



Selection of Polymeric Materials [How to Select Design Properties from Different Standards

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Elsevier Science,
2008

Electronic books

Monografía

Today engineers, designers, buyers and all those who have to work with plastics face a dilemma. There has been a proliferation of test methods by which plastic properties are measured. The property data measured by these test methods are not identical and sometimes have large differences. How are engineers, designers, buyers going to decide the type and resin grade and their property data? Which are the valid test methods? The right plastic property data are the difference between success and failure of a design, thus making the property selection process critical. For the first time th

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Título: Selection of Polymeric Materials electronic resource] How to Select Design Properties from Different Standards

Editorial: Burlington Elsevier Science 2008

Descripción física: 1 online resource (275 p.)

Variantes del título: Plastics Design Library

Mención de serie: Plastics Design Library

Nota general: Description based upon print version of record

Contenido: Front Cover; Selection of Polymeric Materials; Copyright Page; Contents; Preface; Acknowledgement; Chapter 1. Polymeric Materials and Properties; 1.1 Tensile Stress-Strain Comparison Graphs; 1.2 Property Data Information for Polymeric Materials; 1.3 Material Selection Guidelines; 1.4 Polymeric Materials Specifications; 1.5 Testing Polymeric Materials; 1.6 The Need for Uniform Global Testing Standards; 1.7 Origin and Applications of Polymeric Materials; 1.8 Modern History of Polymeric Materials; 1.9 Polymeric Materials Families; 1.10 Classification of Polymeric Materials by Performance 1.11 Types of Thermoplastic Molecular Structures 1.12 Manufacturing of Polymers; 1.13 Polymeric Materials Compounding Process; 1.14 Families of Thermoplastic Polymers; 1.15 Families of Thermoplastic Elastomers (TPEs); 1.16 Families of Thermoset Polymers; Chapter 2.

Mechanical Properties of Polymeric Materials; 2.1 Introduction; 2.2 Comparison Tables of Mechanical Properties; 2.3 Comparison of ASTM and ISO Mechanical Test Standards; 2.4 Tensile Testing (ASTM D-638); 2.5 Tensile Strength Effects Caused by Cross-Head Speeds; 2.6 Molecular Orientation Effects 2.7 Compounding Processes and Properties of Glass Reinforced Polymeric Materials 2.8 Effects of Fiber Glass on Polymeric Materials Properties; 2.9 Tensile Stress Effects Caused by Fiber Glass Orientation; 2.10 Weld Line Effects on Injection Molded Products; 2.11 Temperature Effects on the Behavior of Polymeric Materials; 2.12 Effects of Moisture on Nylon Properties; 2.13 Flexural Testing (ASTM D-790); 2.14 Compressive Strength Testing (ASTM D-695); 2.15 Shear Strength Testing (ASTM D-732); 2.16 Stress-Strain Curves and Load Type Comparison; 2.17 Creep, Rupture, Relaxation, and Fatigue 2.18 Tensile Creep Testing 2.19 Flexural Creep Testing; 2.20 Isochronous Stress-Strain Curves; 2.21 Procedure for Applying Creep Modulus; 2.22 Creep Rupture; 2.23 Stress Relaxation; 2.24 Fatigue Characteristics; 2.25 Impact Strength Testing; 2.26 Impact Fracture Mechanism; 2.27 Pendulum Impact Tests; 2.28 Gardner Drop Weight Impact Testing (ASTM D-3029); 2.29 Falling Weight Tower Impact Testing; 2.30 Instrumented Impact Testing; 2.31 Instrumented High Speed Horizontal Plunger Impact Tester; 2.32 Instrumented Impact Testing (Dynatup®); 2.33 Product Design Analysis Using Dynatup® Test Data 2.34 Miscellaneous Impact Testing Chapter 3. Thermal Properties of Polymeric Materials; 3.1 Introduction; 3.2 Thermal Properties for Elevated Temperatures; 3.3 Introduction to ISO Testing Standards; 3.4 Melting Temperature Test (ASTM D-3418); 3.5 Vicat Softening Temperature Test (ASTM D-1525); 3.6 Glass Transition Temperature (ASTM E-1356); 3.7 Brittleness Temperature (ASTM D-746); 3.8 Continuous Service Temperature Test (ASTM D-794); 3.9 UL Temperature Index (UL 746); 3.10 Heat Deflection Temperature Test (ASTM D-648); 3.11 Soldering Heat Resistance Performance 3.12 Coefficient of Linear Thermal Expansion Testing (ASTM D-696)

Lengua: English

ISBN: 1-282-25307-7 1-282-02742-5 9786612253072 9786612253263 0-8155-1896-X

Materia: Polymeric composites Polymers Polymers. Polymeric composites Polymers Polymeric composites Chemical & Materials Engineering. HILCC Engineering & Applied Sciences. HILCC Materials Science. HILCC

Enlace a formato físico adicional: 0-8155-1551-0

Punto acceso adicional serie-Título: Plastics Design Library

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