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3.3.2 Melt rheology suitable for foaming; 3.3.3 Stages in closed-cell foam development; 3.3.4 Post-extrusion shrinkage; 3.3.5 Oriented PP foams - Strandfoam; 3.4 Foam crystallinity and crystal orientation; Summary; References; Chapter 4. Bead foam microstructure and processing; 4.1 Introduction; 4.2 Processing; 4.2.1 Bead preparation; 4.2.2 Steam moulding; 4.2.3 Dimensional stability post-moulding; 4.3 Microstructure; 4.3.1 Bead shape and fusion; 4.3.2 Density variations in large mouldings; 4.3.3 The effects of processing on properties; 4.3.4 Bead shape variation; 4.3.5 Microstructural models
4.4 Specific bead foams; 4.4.1 PP bead foam: EPP; 4.4.2 PS bead foam: EPS; References; Chapter 5. Simple mechanical tests; 5.1 Introduction; 5.2 Stiffness and strength of structures; 5.3 Stress-strain responses and material parameters; 5.3.1 Linearly elastic and isotropic; 5.3.2 Elastically non-linear and isotropic; 5.3.3 Anisotropic and elastic; 5.3.4 Elastic-plastic; 5.3.5 Elastic-brittle; 5.3.6 Viscoelastic materials; 5.3.7 Viscoelastic phenomena; 5.3.8 Temperature-dependent properties; 5.4 Test types; 5.4.1 Uniaxial compressive tests; 5.4.2 Simple shear tests; 5.4.3 Bend tests
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6.2.3 Ogden strain energy function for elastic foams

Sommario/riassunto

This handbook explores the applications of polymer foams, and the properties that make them suitable for so many applications, in the detail required by postgraduate students, researchers and the many industrial engineers and designers who work with polymer foam in industry. It covers the mechanical properties of foams and foam microstructure, processing of foams, mechanical testing and analysis (using Finite element analysis). In addition, it uniquely offers a broader perspective on the actual engineering of foams and foam based (or foam including) products by including nine detailed
