1. Record Nr. UNINA9910139773803321

Titolo	Thermoplastic starch [[electronic resource]] : a green material for various industries / / edited by Leon, P. B. M. Janssen and Leszek Moscicki
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, 2009
ISBN	1-282-30252-3 9786612302527 3-527-62821-5 3-527-62822-3
Descrizione fisica	1 online resource (258 p.)
Collana	Green chemistry Thermoplastic starch
Classificazione	540 660 UV 9500
Altri autori (Persone)	JanssenL. P. B. M MoscickiLeszek
Disciplina	547.78045416 668.423
Soggetti	Thermoplastics Starch - Thermal properties Electronic books.
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	Thermoplastic Starch: A Green Material for Various Industries; Contents; Preface; List of Contributors; 1: Biodegradable Polymers and Their Practical Utility; 1.1 Natural Polymers; 1.2 Polymers with Hydrolyzable Backbones; 1.3 Polymers with Carbon Backbones; 1.4 Practical Applications of Biodegradable Polymers; 1.4.1 Medical Applications; 1.4.1.1 Surgical Sutures; 1.4.1.2 Bone-Fixation Devices; 1.4.1.3 Vascular Grafts; 1.4.1.4 Adhesion Prevention; 1.4.1.5 Artificial Skin; 1.4.1.6 Drug Delivery Systems; 1.4.2 Agricultural Applications; 1.4.2.1 Agricultural Mulches 1.4.2.2 Controlled Release of Agricultural Chemicals1.4.3 Packaging; 1.4.3.1 Starch-Based Packaging Materials; 1.4.3.2 PLA-Based Packaging Materials; 1.4.3.3 Cellulose-Based Packaging Materials; 1.4.3.4

Pullulan-Based Packaging Materials; 1.4.3.5 Other Bio-Packaging Solutions; 1.4.3.6 Partially Biodegradable Packaging Materials; 1.4.3.7 Protective Loose-Fill Foams; References; 2: Blends of Natural and Synthetic Polymers; 2.1 Introduction; 2.2 Starch in Blends with Polymers; 2.3 Mechanical Properties of Starch/Polymer Blends; 2.4 Compatibilizers; 2.5 Conclusions; References
3: Biodegradability and Compostability of Biopolymers3.1 Definitions and Norms; 3.2 Biodegradability of Starch-Based Products; 3.2.1 Starch Composites (10% Starch); 3.2.2 Starch Composites (50% Starch); 3.2.3 Starch Composites (90% Starch); 3.3 Biodegradability of Polyesters; 3.4 Photo-Biodegradable Plastics; 3.5 Controlled Degradation Additive Masterbatches; 3.6 Methods of Biodegradability Measurements; 3.6.1 ASTM D5338-98 [6] (Composting); 3.6.2 ASTM D5209-92 [18] (Aerobic, Sewer Sludge); 3.6.3 ASTM D5210-92 [10] (Anaerobic, Sewage Sludge)
3.6.4 ASTM D5511-94 [21] (High-solids Anaerobic Digestion)3.6.5 Tests for Specific Disposal Environments; 3.6.6 International Standards Research; 3.6.7 Standard EN 13432-Proof of Compostability of Plastic Products; 3.6.8 Other Standards; 3.6.9 "OK Compost" Certification and Logo; 3.7 Environmental Aspects of Biopolymers; 3.7.1 Climate Protection; 3.7.2 Life-Cycle Economy; 3.7.3 Recovery Options; 3.7.4 Waste Management and Bioplastics Treatment; References; 4: TPS and Its Nature; 4.1 Structure and Properties; 4.2 Glass Transition Temperature; 4.3 Mechanical Properties of Granulates
4.4 ConclusionsReferences; 5: The Melting Process in Thermoplastic Starches; 5.1 Introduction; 5.2 Melting Process; 5.3 Influence of Plasticizers on Melting Behavior of Starch; 5.4 Conclusions; References; 6: Extruders; 6.1 Introduction; 6.2 Single-Screw Extruders; 6.3 Pin Extruders; 6.4 Closely Intermeshing Twin-Screw Extruders; 6.4.1 The Different Zones; 6.4.2 Co-Rotating Versus Counter-Rotating Closely Intermeshing Extruders; 6.5 Self-Wiping Twin-Screw Extruders; 6.5.1 Screw Geometry; 6.5.2 Transporting Elements; 6.5.3 Elements for Pressure Build-Up; 6.5.4 Kneading Elements
6.5.5 The Fully Filled Length

Sommario/riassunto

This first book on this new green material collates all the information hitherto scattered in journal articles and on websites, thus meeting the application-oriented needs of the reader.The contents stretch between many important areas, such as production and applications of biopolymeric material, fundamental knowledge and practical applications, and includes valuable experimental case studies, which can be directly used in industrial practice.All the data satisfies EU environmental regulations, which are the most stringent worldwide.