

The Complete Book on Biodegradable Plastics and Polymers (Recent Developments, Properties, Analysis, Materials & Processes)

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Biodegradable plastics made with plant based materials have been available for many years. The term biodegradable means that a substance is able to be broken down into simpler substances by the activities of living organisms, and therefore is unlikely to persist in the environment. There are many different standards used to measure biodegradability, with each country having its own. The requirements range from 90 per cent to 60 per cent decomposition of the product within 60 to 180 days of being placed in a standard composting environment. They may be composed of either bio plastics, which are plastics whose components are derived from renewable raw materials, or petroleum based plastics which contain additives. Biodegradability of plastics is dependent on the chemical structure of the material and on constitution of the final product, not just on the raw materials used for its production. Polyesters play a predominant role as biodegradable plastics due to their potentially hydrolysable ester bonds. Bio based polymers are divided into three categories based on their origin and production; polymer directly extracted from biomass, polymers produced by classical chemical synthesis using renewable biomass monomer and polymers produced by microorganisms or genetically modified bacteria. In response to public concern about the effects of plastics on the environment and in particular the damaging effects of sea litter on animals and birds, legislation is being enacted or is pending in many countries to ban non degradable packing, finishing nets etc. This book basically deals with biodegradable plastics developments and environmental impacts, hydro biodegradable and photo biodegradable, starch synthetic aliphatic polyester blends, difference between standards for biodegradation, polybutylene succinate (pbs) and polybutylene, recent developments in the biopolymer industry, recent advances in synthesis of biopolymers by traditional methodologies, polymers, environmentally degradable synthetic biodegradable polymers as medical devices, polymers produced from classical chemical synthesis from bio based monomers, potential bio based packaging materials, conventional packaging materials, environmental impact of bio based materials: biodegradability and compostability, etc.

Environmentally acceptable degradable polymers have been defined as polymers that degrade in the environment by several mechanisms and culminate in complete biodegradation so that no residue remains in the environment. The present book gives thorough information to biodegradable plastic and polymers. This is an excellent book for scientists engineers, students and industrial researchers in the field of bio based materials.

Contents

BIODEGRADABLE PLASTICS – DEVELOPMENTS AND ENVIRONMENTAL IMPACTS

Biodegradable

The ASTM defines “biodegradable” as

Compostable

“Compostable” is defined by the ASTM as

Hydro-biodegradable and Photo-biodegradable

Bio-erodable

Thermoplastic Starch Products

Degradation Mechanisms and Properties

Starch Synthetic Aliphatic Polyester Blends

Degradation Mechanisms and Properties

Starch and PBS/PBSA Polyester Blends

Degradation Mechanisms and Properties

Starch-PVOH Blends

Degradation Mechanisms and Properties

PHA (Naturally Produced) Polyesters

Degradation Mechanisms and Properties

PHBH (Naturally Produced) Polyesters

Degradation Mechanisms and Properties

PLA (Renewable Resource) Polyesters

Degradation Mechanisms and Properties

PCL (Synthetic Aliphatic) Polyesters

Degradation Mechanisms and Properties

PBS (Synthetic Aliphatic) Polyesters

Degradation Mechanisms and Properties

AAC Copolyesters

Degradation Mechanisms and Properties

Modified PET

Degradation Mechanisms and Properties

Water Soluble Polymers

Polyvinyl Alcohol (PVOH)

Degradation Mechanisms and Properties

Ethylene Vinyl Alcohol (EVOH)

Photo-biodegradable Plastics

Degradation Mechanisms and Properties

Controlled Degradation Additive Masterbatches

Degradation Mechanisms and Properties

Coated Paper

Agricultural Mulch Film

Shopping Bags

Food Waste Film and Bags

Consumer Packaging Materials

Landfill Cover Film

Other Applications

Biodegradation Standards and Tests

American Society for Testing and Materials

ASTM D5338-93 (Composting)

ASTMD5209-91 (Aerobic, Sewer Sludge)

ASTM D5210-92 (Anaerobic, Sewage Sludge)

ASTM D5511-94 (High-solids Anaerobic Digestion)

ASTM Tests for Specific Disposal Environments

International Standards Research

International Standards Organisation

European Committee for Normalisation
â€œOK Compostâ€™ Certification and Logo
Compost Toxicity Tests
Plant Phytotoxicity Testing
Animal Toxicity Test
Difference Between Standards for Biodegradation
Development of Australian Standards
Composting Facilities and Soil Burial
Key Factors Defining Compostability
Physical Persistence
Chemical Persistence
Toxicity
Effect on Quality of Compost
Anaerobic Digestion
Waste Water Treatment Plants
Reprocessing Facilities
Landfills
Marine and Freshwater Environments
Litter
Key Issues
Recyclable Plastics Sorting Considerations
Reprocessing Considerations
Polyolefin Reprocessing
Polyethylene Reprocessing
Composting
Landfill Degradation
Energy Use
Greenhouse Gas Emissions
Pollution of Aquatic Environments
Increased Aquatic BOD
Water Transportable Degradation Products
Risk to Marine Species
Litter
Compost Toxicity
Recalcitrant Residues
Aromatic Compounds
Additives and Modifiers
Isocyanate Coupling Agents
Plasticisers
Fillers
Catalyst Residues
Prodegradants and Other Additives
Source of Raw Materials
Development of Australian Standards and Testing
Life-Cycle Assessment
Minimisation of Impact on Reprocessing
Determination of Appropriate Disposal Environments
Education
Identify standards and test methods for biodegradable
plastics in Australia
APPENDIX A
Abiotic disintegration
Activated Sludge

Aerobic degradation
Aliphatic-aromatic Copolyesters (AAC)
Aliphatic polyesters (e.g. PCL)
Amylose
Anaerobic degradation
ASTM
Bioassimilation
Biodegradable
Bioerodable
Biomass
Compostable
Compostable Plastics
Composting
Copolyesters
Decomposer organism
Degradability
Degradable PET
Ecotoxicity
Foamed starch
Functional Group
Humus
Hydrolysis
LCA
Masterbatch
Mineralisation
Modified PET
Monomer
Organic Recycling
Photo-biodegradation
Photodegradable
Phytotoxicity
Plastified Starch
Polybutylene succinate (PBS) and polybutylene
succinate adipate (PBSA)
Polycaprolactone (PCL)
Polyesters
Polyhydroxyalkanoates (PHA)
Polyhydroxybutyrate (PHB)
Polylactic Acid (PLA)
Polylactic acid aliphatic copolymer (CPLA)
Polymer
Polyvinyl Alcohol (PVOH)
Prodegradant
Recalcitrant Residues
Thermoplastic Polymers
Thermosetting Polymers
Thermoplastic Starch

2. RECENT DEVELOPMENTS IN THE BIOPOLYMER INDUSTRY

INTRODUCTION

FIBRE-REINFORCED COMPOSITES

STARCH BASED MATERIALS

PLANT PRODUCED POLYMERS

MICROBIALLY PRODUCED POLYMERS

BIOLOGICALLY-BASED RESINS, ADHESIVES,
AND COATINGS
CONTINUING RESEARCH AND DEVELOPMENT
ON BIOPOLYMERS
CONCLUSION
3. RECENT ADVANCES IN SYNTHESIS OF BIOPOLYMERS BY "TRADITIONAL"
METHODOLOGIES
INTRODUCTION
BIODEGRADABLE POLYMERS
POLYMER MODIFICATION
A Modification of Polysaccharides
Modification of Polypeptides
Summary
4. POLYMERS, ENVIRONMENTALLY DEGRADABLE
DEFINITIONS
OPPORTUNITIES FOR ENVIRONMENTALLY DEGRADABLE PLASTICS AND POLYMERS
TEST METHODS FOR ENVIRONMENTALLY DEGRADABLE POLYMERS
Test Methods
DEGRADATION MECHANISMS
Photodegradation
BIODEGRADATION
PRODUCTION OF ENVIRONMENTALLY DEGRADABLE POLYMERS
5. SYNTHETIC BIODEGRADABLE POLYMERS AS MEDICAL DEVICES
POLYMER CHEMISTRY
A Note on Nomenclature
PACKAGING AND STERILIZATION
PROCESSING
Factors That Accelerate Polymer Degradation
DEGRADATION
COMMERCIAL BIODEGRADABLE DEVICES
6. BIOBASED PACKAGING MATERIALS FOR THE FOOD INDUSTRY
INTRODUCTION
PROPERTIES OF BIOBASED PACKAGING
MATERIALS
Introduction
Food biobased materials - a definition
Origin and description of biobased polymers
Polymers directly extracted from bio-mass
Polysaccharides
Starch and derivatives
Cellulose and derivatives
Chitin/Chitosan
Proteins
Casein
Gluten
Soy protein
Keratin
Collagen
Whey
Zein
Polymers produced from classical chemical synthesis
from biobased monomers
Polylactic acid (PLA)

Biobased monomers
Polymers produced directly by natural or genetically modified organisms
Poly(hydroxyalkanoates) (PHAs)
Bacterial cellulose
Material properties
Gas barrier properties
Gas barriers and humidity
Water vapour transmittance
Thermal and mechanical properties
Compostability
Possible products produced of biobased materials
Blown (barrier) films
Thermoformed containers
Foamed products
Coated paper
Additional developments
Conclusions and perspectives

FOOD BIOPACKAGING

Introduction
Food packaging definitions
Primary, secondary and tertiary packaging
Edible coatings and films
Active packaging
Modified atmosphere packaging
Combination materials
Food packaging requirements
Replacing conventional food packaging materials with biobased materials - a challenge
Biobased packaging - food quality demands
State-of-the-art in biopackaging of foods
Potential food applications
Fresh meat products
Conventional packaging materials
Potential biobased materials
Ready meals
Conventional packaging materials
Potential biobased packaging materials

Dairy products
Conventional packaging materials
Potential biobased packaging materials
Beverages
Conventional packaging materials
Potential biobased packaging materials
Fruits and vegetables
Conventional packaging materials
Potential biobased materials
Snacks
Conventional packaging materials
Potential biobased packaging materials
Frozen products
Conventional packaging materials

Potential biobased packaging materials

Dry products

Conventional packaging materials

Potential biobased packaging materials

Conclusions and perspectives

SAFETY AND FOOD CONTACT LEGISLATION

Introduction

Biobased materials and legislation on food contact materials

Common EU legislation

Biobased materials

Petitioner procedures

Standardized test methods

Implications of EU legislation for food and packaging industry

Assessment of potentially undesirable Interactions

Migration of compounds from biobased packages to contained food products

Microbiological contamination of biobased food packages

Penetration of microorganisms through biobased packaging materials

Penetration of insects and rodents into biobased food packages

Collapse due to absorbed moisture from the environment and the contained food product

Conclusions and perspectives

ENVIRONMENTAL IMPACT OF BIOBA-SED MATERIALS: BIODEGRADABILITY AND COMPOSTABILITY

Biodegradability

The composting of biobased packaging

The CEN activity

The compostable packaging

Characterization

Laboratory test of biodegradability

Disintegration under composting conditions and verification of the effects on the process

Compost quality: chemical and eco-toxicological analysis

Natural materials

Biodegradability under other environmental conditions

ENVIRONMENTAL IMPACT OF BIOBA-SED MATERIALS: LIFECYCLE ANALYSIS OF AGRICULTURE

A sustainable production of biobased products

What is LCA?

Environmental impact of agriculture

Crops for biofuels

The ECN study

Environmental impact of bio-based products

The Buwal study on starch-based plastics

The case of hemp-based materials: LCA does not allow generic statements

Compostoâ€™s study on bags for the collection of organic waste

The Ecobilanâ€™s study. The LCA of paper sacks

The Ifeu-IBIFA-study The LCA of loose-fill-packaging

Conclusions

THE MARKET OF BIOBASED PACKAGING MATERIALS

Introduction

Market appeal

Market drivers

Marketing advantages

Functional advantage in the product chain

Cost advantage in the waste disposal system

Legislative demands

Consumers

The market

Today

Tomorrow

Price

Conclusions

CONCLUSION AND PERSPECTIVE

Performance of materials

Food applications

Safety and legislation on materials in contact with food

The environment

The market of biobased packaging materials

Perspective

7. PLASTICS FROM POTATO WASTE (SENATE " JUNE 20, 1991)

BEGIN INSERT

PLASTICS FROM POTATO WASTE

STARCH TO GLUCOSE TO LACTIC ACID

LACTIC ACID INTO PLASTIC

POTENTIAL MARKETS

8. BIODEGRADABLE PLASTICS FROM RENEWABLE SOURCES

ANALYSIS

Plastics and the environment

The move to renewable sources

Extending the recycling loop

Biopolymers, conventional plastics and biodegradable plastics

The plastics sector

Packaging

Plastic films

Structure of the business

Recent developments

Biodegradability and compostability

Challenges ahead

9. SYNTHETIC POLYMERS FUNCTIONALIZED BY CARBOHYDRATES

Polymerizations of the vinyl sugar monomers

to obtain poly(vinylsaccharide)s

Polymerization of anhydro sugars

Anhydro sugar polymerizations

Enzymatic and Enzyme mediated Polymerizations (Chemo-enzymatic methods)

Polymer analogous reactions

10. BIODEGRADABLE POLYOLEFINS

General procedure for grafting of sugars onto poly(styrene maleic anhydride)

Determination of biodegradability of polymers

using aerobic microorganisms

Weight loss data

FTIR Spectral Data

Molecular weight decrease after biodegradation
by GPC

Appendix 1

Mechanism of reaction of poly(styrene maleic
anhydride) with the sugar

Appendix 2

Scanning electron micrographs of the polymers before
and after bacterial degradation

11. PROCESS FOR THE PREPARATION OF BIODEGRADABLE SYNTHETIC POLYMERS FORMULA OF THE PRODUCT

INTRODUCTION

OBJECTIVE OF THE PRESENT INVENTION

Wherein

PREFERRED EMBODIMENTS

EXPERIMENTAL/ EXAMPLES

CLAIMS

CONCLUSION

12. FUNGAL DEGRADATION OF CARBOHYDRATE-LINKED POLYSTYRENES

Materials

Synthesis of sugar linked PS-MAH (General Procedure)

FTIR Spectra

Test microorganisms

Testing of the samples

APPENDIX 1

Reaction Mechanism

Calculations (representative)

For sucrose linked to poly(styrene maleic anhydride)

APPENDIX 2

13. GLUCOSE AND GLUCOSE DERIVATIVES WITH POLY(STYRENE MALEIC ANHYDRIDE)

APPENDIX 1

1,2-5,6 Diisopropylidene D- glucose

Step 1: Tritylation and acetylation of D- glucose

Blank reaction of PSMAH in DMF solvent system
with 4-DMAP as the catalyst

Hydrolysis reaction of PSMAH using DMF as
the solvent and 4-DMAP as the catalyst

14. THERMAL ANALYSIS OF SUGAR- LINKED POLY(STYRENE MALEIC ANHYDRIDE)

Thermogravimetry

FTIR characterization of the thermally treated products

15. BIOMINERALIZATION OF THE SUGAR-LINKED POLY(STYRENE MALEIC ANHYDRIDE)

Experimental set-up

Composition of minimal medium for 1 litre solution

Solutions for the titration are as follows

Preparation of the inoculum

16. BIODEGRADATION OF ACYLATED SUGAR-LINKED POLY(STYRENE MALEIC ANHYDRIDE)

Procedure for Acylation of sugar- linked
poly(styrene maleic anhydride) polymers

FTIR spectroscopy of the acylated derivatives
of sugar-linked poly(styrene maleic anhydride)
Thermal studies of acylated derivatives of sugar-
linked poly(styrene maleic anhydride) polymers
Biodegradation by *Serratia marscecens*
Biodegradation by *Pseudomonas* sp.
Weight loss data
Materials

Test microorganisms
Testing of the samples
Weight loss data

APPENDIX 1

(Sugar-linked PSMAH and their acylated products degraded by *Serratia marscecens* and *Pseudomonas* sp.)

Preparation of Reagent A, B, C, and D

17. BIOTECHNOLOGY: AN ENABLING TECHNOLOGY

BIOTECHNOLOGY AND CO₂ EMISSIONS

THE SOYA BEAN: AN IMPORTANT RENEWABLE RESOURCE

CHEMICALS FROM BIOLOGICAL FEEDSTOCKS

LIFE CYCLE ASSESSMENT OF PROTEASES

18. DEGRADABLE PLASTICS FOR COMPOSTING

CERTIFICATION AND STANDARDS

BIODEGRADABLE POLYMERS

DEGRADABLE PLASTICS

WHAT USERS WANT

QUESTIONS FOR THE FUTURE

19. STARCH BASED BIODEGRADABLE PLASTICS

INTRODUCTION

TECHNOLOGY COMMERCIALIZATION MODEL

APPLICATION OF TECHNOLOGY COMMERCIALIZATION MODEL

Starch-based Biodegradable Plastics – Commercialization Case Studies

CONCLUSION

20. BIODEGRADABLE PLASTICS FROM WHEAT STARCH AND POLYLACTIC ACID (PLA)

INTRODUCTION AND BACKGROUND

RESULTS FROM PREVIOUS FUNDING

RATIONAL AND SIGNIFICANCE

PROCEDURES/METHODOLOGY

OTHER RELATED WORKS

21. MAKING PACKAGING GREENER – BIODEGRADABLE PLASTICS

PLASTICS THAT BREAK DOWN

PLASTICS CAN BE PRODUCED FROM STARCH

PLASTICS CAN ALSO BE PRODUCED BY

BACTERIA

WHAT’S THE COST?

BIODEGRADABLE AND AFFORDABLE

MULCH FILM FROM BIODEGRADABLE PLASTICS

POTS YOU CAN PLANT

DIFFERENT POLYMER BLENDS FOR DIFFERENT PRODUCTS

LANDFILL SITES AREN’T COMPOST HEAPS

COMPOSTING THE PACKAGING WITH ITS CONTENTS

AN OLYMPIC EFFORT – RECYCLING 76

PER CENT OF WASTE

22. PET MATERIALS AND APPLICATIONS

INTRODUCTION

POLYMERISATION AND MANUFACTURING PROCESSES

Manufacturing plants

STRUCTURES, MORPHOLOGY AND ORIENTATION

Structure

Morphology

Orientation

Creep

PROPERTIES

Molecular weight and intrinsic viscosity

End group

Thermal properties

RHEOLOGY AND MELT VISCOSITY

Melt viscosity

Melt flow

Moulding shrinkage

MOISTURE UPTAKE AND POLYMER DRYING

Moisture level

Polymer drying

DEGRADATION REACTIONS

Thermal and thermal oxidative degradation

Environmental degradation

REHEAT CHARACTERISTICS

GAS BARRIER PROPERTIES

AMORPHOUS POLYESTERS

Homopolymers

Low copolymers

Medium copolymers

High copolymers

CRYSTALLINE POLYMERS

POLYMER BLENDS

APPLICATIONS

TRENDS

GLOBALS

23. PET FILM AND SHEET

Extrusion

Casting

The forward draw preheat (FWDPH)

The forward draw (FWD)

The sideways draw preheat (SWDPH)

The sideways draw (SWD)

24. INJECTION AND CO-INJECTION PREFORM TECHNOLOGIES

MULTILAYER CHARACTERISTICS

APPLICATIONS

Performance-driven applications

Economics - or legislative-driven applications

Combination applications

CLOSURE VS BOTTLE PERMEATION

CONTAINER PERFORMANCE

Barrier properties

Oxygen barrier

Carbon dioxide barrier

Scavenger property

WALL STRUCTURE

PREFORM AND BOTTLE DSEIGN
Permeation through finish, sidewall and base
Controlled fill
HEADSPACE OXYGEN ABSORPTION
OXYGEN DESORPTION FROM PET
BEER CONTAINERS
SMALL JUICE CONTAINERS
SMALL CSD CONTAINERS
CORE LAYER VOLUMES
RECYCLING
COMPARISON OF CO-INJECTION TECHNOLOGIES
CO-INJECTION MOLDING EQUIPMENT
25. INJECTION BLOW MOULDING
INTRODUCTION
BASIC PRINCIPLES
HISTORY
PROCESS IDENTIFICATION
COMMERCIAL PROCESSES
Rotary table machines : Jomar, Uniloy and similar
TOOLING
PROCREA
MATERIALS
APPLICATIONS
Machine and process capabilities

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