

# Handbook on Biodegradable Plastics (Eco Friendly Plastics)

**Author:** NIIR Board

**Format:** Paperback

**ISBN:** 8186623531

**Code:** NI26

**Pages:** 276

**Price:** Rs. 600.00 US\$ 100.00

**Publisher:** National Institute of Industrial Research

Usually ships within **3** days

Plastic has brought immense benefits to the whole human race. The light weight, cheap chemical resistant and strong material has got almost omnipotent presence. When we talk of its strength we talk of the time till it survives and to everyone's knowledge plastic does not bio-degrade. Yes, plastic the greatest invention of mankind has the power to even destroy mankind. Plastic that is not biodegradable brings a lot of environmental issues. It deteriorates the ozone layer. For the most part plastic is produced from oil. The world is progressively running out of oil. Research says plastic brings number of harms not only to humans but also the entire cosmos. The plastic which cannot be recycled has to be disposed off in some or the other way. Let's say if we dispose in water it has the tendency to destroy marine life. So the only way left to reduce the ill effects of plastic is to use eco-friendly or biodegradable plastic.

Biodegradable plastics are plastics that will decay in usual aerobic environments. These include plastics that are made from vegetable oil and other organic matter. The book, Handbook on Bio Degradable Plastics (Eco friendly plastics) is one of its kinds which give the information about biodegradable plastics. The book gives comprehensive information about Standard Methods for Biodegradation of Plastics, Commercialization of Eco-Friendly Plastics, and multipurpose exploitation of municipal solid waste (plastics), management of non recoverable plastic waste, guidelines to be followed in recycling of plastic and several other crucial topics required for the understanding of recycling of plastic. According to a report out of 200 million plastic produced in the world 26 million is produced by the United States and only 6%(approximately) of plastic waste gets recycled posing both a challenge and opportunity. Challenge in the sense that it is causing environmental issue and opportunity for the young entrepreneurs to penetrate in this sector. The book provides important and descriptive information on the whole topic of biodegradable plastic, the benefits and the techniques used. The book also contains information on topics arising social concern like present technologies for recycling of polyethylene terephthalate (pet) waste, how to minimise the impact of packaging materials on the environment and also provides information on new bio-degradable plastic, as business options for entrepreneurs.

The book at the end contains a list of directory providing information on List of Plant & Machinery, List of Raw Material, Plant/Machinery Suppliers, Overseas Suppliers of Machinery and Raw Material Suppliers.

## Contents

### 1. INTEGRATED PLASTIC WASTE MANAGEMENT : AN INDIAN PERSPECTIVE

Introduction

Degradation of Plastics in Environment

Biodegradability Vs Eco-Friendliness

Standard Methods for Biodegradation of  
Plastics

## 2. ECO-FRIENDLY PLASTICS FOR A NICHE MARKET

Disposal of Plastics Disturbs Eco-System

Biodegradable Polymeric Materials

Agricultural Mulches

Agricultural Planting Containers

Plastics in Municipal Solid Waste (MSW)

Commercialization of Eco-Friendly Plastics

Starch

Ampacet

Biofine™ Foils

REXflex Flexible Polyolefin (FPO)

PBHV-Biodegradable Plastics

Prospective Markets for Biodegradable Polymer

Factors Affecting Degradability

Possibility of Recyclable Biodegradable Polymers

Biodegradable Additives

Assessment of Biodegradable Polymers

Test Conditions

Biodegradability of Polyolefins

Mixed Cultures and Microbial Communities

Conclusion

## 3. MULTI PURPOSE EXPLOITATION OF MUNICIPAL SLID WASTE (PLASTICS)

Introduction

Some Definitions

Chemical Products

Economic and Social Benefits

Ecological Implications

Fuel cells turn landfill gas into electric power

Conclusion

Activity Plan

Steps to be Taken

Expected Outcome

## 4. MANAGEMENT OF RECOVERABLE PLASTIC WASTE

Incineration

Mechanical Recycling

Recent trends in recycling

Feedstock Recovery

Biodegradable plastics

Energy Recovery

## 5. MANAGEMENT OF NON RECOVERABLE PLASTIC WASTE

Photodegradable plastic

Landfill and composting

Biodegradable plastics from microbial origin

India Scenario

Conclusions and Future Outlook

## 6. STANDARDS ON ENVIRONMENT FRIENDLY

## PACKAGING AND ECO MARKING

ECO-Mark Scheme

Criteria for ECO-Mark

Product General Requirements

Product Specific Requirements

Procedure for Grant of Licence

ECO logo

General Requirements

Product Specific Requirements

Guidelines for Recycling of Plastics

International Guideline

## 7. DREAMS AND MYTHS ABOUT BIODEGRADABLE POLYMERS

### FOR PLASTICS PACKAGING

Origin and Myths of Biodegradable Polymers

Paper

Starch Based films

Suitability of Biodegradable Plastics in Packaging

## 8. PRESENT TECHNOLOGIES FOR RECYCLING OF POLYETHYLENE TEREPHTHALATE (PET) WASTE

Introduction

Methods for PET Recycling

Mechanical Recycling

Flotation/Hydrocyclone Process

Water Bath/Hydrocyclone Process

Solution/Washing Process

Solvent/Flotation Process

Depolymerisation

New Chemical Recycling Technique for PET

Recycling in India

## 9. BIO-DEGRADABLE PLASTIC FILM

MADE OUT OF SOYBEANS: A BREAK

THROUGH INPLASTIC INDUSTRY

## 10. BIO-DEGRADABLE PLASTIC: A NEW

PTIONS FOR ENTREPRENEURS

## 11. LASTIC WASTE RECYCLING TECHNOLOGIES

ECO FRIENDLY SOLUTION

Plastic and Environment

Plastic Waste Management Strategies

Incineration

Recycling

Mechanical Recycling

Recycling to Feedstock and Energy

Process Components

Prereatment

Liquefaction

Pyrolysis

Co-processing

Hydrocracking

Commercial Technologies

BP Technology

CFFLS Pyrolysis Technology

Bevan Pyrolysis Technology

German Liquefaction Technology

Incineration Technology with Energy Recovery

Indian Scenario

Conclusions and Future Outlook

12. BIO-DEGRADABLE PLASTICS: THE  
ECO-FRIENDLY ALTERNATIVE

13. HOW TO MINIMISE THE IMPACT OF PACKAGING  
MATERIALS ON THE ENVIRONMENT

Source Reduction

Recycling

Incineration

Landfill

How do we measure up

14. ENVIRONMENTAL MANAGEMENT

SYSTEM STANDARDS ISO 14000

ISO TC 207 and Development of ISO 14000

What is an EMS?

Benefits

Uptake by Business

EMS (ISO 14000) Pilot Programme

15. ENVIRONMENTAL LEGISLATION AND REGULATION

Principles

European Economic Area (EEA) Environmental Regulation  
with Reference to SMEs

Trade and the Environment International

Trade Centre (ITC)

Environmental Restrictions on trade

16. DEGRADATION OF PLASTIC

BY FUNGI IN CONTRARY

17. BIOPOLYESTERS (PHB-CO-PHV) ARE PRODUCED ALREADY COMMERCIALY.

Biodegradable Polymers for Medicine

18. BIODEGRADABLE PLASTICS

19. PROCESSING OF SYNTHETIC AND

NATURALLY-OCCURRING POLYMERS

20. INJECTION MOLDING OF PLASTICS

FROM AGRICULTURAL MATERIALS

21. PRODUCTION OF DEGRADABLE PLASTIC

FROM EGG SHELL MEMBRANE PROTEINS

22. PHOTO- AND BIO-DEGRADABLE PLASTIC

Technology Description

Innovative Aspects

Application Fields

Status

Intellectual Property Status

Business Potential

23. BIOPOLYMERS

Biodegradable Materials

Water Absorbing Materials Based on Starch

Chitin-Chitosan

Physicochemical and Physical Properties

Biomedical Applications

24. ENVIRONMENTAL PLASTICS

Introduction

Feature

Application

CALFIN C30F & C31F CYPORENE.....

(Introduction, Feature, Application)

CLEAN-PLAS.....

(Introduction, Feature, Application)

25. DEGRADABLE PLASTIC

Biodegradable Polymers

Background of The Invention

Summary of the Invention

Detailed Description

Examples

26. THE PROPOSED PROJECTS FOR INTERNATIONAL  
ECONOMIC AND TECHNICAL COOPERATION

Project Survey

27. RE-NEW STARCH POLYMERS

28. NEW PLASTIC MADE FROM POTATO

PEELS IS DEGRADABLE, INEXPENSIVE,  
AND ENERGY CONSERVING

Food Wastes can be used to Produce 100%

Degradable Plastic

The Future is Promising for Degradable Plastic.

29. PACKAGING REGULATIONS IN THE EUROPEAN  
UNION INNOVATIONS IN PET

30. PACKAGING WITH PET BOTTLES

PET - a packaging plastics on the up and up

The PET mineral Water Bottle-Still Waiting

in the Wings

Savings not only in Weight but also in Fuel

Recycling Quota up to 100 Per Cent

31. STARCH BASED BIODEGRADABLE  
PLASTICS

Raw Materials:

Uses

32. BIOPLASTICS

Introduction

Aiming for Biodegradable and Ecofriendly

Products

The Problem of Plastic

The Solutions for Plastic

Biopol

General Structure of PHA and Some

Representative Members

Properties of PHB

Production of PHA by Genetically Engineered

Plants

Production of PHA in Genetically Engineered

Bacteria

Price Factor

Possible Applications of PHAs

Industrial Production of PHAs and Other

Biodegradable Plastics

Biolac

Conclusion

33. PET PRE-FORM FROM PET RESIN

Introduction  
Uses  
Properties  
Market Survey  
Permeation Coefficient  
Manufacturing Process of PET Pre-form  
PROCESS FLOW SHEET  
List of Plant & Machinery  
List of Raw Material  
Plant/Machinery Suppliers  
Overseas Suppliers of Machinery  
PET Technology Suppliers  
Raw Material Suppliers  
Plant Economics  
34. PET BOTTLES FROM PRE-FORM PET  
Introduction  
Injection Molding Machines  
Blow Molding  
Uses  
Properties  
Chemical Resistance, Environment Friendly  
Manufacturing Process  
List of Plant & Machinery  
List of Raw Material  
Plant/Machinery Suppliers  
Overseas Suppliers of Machinery  
Raw Material Suppliers  
Market Survey  
Plant Economics  
35. INTERNATIONAL ENVIRONMENT ORGANISATIONS

## About NIIR

**NIIR PROJECT CONSULTANCY SERVICES (NPCS)** is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes various process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

