon this theory were evaluated for the test materials. It is found that an increase in air void ratio leads to higher creep strains for a given stress level.

The subject of mechanical behavior has been in the front line of basic studies in engineering curricula for many years. This textbook was written for engineering students with the aim of presenting, in a relatively simple manner, the basic concepts of mechanical behavior in solid materials. A second aim of the book is to guide students in their laboratory experiments by helping them to understand their observations in parallel with the lectures of their various courses; therefore the first chapter of the book is devoted help to bridge the gap of time that has passed from their graduation up to their actual involvement in engineering work. The book also serves as the basis for more advanced studies and seminars when pursuing courses on a graduate level. The content of this textbook and the topics discussed correspond to courses that are usually taught in universities and colleges all over the world, but with a different and more modern approach. It is however unique by the inclusion of an extensive chapter on mechanical behavior explained and often related to the presence of dislocations in structures. Many practical illustrations are provided representing various observations encountered in actual structures of particularly technical significance. A comprehensive list of references at the end of each chapter is included to provide a broad basis for further studying the subject.

Mechanical and Linear Viscoelastic Properties of High Density Polyethylene Obtained from Tensile and Dead-Load Creep Tests

Practical Guide to Rotational Moulding, Second Edition

Scientific Ballooning in the Next Century

Scientific Ballooning

Winter Annual Meeting

*Rotational moulding (also called rotomoulding or rotocasting), is a low pressure, high temperature manufacturing process that offers a very competitive alternative to blow moulding, thermoforming and injection moulding for the manufacture of hollow plastic parts. It offers designers the chance to produce relatively stress-free articles, with uniform wall thickness and potentially complex shapes. This second edition of the very popular Practical Guide to Rotational Moulding describes the basic aspects of the process and the latest state-of-the-art developments in the industry. It is completely revised and is extensively illustrated. This guide will be of interest both to students of polymer processing and those who work with rotational moulding equipment.*

*Concern about global warming has led to renewed interest in the more sustainable use of natural fibres in composite materials. This important book reviews the wealth of recent research into improving the mechanical properties of natural-fibre thermoplastic composites so that they can be more widely used. The first part of the book provides an overview of the main types of natural fibres used in composites, how they are processed and, in particular, the way the fibre-matrix interface can be engineered to improve performance. Part two discusses the increasing use of natural-fibre composites in such areas as automotive and structural engineering, packaging and the energy sector. The final part of the book discusses ways of assessing the mechanical performance of natural-fibre composites. With its distinguished editor and team of contributors, Properties and performance of natural-fibre composites is a valuable reference for all those using these important materials in such areas as automotive and structural engineering. Provides an overview of the types of natural fibres used in composites Discusses fibre-matrix interface and how it can be engineered to improve performance Examines the increasing use of natural-fibre composites in automotive and structural engineering and the packaging and energy sector*

Nuclear Science Abstracts

Phase I, Chapters 1-4

Goals and Challenges : Proceedings of the PSB1 Symposium of the COSPAR Panel on Scientific Ballooning which was Held During the Thirty-third COSPAR Scientific Assembly, Warsaw, Poland, July, 2002

Handbook of Polyethylene

Technical papers presented and available

The thirty-eight papers presented in this volume comprise a selection of those given at the symposium on Scientific Ballooning. The papers have been divided into five sections dealing with balloon design and new balloon materials, balloon programmes and long duration flights, balloons on other planets, instrumentation for balloons and recent scientific observations.

Report of Investigations

NASA technical note