1. Record Nr. UNINA9910830719203321

Titolo	Modern polyesters [[electronic resource]] : chemistry and technology of polyesters and copolyesters / / edited by John Scheirs and Timothy E. Long
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley & Sons, c2003
ISBN	1-280-23893-3 9786610238934 0-470-09067-7 0-470-09068-5
Descrizione fisica	1 online resource (786 p.)
Collana	Wiley series in polymer science
Altri autori (Persone)	ScheirsJohn LongTimothy E. <1969->
Disciplina	668.4225
Soggetti	Polyesters
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Modern Polyesters: Chemistry and Technology of Polyesters and Copolyesters; Contents; Contributors; Series Preface; Preface; About the Editors; I HISTORICAL OVERVIEW; 1 The Historical Development of Polyesters; 1 Introduction; 2 Alkyd and Related Resins; 3 Fibres from Partially Aromatic Polyesters; 3.1 Early Work Leading to Poly(ethylene Terephthalate); 3.2 Spread of Polyester Fibre Production; 3.3 Intermediates; 3.4 Continuous Polymerisation; 3.5 Solid-phase Polymerisation; 3.6 End-use Development; 3.7 High-speed Spinning; 3.8 Ultra-fine Fibres; 4 Other Uses for Semi-aromatic Polyesters 4.1 Films4.2 Moulding Products; 4.3 Bottles; 5 Liquid-crystalline Polyesters; 6 Polyesters as Components of Elastomers; 7 Surface-active Agents; 8 Absorbable Fibres; 9 Polycarbonates; 10 Natural Polyesters; 10.1 Occurrence; 10.2 Poly(b-hydroxyalkanoate)s; 11 Conclusion; References; II POLYMERIZATION AND POLYCONDENSATION; 2 Poly (ethylene Terephthalate) Polymerization - Mechanism, Catalysis, Kinetics, Mass Transfer and Reactor Design; Notation; 1 Introduction; 2 Chemistry, Reaction Mechanisms, Kinetics and Catalysis; 2.1 Esterification/Hydrolysis; 2.2 Transesterication/Glycolysis

2.3 Reactions with Co-monomers2.4 Formation of Short Chain Oligomers; 2.5 Formation of Diethylene Glycol and Dioxane; 2.6 Thermal Degradation of Diester Groups and Formation of Acetaldehyde; 2.7 Yellowing; 2.8 Chemical Recycling; 2.9 Conclusions; 3 Phase Equilibria, Molecular Diffusion and Mass Transfer; 3.1 Phase Equilibria; 3.2 Diffusion and Mass Transfer in Melt-phase Polycondensation; 3.2.1 Mass-transfer Models; 3.2.2 Diffusion Models; 3.2.3 Specific Surface Area; 3.3 Diffusion and Mass Transfer in Solid-state Polycondensation; 3.4 Conclusions
4 Polycondensation Processes and Polycondensation Plants4.1 Batch Processes; 4.1.1 Esterification; 4.1.2 Polycondensation; 4.2 Continuous Processes; 5 Reactor Design for Continuous Melt-phase Polycondensation; 5.1 Esterification Reactors; 5.2 Polycondensation Reactors for Low Melt Viscosity; 5.3 Polycondensation Reactors for High Melt Viscosity; 6 Future Developments and Scientific Requirements; Acknowledgements; References; 3 Synthesis and Polymerization of Cyclic Polyester Oligomers; 1 Introduction; 2 History; 3 Preparation of Polyester Cyclic Oligomers from Acid Chlorides
4 Polyester Cyclic Oligomers via Ring-Chain Equilibration (Depolymerization)5 Mechanism for Formation of Cyclics via Depolymerization; 6 Polymerization of Oligomeric Ester Cyclics; 7 Conclusions; References; 4 Continuous Solid-state Polycondensation of Polyesters; 1 Introduction; 2 The Chemical Reactions of PET in the Solid State; 2.1 Basic Chemistry; 2.2 Mechanism and Kinetics; 2.3 Parameters Affecting SSP; 2.3.1 Temperature; 2.3.2 Time; 2.3.3 Particle Size; 2.3.4 End Group Concentration; 2.3.5 Crystallinity; 2.3.6 Gas Type; 2.3.7 Gas Purity; 2.3.8 Catalyst; 2.3.9 Molecular Weight
3 Crystallization of PET

Sommario/riassunto

Provides an overview of the family of polyester polymers which comprise an important group of plastics that span the range of commodity polymers to engineering resins. It describes the preparation, properties and applications of polyesters. Readers will also find details on polyester-based elastomers, biodegradable aliphatic polyester, liquid crystal polyesters and unsaturated polyesters for glass-reinforced composites.Presents an overview of the most recent developments.Explores synthesis, catalysts, processes, properties and applications.Looks at emerging polyester materials