



GLOBAL POLYPROPYLENE FILMS

**Americas, Europe, Asia/Pacific, Africa –
Middle East**

Markets, Technologies & Trends 2001 - 2006

**CMR, Inc. Prospectus For
An In-Depth Market/End Use Economics Study
Completion Date - February 2002**

**Global in Scope: Market Size, Major End Users and
Industry Trends
Major End Use Requirements – Unmet Opportunities
OPP Film Demand – End Uses vs Type of Film
Intermaterial Substitution – ex: OPP vs Polyester Film
OPP/UOPP Film Producers/Profiles
Market/Technology of Major Film Producers
OPP/UOPP Film Technologies – Status Quo?
Manufacturing Cost Analysis – Modular Approach
Converting Operations of PP Films – Upstream
Impact of New Generation Metallocene Polyolefins
Major PP Suppliers to OPP/UOPP Film Producers**



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INDUSTRY OVERVIEW

Polypropylene films are one of the most dynamic, versatile and cost effective barrier films that are used in various packaging and non-packaging applications. Due to its superior moisture barrier properties, clarity, gloss, strength, printability, embossability, aroma resistance, dimensional stability, processability and others, markets of PP films are changing rapidly and various new applications are taking market share from other plastic films. PP films compete with various other materials such as PVDC films, polyester films, nylon films, polyethylene films, cellulose films, waxed paper, aluminum foil, and others on a cost and performance basis.

The total global demand (the Americas, Europe, Asia/Pacific, Africa – Middle East) for polypropylene films was 7,292 million pounds in 2001 and the projected growth rate is 6.3% annually for the next five years. Polypropylene films are used widely in various flexible packaging and non-packaging applications such as food packaging, labels, pressure sensitive tapes, capacitor films, shrink wrap, tobacco packaging, medical & healthcare packaging, stationary and office supply products, textile packaging and others.

Novel developments in heat seal properties of PP films have helped in the overall growth rate of PP films. Coextruded OPP films are gaining market share at the expense of other OPP film types and competing materials to OPP films on a cost performance basis. Coextruded OPP films with one sided metallized layer are becoming industry standard packaging material for snack food packaging and capacitor film applications. The demand of PP films in food packaging end-use applications are now well defined and has fewer new developments in end-uses. In industrial applications, PP films are still finding new grounds in various niche applications and are also replacing traditional materials such as PVC films, polyester films and others.

BENCHMARK STUDY

To assist companies in understanding the current market status and help them monitor the recent developments within the industry, Chemical Market Resources, Inc. (CMR), presents Global Polypropylene Films 2001-2006 the Americas, Europe, Asia/Pacific and Africa-Middle East, part of the ongoing Polyolefins Markets, Technologies and Trends Series. CMR has extensive experience in polypropylene films and related markets. This study represents a comprehensive report with focus on business and technical strategic analysis and includes an in-depth analysis of the status of these products and markets. The report will be valuable in assessing opportunities and strategies in the polypropylene film industry.

This Global Polypropylene Films 2001-2006 study/analysis is more comprehensive in terms of geographic scope and market detail than the earlier study on Polypropylene Films completed by CMR, Inc. in 1996.



HISTORY

The use of PP film is very large. Oriented films typically have high toughness and excellent clarity. A high expansion bubble process or a tenter process produces these films. Product variations are possible based on the amount of transverse and machine direction orientation. Non-oriented cast polypropylene films are usually made by a chill-roll process but there are also water-quench and water-quenched bubble processes in use. Oriented films can have a stiff feel or “hand”. They sparkle and tend to “crinkle” audibly. Non-oriented films have a number of growing markets. Compared to oriented film, it is available in thicker gauges and has a softer “hand” at the same thickness. The motivation for such products is often related to barrier properties, temperature resistance, chemical resistance and cost. The principal market for these materials is in food packaging.

Historically, the production of OPP films tended to lead UOPP films. A major market that catalyzed OPP was the replacement of cellophane in products such as tobacco packaging. Later as OPP growth moderated away from “penetration” of new applications into a more mature market, UOPP film or sheet became the engine for PP Film growth into new food packaging applications.

MAJOR OBJECTIVES

Assist polypropylene homo/copolymer producers in effectively positioning their grades for OPP and UOPP film manufacturing

Assist OPP/UOPP film producers and converters in assessing the market trends and intermaterial competition

Assist major end users of OPP/UOPP in selecting the films and understanding the manufacturing cost economics

Develop detailed attribute analyses and value based analyses of films in end use applications

KEY ISSUES ADDRESSED

Outline of the GLOBAL OPP and UOPP markets

In-depth opportunity analysis for mergers and acquisitions in the Americas and European marketplace

Current & future technologies for OPP/UOPP film manufacturing processes and costs

Market/technology positioning of major UOPP/OPP film producers

PP resins and end use requirements, and unmet opportunities for major film producers

Impact of new generation polyolefins on OPP/UOPP markets

Impact of syndiotactic PP on OPP/UOPP markets

Detailed manufacturing cost analysis for film and converting to end use structures



APPROACH

The information, data and conclusions of this analysis were developed from sources in the Americas, Europe, Asia/Pacific, and Africa-Middle East and are based upon, but not limited to, the following methods:

Search, review and interpretation of information from government sources, trade and industry groups, published articles and product promotional information

A thorough search of relevant patent technology and process details with producers and converters

Information from industry experts and CMR proprietary projects related to OPP/UOPP films and resins

Interviews with leading polyolefins, polyester and nylon resin and film suppliers, end users and distributors

Interviews with all of the major converters of OPP/UOPP and end users to understand their current and unmet needs

Other multiclient studies completed by Chemical Market Resources, Inc.

The manufacturing cost economics based on our extensive cost databases and interviews.

The intermaterial competition was analyzed based on “multi-attribute analysis”, a technique used by Chemical Market Resources, Inc. and well accepted by our major clients.

Interviews with government agencies



PROJECT MANAGEMENT TEAM

Dr. BALAJI B. SINGH obtained his Ph.D in Chemical Engineering from Texas A&M University and an M.B.A in Marketing Research and Strategic Planning from the Ohio State University. He is a registered professional engineer in the states of Texas and Ohio. He has seven years of experience in the oil/chemical industry in process research, process economics and marketing research. His key area of expertise is in opportunity evaluation and competitive assessment for technology value added specialty products in petrochemicals and functional chemicals. Balaji has successfully completed over 500 proprietary studies, in high technology specialty products in various end use industry sectors for clients worldwide.

Dr. WILLIAM VERNON obtained his Ph.D in Chemistry from Michigan State University. Bill has over 17 years of experience in the polymer industry with various organizations including, Stauffer Chemical Company, Rexene Corporation and Paxon. Most recently he was the vice president of technology at Paxon and was responsible for various HDPE R&D programs for various applications. His strong R&D and product development experience will play a key role in this project.

JEHANGIR IRANI obtained his M.S degree in Chemical Engineering from the Texas A&M University. Jehangir has several years of experience in production and process development. As project director, he has completed over 100 technology evaluations and market research projects related to polyolefins, thermoplastic elastomers, polyvinyl chloride, polyurethanes, acrylics and fabricated products.

CHANDRESH KEDHAMBADI obtained his Master's degree in Chemical Engineering from the Texas A&M University. Chandresh has several years of experience in product processing / development and image analysis related projects. As a senior research analyst, he has completed several marketing research projects related to high EVA copolymers, ENBA copolymers, polyolefins and lubricants.

JIGNESH SHAH obtained his MBA from James Madison University and an MS in Applied Chemistry from MS University of India. In addition, Jignesh has been a principal in a wide variety of polymers related studies ranging from SEBS, acrylics, and geomembranes.

TIMING, SUBSCRIPTION & ORDERING INFORMATION

This study will be completed by November 2001 and made available for immediate delivery. The price of the study is U.S. \$8,500 for two copies of the report. Additional copies are available for \$500 each. To subscribe, simply sign the attached order form and mail or fax to CMR. This study is part of the Polyolefins MT&T series. For further information call us at **281-557-3320**



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TABLE OF CONTENTS

CHAPTER 1: EXECUTIVE SUMMARY

Introduction.....	1-1
The Study Organization.....	1-2
Chapter 3: Polypropylene Film Technologies.....	1-3
Types of polypropylene Films.....	1-3
Manufacturing Technologies for PP Films.....	1-3
Polypropylene Resin Technology.....	1-6
Chapter 4: Global Supply and Demand for PP Films.....	1-6
Chapter 5: Americas Demand for PP Films.....	1-12
Demand for PP Films, North America.....	1-12
Demand for BOPP Films, North America.....	1-12
Demand for CPP Films, North America.....	1-12
Demand for BOPP Films, Central and South America.....	1-19
Demand for CPP Films, Central and South America.....	1-19
Chapter 6: Americas Suppliers for PP Films.....	1-19
Suppliers of PP Films, North America.....	1-19
BOPP Film Suppliers, North America.....	1-19
CPP Film Suppliers, North America.....	1-27
Suppliers of BOPP Films, Central and South America.....	1-27
Chapter 7: European Demand for PP Films.....	1-27
Demand for PP Films, Western Europe.....	1-27
Demand for BOPP Films, Western Europe.....	1-33
Demand for CPP Films, Western Europe.....	1-33
Demand for BOPP Films, Eastern Europe.....	1-33
Demand for CPP Films, Eastern Europe.....	1-33
Chapter 8: European Supply of PP Films.....	1-33
Suppliers of PP Films, Western Europe.....	1-33
Suppliers of BOPP Films, Western Europe.....	1-41
Suppliers of CPP Films, Western Europe.....	1-41
Suppliers of BOPP Films, Eastern Europe.....	1-41
Chapter 9: Asia/Pacific Supply and Demand for PP Films.....	1-41
Demand for BOPP Films, Asia/Pacific.....	1-41
Suppliers of BOPP Films, Asia/Pacific.....	1-49
Demand for CPP Films, Japan.....	1-49
Suppliers for CPP Films, Japan.....	1-49
Chapter 10: Strategic Analysis.....	1-49
Introduction.....	1-49
Status of Polypropylene Film Industry.....	1-58
Strategic Options for BOPP Suppliers.....	1-58
Strategic Options for CPP Suppliers.....	1-61
Strategic Options for New Generation Polyolefin Suppliers.....	1-63
Strategic Options for Conventional PP Resin Suppliers.....	1-64

CHAPTER 2: INTRODUCTION

Background.....	2-1
Objectives.....	2-2
CMR Research Methodology.....	2-3
A Message from the Authors.....	2-3

CHAPTER 3: POLYPROPYLENE FILM TECHNOLOGIES

Introduction.....	3-1
Types of PP Films.....	3-1
Types of BOPP Films.....	3-1
Types of CPP Films.....	3-8
Manufacturing Technologies of PP Films.....	3-8
Tenter Frame Process.....	3-8
Tubular Process.....	3-10
Cast Process.....	3-10
Blown Process.....	3-12
Manufacturing Cost Economics of PP Films.....	3-12
Manufacturing Cost Economics of BOPP Films.....	3-12
Manufacturing Cost Economics of CPP Films.....	3-14
Converting Operations of PP Films.....	3-14
Polypropylene Resin Technology.....	3-20
Advancements and Future Trends in PP Resin Technology.....	3-20
PP Resin Suppliers.....	3-22
Recent Development in the Polypropylene Industry.....	3-24

CHAPTER 4: GLOBAL SUPPLY AND DEMAND FOR PP FILMS

Introduction.....	4-1
Global Supply and Demand for Polypropylene Films.....	4-1

Chapter 5: Americas demand for pp films

Introduction.....	5-1
North American Demand for BOPP Films.....	5-1
North American Demand for BOPP Films by Type.....	5-1
Coextruded Films.....	5-1
Homopolymer Films.....	5-4
Coated BOPP Films.....	5-4
Metallized Films.....	5-4
White Opaque Films.....	5-4
North American Demand for BOPP Films by End-Use Application.....	5-5
Food Packaging Applications.....	5-8
Snack Food Packaging.....	5-8
Bakery Products.....	6-15

Candy Packaging.....	5-19
Cheese Packaging.....	5-21
Other Food Packaging Applications.....	5-23
Industrial Applications.....	5-23
Pressure Sensitive Tapes.....	5-23
Labels.....	5-26
Capacitor Films.....	5-29
Other Industrial Applications.....	5-33
Tobacco Packaging Applications.....	5-33
Shrink Wrap.....	5-34
North American Demand for CPP Films.....	5-38
Food Packaging Applications.....	5-38
Stationery Products.....	5-44
Medical & Healthcare Packaging Applications.....	5-45
Textile Packaging Applications.....	5-50
Other Applications.....	5-52
Central and South American Demand for Polypropylene Films.....	5-52
Central and South American Demand for BOPP Films.....	5-53
Future Trends.....	5-58

CHAPTER 6: AMERICAS SUPPLIERS OF PP FILMS

Introduction.....	6-1
North American Suppliers of BOPP Films.....	6-1
ExxonMobil Chemical Company.....	6-1
Applied Extrusion Technologies.....	6-10
Inteplast/Amtopp Corporation.....	6-11
Vifan Canada.....	6-17
Toray Plastics America.....	6-17
BPX Films (Simpro).....	6-19
Cryovac North America.....	6-19
Minnesota Mining and Manufacturing Company (3M).....	6-21
Bemis Converter Films.....	6-22
Masterpak.....	6-22
DuPont Company.....	6-23
Central Products Company.....	6-23
General Electric Company.....	6-24
Trespaphan.....	6-24
Others.....	6-24
North American Suppliers of CPP Films.....	6-25
Printpack.....	6-25
Tredgar Film Products.....	6-28
American Profol, Inc.....	6-28
Consolidated Thermoplastic Company.....	6-28
American Renolit Corporation.....	6-29
Desmarais and Frere Ltd.....	6-29

Copol International.....	6-30
Clopay Corporation.....	6-30
BOPP Film Suppliers' Market and Technology Position.....	6-30
BOPP Film Suppliers' Market Shares.....	6-30
BOPP Film Suppliers' Market Positioning.....	6-32
BOPP Film Suppliers' Technology Positioning.....	6-32
CPP Film Suppliers' Market and Technology Position.....	6-33
CPP Film Suppliers' Market Shares.....	6-33
CPP Film Suppliers' Market Positioning.....	6-33
CPP Film Suppliers' Technology Positioning.....	6-37
Pricing of PP Films.....	6-37
Industry Structure of PP Films.....	6-41
South American Suppliers for BOPP Films.....	6-41
Votocel.....	6-41
Biofilm.....	6-41
Vitopel.....	6-44
Others.....	6-44

CHAPTER 7: EUROPEAN DEMAND FOR PP FILMS

Introduction.....	7-1
Demand for PP Films, Western Europe.....	7-1
Demand for BOPP Films, Western Europe.....	7-4
Food Packaging.....	7-8
Pressure Sensitive Tapes.....	7-8
Textile Packaging.....	7-11
Tobacco Packaging.....	7-11
Labels.....	7-11
Floral Wrap.....	7-11
Capacitor Films.....	7-12
Others.....	7-12
Demand for CPP Films.....	7-12
Food Packaging.....	7-15
Stationery Products.....	7-15
Textile Packaging.....	7-15
Medical and Healthcare Packaging.....	7-16
Floral Packaging.....	7-16
Others.....	7-16
Demand for BOPP Films, Eastern Europe.....	7-16
Future Trends.....	7-17

CHAPTER 8: EUROPEAN SUPPLIERS OF PP FILMS

Introduction.....	8-1
Suppliers of PP Films, Western Europe.....	8-1
Suppliers of BOPP Films, Western Europe.....	8-1

ExxonMobil Europe.....	8-6
Moplefan.....	8-6
UCB Films.....	8-6
Radici Films.....	8-6
Vifan (subsidiary of Vibac Finanziaria).....	8-7
Trespaphan.....	8-7
Others.....	8-7
Suppliers of CPP Films, Western Europe.....	8-8
Moplefan.....	8-8
Profol Kunststoffe.....	8-8
Suppliers of BOPP Films, Eastern Europe.....	8-11
Biafol.....	8-11
Petrochemia Plock.....	8-11
Khimvolokna (Mogilev).....	8-11
Chemosvit.....	8-11

CHAPTER 9: ASIA/PACIFIC SUPPLY AND DEMAND FOR PP FILMS

Introduction.....	9-1
Japanese Supply and Demand for PP Films.....	9-1
Introduction.....	9-1
Japanese Supply of BOPP Films.....	9-9
Suppliers of BOPP Films.....	9-9
Futamura Sanasho Company.....	9-9
Tohcello Company.....	9-13
Toyobo Company.....	9-13
Tokuyama Corporation.....	9-13
Honshu Paper Company.....	9-14
Toray Industries.....	9-14
Others.....	9-14
Demand for BOPP Films, Japan.....	9-14
Future Trends.....	9-16
Suppliers of CPP Films, Japan.....	9-16
Demand for CPP Films, Japan.....	9-18
Future Trends.....	9-22
Supply and Demand for BOPP Films, China.....	9-24
Introduction.....	9-24
Supply of BOPP Films, China.....	9-24
Demand for BOPP Films, China.....	9-27
Coextruded Film.....	9-27
Cigarette Film.....	9-29
Clear Film.....	9-29
White Opaque Film.....	9-29
Metallized Film.....	9-30
Capacitor Film.....	9-30
Future Trends, China.....	9-30

Supply and Demand for BOPP Films, Indonesia.....	9-32
Introduction.....	9-32
Supply for BOPP Films, Indonesia.....	9-32
Suppliers of BOPP Films, Indonesia.....	9-32
PT Argha Karya.....	9-32
PT Trias Sentosa.....	9-32
PT Fatrapolindo Nusa Industry.....	9-34
PT Indo Thai Film Polytama.....	9-34
PT Polydayaguna Perkasa.....	9-34
PT Indopoly Swakarsa.....	9-34
Imports.....	9-34
Exports.....	9-35
Demand for BOPP Films, Indonesia.....	9-35
Future Trends.....	9-35

CHAPTER 10: STRATEGIC ANALYSIS

Introduction.....	10-1
Status of Polypropylene Film Industry.....	10-1
Future Trends.....	10-4
BOPP Film Markets.....	10-4
CPP Film Markets.....	10-4
Strategic Options.....	10-8
Strategic Options for BOPP Film Suppliers.....	10-8
Strategic Options for CPP Film Suppliers.....	10-11
Strategic Options for New Generation Polyolefin Suppliers.....	10-14
Strategic Options for Conventional PP Resin Suppliers.....	10-15

LIST OF EXHIBITS

CHAPTER 1: EXECUTIVE SUMMARY

1-1	Plastic Films: Comparison of Moisture Barrier Performance.....	1-4
1-2	Property Comparisons for BOPP and CPP Films.....	1-5
1-3	Polypropylene Resin Producers, North America.....	1-7
1-4	Global Capacity and Consumption for BOPP Films.....	1-8
1-5	Global Capacity and Consumption for CPP Films.....	1-9
1-6	Top 10 Suppliers of BOPP Films, Global.....	1-10
1-7	Demand for BOPP Films by Region, Global.....	1-11
1-8	Demand for PP Films, North America.....	1-13
1-9	Demand for BOPP Films by Type, North America.....	1-14
1-10	Demand for BOPP Films by End Use Applications, North America.....	1-15
1-11	Demand and Forecast for BOPP Films, North America.....	1-16
1-12	Demand for CPP Films, North America.....	1-17
1-13	Demand and Forecast for CPP Films, North America.....	1-18
1-14	Demand for BOPP Films by Country, C & S America.....	1-20
1-15	Demand for BOPP Films by End Use Application, C & S America.....	1-21
1-16	Capacity for PP Films by Type, North America.....	1-22
1-17	Suppliers of BOPP Films, North America.....	1-23
1-18	BOPP Film Suppliers: Market Share Matrix, North America.....	1-25
1-19	Market Share of BOPP Film Suppliers, North America.....	1-26
1-20	Suppliers of CPP Films, North America.....	1-28
1-21	CPP Film Suppliers, Market Share Matrix, North America.....	1-29
1-22	CPP Supplier Market Shares, North America.....	1-30
1-23	Suppliers of BOPP Films, South America.....	1-31
1-24	Demand for PP Films, Western Europe.....	1-32
1-25	Demand for BOPP Films by Country, Western Europe.....	1-34
1-26	Demand for BOPP Films by End-Use Applications.....	1-35
1-27	Demand for BOPP Films, Western Europe.....	1-36
1-28	Demand for CPP Films, Western Europe.....	1-37
1-29	Demand and Forecast for CPP Films, Western Europe.....	1-38
1-30	Demand for BOPP Films by Country, Eastern Europe.....	1-39
1-31	Demand for BOPP Films by End Use Applications, Eastern Europ.....	1-40
1-32	Capacity for PP Films by Type, Western Europe.....	1-42
1-33	Suppliers of BOPP Films, Western Europe.....	1-43
1-34	Suppliers of CPP Films, Western Europe.....	1-45
1-35	Suppliers of BOPP Films, Eastern Europe.....	1-47
1-36	Demand for BOPP Films, Asia/Pacific.....	1-48
1-37	Capacity for BOPP Films, Asia/Pacific.....	1-50
1-38	Major Suppliers of BOPP Films, Asia/Pacific.....	1-51
1-39	Demand for CPP Films, Japan.....	1-55
1-40	Suppliers of CPP Films, Japan.....	1-56
1-41	PP Films Position in the Industry Life Cycle.....	1-59
1-42	Global Per Capita Consumption for BOPP Film by Region.....	1-60

1-43	2006 BOPP Capacity Requirement & Current BOPP Capacity.....	1-62
------	-------------------------------------------------------------	------

CHAPTER 2: INTRODUCTION

2-1	Chemical Market Resources, Inc. Research Methodology.....	2-4
2-2	Abbreviations Used in this Study.....	2-5

CHAPTER 3: POLYPROPYLENE FILM TECHNOLOGIES

3-1	Plastic Films: Comparison of Moisture Barrier Performance.....	3-2
3-2	Property Comparison for BOPP and CPP Films.....	3-3
3-3	Historical Advancements in BOPP Surface Treatment.....	3-5
3-4	Comparison of BOPP Films.....	3-6
3-5	Tenter Frame Process Diagram.....	3-9
3-6	Tubular Process: Unit Operations – BOPP Films.....	3-11
3-7	Manufacturing Cost Economics: BOPP Films.....	3-13
3-8	Manufacturing Cost Economics CPP Films.....	3-15
3-9	Process Flow Diagram: Glassine Structure.....	3-17
3-10	Process Flow Diagram: MBOPP Structure.....	3-18
3-11	Process Flow Diagram: BOPP – Sealant Resin Structure.....	3-19
3-12	A Chronology of Development in Polypropylene Technology.....	3-21
3-13	Polypropylene Resin Producers, North America.....	3-23

CHAPTER 4: GLOBAL SUPPLY AND DEMAND FOR PP FILMS

4-1	Global Capacity & Consumption for BOPP Films.....	4-2
4-2	Global Demand and Growth Rate for BOPP Films by Region.....	4-4
4-3	Top 10 Suppliers of BOPP Films, Global.....	4-5
4-4	Global Capacity & Consumption for CPP Films.....	4-7
4-5	Global Demand and Growth Rate for CPP Films by Region.....	4-8

CHAPTER 5: AMERICAS DEMAND FOR PP FILM

5-1	Demand for PP Films, North America.....	5-2
5-2	Demand for BOPP Films by Type, North America.....	5-3
5-3	Demand for BOPP Films by End Use Applications, North America.....	5-6
5-4	Demand and Forecast for BOPP Films, North America.....	5-7
5-5	PP Based Film Structures.....	5-9
5-6	Demand for BOPP Film in Food Packaging Applications.....	5-11
5-7	Total Sales of Snack Food by Type, North America.....	5-14
5-8	Total Sales of Bakery Products by Type, North America.....	5-17
5-9	Multi-Attribute Analysis – Bakery Products.....	5-18
5-10	Multi-Attribute Analysis – Candy Packaging.....	5-20
5-11	Multi-Attribute Analysis – Cheese Packaging.....	5-22
5-12	Demand for BOPP Film in Industrial Applications.....	5-24

5-13	Multi-Attribute Analysis – Pressure Sensitive Tapes.....	5-27
5-14	Multi-Attribute Analysis – Label Applications.....	5-30
5-15	Multi-Attribute Analysis – Capacitor Films.....	5-32
5-16	Multi-Attribute Analysis – Tobacco Packaging.....	5-35
5-17	Multi-Attribute Analysis – Shrink Wrap	5-37
5-18	Demand for CPP Films by End-Use Application, North America...	5-39
5-19	Demand and Forecast for CPP Films, North America.....	5-40
5-20	Multi-Attribute Analysis – Food Packaging.....	5-43
5-21	Multi-Attribute Analysis – Stationery and Office Supplies.....	5-46
5-22	Multi-Attribute Analysis – Medical & Health Care Packaging.....	5-49
5-23	Multi-Attribute Analysis – Textile Packaging.....	5-51
5-24	Demand for BOPP Film by Country, C & S America.....	5-54
5-25	Demand for BOPP Film by Type, C & S America.....	5-55
5-26	Demand for BOPP Films by End Use Application, C & S America...	5-56
5-27	Demand for BOPP Films in Food Packaging.....	5-57
5-28	Demand and Forecast for BOPP Films, C & S America.....	5-59

CHAPTER 6: AMERICAS SUPPLIERS OF PP FILMS

6-1	Total Capacity for PP Films by Type of Film, North America.....	6-2
6-2	Suppliers of BOPP Films, North America.....	6-3
6-3	BOPP Film Suppliers: Market Share Matrix, North America.....	6-5
6-4	ExxonMobil: Typical Grades and Properties of BOPP Films.....	6-7
6-5	AET: Typical Grades and Properties of BOPP Films.....	6-12
6-6	Inteplast/Amtopp BOPP Film Product Line.....	6-18
6-7	Toray: Typical Grades and Products of BOPP Films.....	6-20
6-8	Suppliers of CPP Films, North America.....	6-26
6-9	CPP Film Suppliers: Market Share Matrix, North America.....	6-27
6-10	Market Shares of BOPP Film Suppliers, North America.....	6-31
6-11	BOPP Film Suppliers: Market and Technology Position.....	6-34
6-12	BOPP Film Suppliers Market and Technology Position Chart.....	6-35
6-13	CPP Film Supplier Market Shares, North America.....	6-36
6-14	CPP Film Suppliers: Market and Technology Position.....	6-38
6-15	CPP Film Suppliers Market and Technology Position Chart.....	6-39
6-16	Pricing of PP Films, North America.....	6-40
6-17	PP Films: Industry Structure, North America.....	6-42
6-18	Suppliers of BOPP Films, South America.....	6-43

CHAPTER 7: EUROPEAN DEMAND FOR PP FILMS

7-1	Demand for PP Films by Region, Europe.....	7-2
7-2	Demand for PP Films, Western Europe.....	7-3
7-3	Demand for BOPP Films by End-Use Application, Western Europe	7-5
7-4	Demand and Forecast for BOPP Films, Western Europe.....	7-6
7-5	Demand for BOPP Films by Type, Western Europe.....	7-7
7-6	Demand for BOPP Films by Country, Western Europe.....	7-9

7-6.1	Demand for BOPP Films in Food Packaging, Western Europe.....	7-10
7-7	Demand for CPP Films by End-Use Application, Western Europe	7-13
7-8	Demand and Forecast for BOPP Films, Western Europe.....	7-14
7-9	Demand for BOPP Films by End Use Application, Eastern Europe.	7-18
7-10	Demand for BOPP Films by Type, Eastern Europe.....	7-19
7-11	Demand for BOPP Films by Country, Eastern Europe.....	7-20
7-12	Demand and Forecast for BOPP Films, Eastern Europe.....	7-21

CHAPTER 8: EUROPEAN SUPPLY FOR PP FILMS

8-1	Capacity for PP Films by Region, Europe.	8-2
8-2	Capacity for PP Films by Type, Western Europe.....	8-3
8-3	Suppliers of BOPP Films, Western Europe.....	8-4
8-4	Suppliers of CPP Films, Western Europe.....	8-9
8-5	Suppliers of BOPP Films, Eastern Europe.....	8-12

CHAPTER 9: ASIA/PACIFIC SUPPLY AND DEMAND FOR PP FILMS

9-1	Capacity for BOPP Films by Country, Asia/Pacific.....	9-2
9-2	Major Suppliers of BOPP Film, Asia/Pacific.....	9-3
9-3	Demand for BOPP Films by Country, Asia/Pacific.....	9-7
9-4	Capacity for PP Films by Type, Japan.....	9-8
9-5	Demand for PP Films by Type, Japan.....	9-10
9-6	Suppliers of BOPP Film, Japan.....	9-11
9-7	Demand for BOPP Films, Japan.....	9-15
9-8	Demand and Forecast for BOPP Films, Japan.....	9-17
9-9	Suppliers of CPP Films, Japan.....	9-19
9-10	Demand for CPP Films, Japan.....	9-21
9-11	Demand and Forecast for CPP Films, Japan.....	9-23
9-12	Suppliers of BOPP Films, China.....	9-26
9-13	Demand for BOPP Films, China.....	9-28
9-14	Demand and Forecast for BOPP Films, China.....	9-31
9-15	Suppliers of BOPP Films, Indonesia.....	9-33
9-16	Demand for BOPP Films by End-Use Application, Indonesia.....	9-36

CHAPTER 10 STRATEGIC ANALYSIS

10-1	PP Films Position on the Industry Life Cycle.....	10-2
10-2	Global Per Capita Consumption of BOPP film.....	10-3
10-3	Market Attractiveness by End-Use Application, North America.....	10-6
10-4	BCG Growth-Share Matrix for ExxonMobil.....	10-9
10-5	BCG Growth-Share Matrix for AET.....	10-10
10-6	BCG Growth-Share Matrix for Amtopp.....	10-12
10-7	2006 BOPP Capacity Requirement & Current BOPP Capacity.....	10-13

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