

# POLYPROPYLENE in Technical Textiles and Nonwovens World Market Forecasts to 2010

PRODUCED FOR:  
DRA Limited

## Contents

		<b>Page</b>
<b>1</b>	<b>OVERVIEW</b>	<b>1.1</b>
1.1	A Healthy Outlook for Polypropylene, Especially in Nonwovens	1.1
1.2	Polypropylene Technical Textiles Defined	1.2
1.3	Aims of the Report	1.3
1.4	The Source of the Forecasts	1.3
1.5	Products Using Polypropylene included in the Report	1.4
1.6	Levels of Detail in this Report	1.7
1.7	Scope and Structure of the Report	1.7
<b>2</b>	<b>THE RELATIVE IMPORTANCE OF POLYPROPYLENE IN THE TECHNICAL TEXTILES MARKET</b>	<b>2.1</b>
2.1	Overall Market Size and Growth Rates for Technical Textiles	2.1
2.2	The Role of Polypropylene	2.2
<b>3</b>	<b>POLYPROPYLENE END-USE PRODUCTS AND MARKETS</b>	<b>3.1</b>
3.1	Outline of the Chapter	3.1
3.2	Overall End-Use Consumption of Polypropylene	3.2
3.3	End-Use Consumption of Polypropylene by Polymer/Fibre Form (Yarn Type)	3.3
3.4	End-Use Consumption of Polypropylene by Application Area and End-Use Product	3.4
3.5	The Highest Volume and Fastest Growing Polypropylene Product Markets	3.23
3.6	End-Use Consumption of Polypropylene by Region	3.30
3.7	End-Use Consumption of Polypropylene by Fabric and Other Final Textile Product Type	3.37
<b>4</b>	<b>POLYPROPYLENE: DETAILED FORECAST TABLES</b>	<b>4.1</b>
	Part A: Polypropylene World Totals, 1995-2010	4.3
	Part B: End-Use Consumption Analysis by End-Use Product against Polymer/Fibre Form	4.9
	Part C: End-Use Consumption Analysis by End-Use Product against Region	4.17
	Part D: End-Use Consumption Analysis by End-Use Product against Fabric and Other Final Textile Product Type	4.29
	Part E: End-Use Consumption Analysis by Fabric and Other Final Textile Product Type against Polymer/Fibre Form	4.35
	Part F: End-Use Consumption Analysis by Region against Polymer/Fibre Form	4.41
	Part G: End-Use Consumption Analysis by Region against Fabric and Other Final Textile Product Type	4.47
<b>Appendix 1:</b>	<b>DEFINITIONS AND ASSUMPTIONS</b>	A1.1
<b>Appendix 2:</b>	<b>THE DRA TEXTILE PRODUCTS END-USE CONSUMPTION FORECASTING SYSTEM</b>	A2.1

## List of Exhibits

Exhibit	Page
<b>Chapter 1: OVERVIEW</b>	
1.1:	Polypropylene Consumption by Textile Application, 2000 ('000 tonnes) 1.1
1.2:	Polypropylene Performance Strengths and Weaknesses 1.1
1.3:	List of Polypropylene End-Use Products Covered in this Report, with relevant Application Area 1.5
1.4:	Reporting Levels Used in this Report 1.7
<b>Chapter 2: THE RELATIVE IMPORTANCE OF POLYPROPYLENE IN THE TECHNICAL TEXTILES MARKET</b>	
2.1:	World End-Use Consumption of Technical Textiles, 1995-2010 ('000 tonnes and US\$bn) 2.1
2.2:	World End-Use Consumption of Technical Textiles, Annual Growth Rates, 2000-2004 (Volume Terms) 2.2
2.3:	Classification of Polymer/Fibre Types used in Technical Textiles 2.3
2.4:	World End-Use Consumption of Technical Textiles by Broad Group of Polymer/Fibre Types, 1995-2010 ('000 tonnes) 2.4
2.5:	Polymers and Fibres consumed in Technical Textiles, 1995-2010, by Broad Group of Polymer/Fibre Types , (US\$bn) 2.4
2.6:	World End-Use Consumption of Technical Textiles by Polymer/Fibre Type, 2000 (% Split in Volume Terms) 2.5
2.7:	World End-Use Consumption of Technical Textiles by Main Polymer/Fibre Type and Application Area, 2000 ('000 tonnes) 2.5
2.8:	World End-Use Consumption of Technical Textiles by Polymer/Fibre Type and Region, 2000 ('000 tonnes) 2.8
2.9:	World End-Use Consumption of Technical Textiles by Selected Polymer/Fibre Type, 2000 and 2010 ('000 tonnes) 2.9
<b>Chapter 3: POLYPROPYLENE END-USE PRODUCTS AND MARKETS</b>	
3.1:	World End-use Consumption of Polypropylene in Technical Textiles and Nonwovens, 1995-2010 ('000 tonnes) 3.2
3.2:	World End-use Consumption of Polypropylene in Technical Textiles by Polymer/Fibre Form, 2000 (% Split in Volume Terms) 3.3
3.3:	World End-use Consumption of Polypropylene in Technical Textiles by Polymer/Fibre Form, 1995-2010 ('000 tonnes) 3.4
3.4:	World End-use Consumption of Polypropylene in Technical Textiles by Application Area, 2000 (% Split in Volume Terms) 3.4

## List of Exhibits (continued)

Exhibit		Page
	<b>Chapter 3: POLYPROPYLENE END-USE PRODUCTS AND MARKETS (continued)</b>	
3.5:	Polypropylene Packtech Products: World End-Use Consumption and Market Share, 2000	3.5
3.6:	Polypropylene Packtech Products: World End-use Consumption, 2000 and 2010, ranked by Growth Rate	3.6
3.7:	Polypropylene Medtech Products: World End-Use Consumption and Market Share, 2000	3.7
3.8:	Polypropylene Medtech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.7
3.9:	Polypropylene Hometech Products: World End-Use Consumption and Market Share, 2000	3.9
3.10:	Polypropylene Hometech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.9
3.11:	Polypropylene Agrotech Products: World End-Use Consumption and Market Share, 2000	3.10
3.12:	Polypropylene Agrotech Products: World End-use Consumption, 2000 and 2010, ranked by Growth Rate	3.11
3.13:	Polypropylene Mobiltech Products: World End-Use Consumption and Market Share, 2000	3.12
3.14:	Polypropylene Mobiltech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.12
3.15:	Polypropylene Geotech Products: World End-Use Consumption and Market Share, 2000	3.13
3.16:	Polypropylene Geotech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.14
3.17:	Polypropylene Buildtech Products: World End-Use Consumption and Market Share, 2000	3.14
3.18:	Polypropylene Buildtech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.15
3.19:	Polypropylene Sporttech Products: World End-Use Consumption and Market Share, 2000	3.16
3.20:	Polypropylene Sporttech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.16
3.21:	Polypropylene Clothtech Products: World End-Use Consumption and Market Share, 2000	3.17
3.22:	Polypropylene Clothtech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	3.17
3.23:	Polypropylene Indutech Products: World End-Use Consumption and Market Share, 2000	3.18

## List of Exhibits (continued)

Exhibit	Page
<b>Chapter 3: POLYPROPYLENE END-USE PRODUCTS AND MARKETS (continued)</b>	
3.24:	3.19
Polypropylene Indutech Products: World End-Use Consumption, 2000 and 2010, ranked by Growth Rate	
3.25:	3.19
Examples of Nonwoven Fabric Types in Filtration	
3.26:	3.20
Polypropylene Protech Products: World End-Use Consumption and Market Share, 2000	
3.27:	3.20
Polypropylene Protech Products: World End-Use Consumption, 2000 and 2010 ranked by Growth Rate	
3.28:	3.21
Products using Polypropylene in Polymer Chip Form: Top 80% in 2000 by volume	
3.29:	3.21
Products using Polypropylene in Staple Fibre Form: Top 80% in 2000 by volume	
3.30:	3.22
Products using Polypropylene in Spun Staple Form: Top 80% in 2000 by volume	
3.31:	3.22
Products using Polypropylene in HT Multifilament Form: Top 80% in 2000 by volume	
3.32:	3.22
Products using Polypropylene in Textile Multifilament Form: Top 80% in 2000 by volume	
3.33:	3.23
Products using Polypropylene in Monofilament Form: Top 80% in 2000 by volume	
3.34:	3.23
Products using Polypropylene in Tape and Slit Film Form: Top 80% in 2000 by volume	
3.35:	3.24
Highest Volume Polypropylene End-Use Products in Technical Textiles in 2000 and 2010 in Descending Size Order, 2000	
3.36:	3.24
Fastest Growing Polypropylene End-Use Products in Technical Textiles, 2000 to 2010 in Descending Growth Rate Order	
3.37:	3.26
Matrix of Forecast Growth Rates by Current Market Size of Highest Volume and Fastest Growing Polypropylene Products	
3.38:	3.27
Analysis of Increase in Polypropylene End-Use Product Demand between 2000 and 2010	
3.39:	3.28
Market Growth Trends and Market Share Changes for Polypropylene 2000-2010 for Fastest Growing Polypropylene End-Use Products ('000 tonnes)	
3.40:	3.29
Polypropylene and Polyethylene Inter-fibre Competition 1995-2010 ('000 tonnes)	
3.41:	3.30
Change in Polypropylene's Share of Total Polyolefin Consumption in Technical Textiles, 1995-2010 (%)	
3.42:	3.31
World End-Use Consumption of Polypropylene in Technical Textiles by Region, 2000 (% Split in Volume Terms)	
3.43:	3.31
World End-Use Consumption of Polypropylene in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	

## List of Exhibits (continued)

<b>Exhibit</b>	<b>Page</b>
3.44: World End-Use Consumption of Polypropylene Polymer in Technical Textiles by Region, 2000 (% Split in Volume Terms)	3.32
3.45: World End-Use Consumption of Polypropylene Polymer in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	3.32
3.46: World End-Use Consumption of Polypropylene Staple Fibre in Technical Textiles by Region, 2000 (% Split in Volume Terms)	3.33
3.47: World End-Use Consumption of Polypropylene Staple Fibre in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	3.33
3.48: World End-Use Consumption of Polypropylene HT Multifilament in Technical Textiles by Region, 2000 (% Split in Volume Terms)	3.34
3.49: World End-Use Consumption of Polypropylene HT Multifilament in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	3.34
3.50: World World End-Use Consumption of Polypropylene Monofilament in Technical Textiles by Region, 2000 (% Split in Volume Terms)	3.35
3.51: World End-Use Consumption of Polypropylene Monofilament in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	3.35
3.52: World End-Use Consumption of Polypropylene Tape and Slit Film in Technical Textiles by Region, 2000 (% Split in Volume Terms)	3.36
3.53: World End-Use Consumption of Polypropylene Tape and Slit Film in Technical Textiles by Region, 2000 and 2010 ('000 tonnes)	3.36
3.54: World End-Use Consumption of Polypropylene in Technical Textiles by Fabric and Other Final Textile Product, 2000 (% Split in Volume Terms)	3.37
3.55: World End-Use Consumption of Polypropylene in Technical Textiles by Fabric and Other Final Textile Product, 2000 and 2010 ('000 tonnes)	3.38
3.56: Products using Polypropylene in Unspun Fibre Form: Top 80% in 2000 by volume	3.38
3.57: Products using Polypropylene in Woven Fabric Form: Top 80% in 2000 by volume	3.39
3.58: Products using Polypropylene in Knitted Fabric Form: Top 80% in 2000 by volume	3.39
3.59: Products using Polypropylene in Nonwoven Fabric Form: Top 80% in 2000 by volume	3.40
3.60: Products using Polypropylene in Yarn Type Product Form: Top 80% in 2000 by volume	3.40
3.61: Products using Polypropylene in Other Fabric Form: Top 80% in 2000 by volume	3.40

## **List of Exhibits (continued)**

<b>Exhibit</b>		<b>Page</b>
<b>Appendix 1: DEFINITIONS AND ASSUMPTIONS</b>		
A1.1:	Techtextil Application Areas	A1.1
A1.2:	The Inter-relationship between Products in the Technical Textiles Production Chain	A1.3
A1.3:	Reporting Levels used in this Report	A1.4
<b>Appendix 2: THE DRA TEXTILE PRODUCTS END-USE CONSUMPTION FORECASTING SYSTEM</b>		
A2.1:	Products included in the Technical Textiles Partition of DRA's Textile Products End-Use Consumption Forecasting System	A2.5
A2.2:	Full List of Variables and their Subsets in the Technical Textiles Partition of DRA's Textile Products End-Use Consumption Forecasting System	A2.6

## List of Forecast Tables

Table		Page
<b>Chapter 4: POLYPROPYLENE END-USE PRODUCTS: DETAILED FORECAST TABLES</b>		
<b>Part A: Polypropylene World Totals, 1995-2010</b>		
4.1:	End-Use Consumption Analysis by Polymer/Fibre Form, Volume ('000 tonnes)	4.4
4.2:	End-Use Consumption Analysis by Fabric and Other Final Textile Product Type, Volume ('000 tonnes)	4.4
4.3:	End-Use Consumption Analysis by Region, Volume ('000 tonnes)	4.5
4.4:	End-Use Consumption Analysis by Application Area, Volume ('000 tonnes)	4.5
4.5:	End-Use Consumption Analysis by End-Use Product, Volume ('000 tonnes)	4.6
<b>Part B: End-Use Consumption Analysis by End-Use Product against Polymer/Fibre Form</b>		
4.6:	All Polymer/Fibre Forms, 2000, Volume ('000 tonnes)	4.10
4.7:	All Polymer/Fibre Forms, 2010, Volume ('000 tonnes)	4.11
4.8:	Polymer Chip, 1995-2010, Volume ('000 tonnes)	4.12
4.9:	Staple Fibre, 1995-2010, Volume ('000 tonnes)	4.13
4.10:	Spun Staple, 1995-2010, Volume ('000 tonnes)	4.14
4.11:	Textile Multifilament, 1995-2010, Volume ('000 tonnes)	4.14
4.12:	HT Multifilament, 1995-2010, Volume ('000 tonnes)	4.14
4.13:	BCF, 1995-2010, Volume ('000 tonnes)	4.15
4.14:	Monofilament, 1995-2010, Volume ('000 tonnes)	4.15
4.15:	Tape/Slit film, 1995-2010, Volume ('000 tonnes)	4.15
<b>Part C: End-Use Consumption Analysis by End-Use Product against Region</b>		
4.16:	By Region, 2000, Volume ('000 tonnes)	4.18
4.17:	By Region, 2010, Volume ('000 tonnes)	4.20
4.18:	North America, 1995-2010, Volume ('000 tonnes)	4.21
4.19:	South America, 1995-2010, Volume ('000 tonnes)	4.23
4.20:	Western Europe, 1995-2010, Volume ('000 tonnes)	4.24
4.21:	Eastern Europe, 1995-2010, Volume ('000 tonnes)	4.25
4.22:	South Asia, 1995-2010, Volume ('000 tonnes)	4.26
4.23:	North East Asia, 1995-2010, Volume ('000 tonnes)	4.27
4.24:	South East Asia, 1995-2010, Volume ('000 tonnes)	4.28

## List of Forecast Tables (continued)

Table	Page
<b>Part D: End-Use Consumption Analysis by End-Use Product against Fabric and Other Final Textile Product Type</b>	
4.25:	4.30
4.26:	4.31
4.27:	4.32
4.28:	4.32
4.29:	4.32
4.30:	4.33
4.31:	4.34
4.32:	4.34
<b>Part E: End-Use Consumption Analysis by Fabric and Other Final Textile Product Type against Polymer/Fibre Form</b>	
4.33:	4.36
4.34:	4.36
4.35:	4.37
4.36:	4.37
4.37:	4.37
4.38:	4.38
4.39:	4.38
4.40:	4.38
4.41:	4.39
4.42:	4.39
<b>Part F: End-Use Consumption Analysis by Region against Polymer/Fibre Form</b>	
4.43:	4.42
4.44:	4.42
4.45:	4.43
4.46:	4.43
4.47:	4.44
4.48:	4.44
4.49:	4.45
4.50:	4.45
4.51:	4.46
4.52:	4.46

## List of Forecast Tables (continued)

<b>Table</b>		<b>Page</b>
<b>Part G: End-Use Consumption Analysis by Region against Fabric and Other Final Textile Product Type</b>		
4.53:	All Fabrics, 2000, Volume ('000 tonnes)	4.48
4.54:	All Fabrics, 2010, Volume ('000 tonnes)	4.48
4.55:	Unspun Fibre, 1995-2010, Volume ('000 tonnes)	4.49
4.56:	Woven Fabric, 1995-2010, Volume ('000 tonnes)	4.49
4.57:	Knitted Fabric, 1995-2010, Volume ('000 tonnes)	4.50
4.58:	Nonwoven Fabric, 1995-2010, Volume ('000 tonnes)	4.50
4.59:	Yarn Type Products, 1995-2010, Volume ('000 tonnes)	4.51
4.60:	Other Fabrics, 1995-2010, Volume ('000 tonnes)	4.51

# 1. OVERVIEW

---

## 1.1 A HEALTHY OUTLOOK FOR POLYPROPYLENE, ESPECIALLY IN NONWOVENS

THIS SECTION PROVIDES AN OVERVIEW OF THE MAIN FINDINGS OF THE REPORT.

---

## 1.2 POLYPROPYLENE TECHNICAL TEXTILES DEFINED

This report considers all technical textiles that use polypropylene in the form of polymer chip (for extruded nonwovens), staple fibre, spun staple yarn, multifilament yarn, monofilament yarn or tape/slit film yarn. In this report technical textiles are defined as comprising all those textile-based products which are used principally for their performance or functional characteristics rather than for their aesthetics, or are used for non-consumer (i.e. industrial) applications. Hence the definition does not depend on the yarn or fibre used, but on the end-use of the product itself. A more detailed definition of technical textiles is provided in Appendix 1.

---

## 1.3 AIMS OF THE REPORT

The main aims of this report are as follows:

- i) to provide a comprehensive and detailed analysis of the current world market for polypropylene in nonwovens and other technical textiles by individual end-use product.
- ii) to provide estimates of current end-use consumption levels for 66 separate end-use products where polypropylene is used by region and by physical make-up - polymer/fibre form (yarn type), fabric type.
- iii) to provide forecasts of consumption by product by region to 2010 at the same level of detail, based on a well defined and internally consistent set of assumptions, in order to provide a clear picture of future demand for polypropylene polymer/fibre in technical applications.

This information on the most important features of the polypropylene technical textiles market currently and up to 2010 is expected to be useful to the following types of organisation:

- Producers of fibre intermediates, polymers, fibres, yarns and fabrics already operating in the sector or wishing to enter it
- Suppliers of chemicals to the fibre and textile industries: spin finishes, process chemicals, adhesives, coating, effect chemicals, etc
- Manufacturers of machinery for fibre extrusion and processing, textile production, coating and laminating, etc
- Converters and other downstream processors of technical textiles and nonwovens

- Fibre trade associations
- Ultimate commercial end-users of technical products.

---

## **1.4 THE SOURCE OF THE FORECASTS**

The product detail and market forecasts in this report are based on DRA's proprietary system for describing and forecasting world end-use markets for textile products. Details of this Textile Products End-Use Consumption Forecasting System are given in Appendix 2.

The databases and the model included in this consumption forecasting system have been set up to handle a high level of product and market detail. In practice the physical make-up of some 150 individual end-use products (including 66 products which use polypropylene) included in the technical textiles partition of this consumption forecasting system is analysed across 210 individual country markets into:

- 19 individual polymer/fibre types (e.g. cotton, viscose, polypropylene, etc)
- 8 forms of polymer/fibre or yarn type used (e.g. unspun staple fibre, filament yarns, tape yarns)
- 19 different final textile product types (e.g. narrow woven fabrics, warp knits, dry-laid nonwovens)
- 4 coating types (plus uncoated).

Complete lists of the 150 technical textile products and the other variables contained within the DRA consumption forecasting system are given in Exhibits A2.1 and A2.2 in Appendix 2.

---

## **1.5 PRODUCTS USING POLYPROPYLENE INCLUDED IN THIS REPORT**

Each of the 66 individual end-use technical textile products in which polypropylene is used has been assigned to one of the relevant 12 application areas as defined by Messe Frankfurt, the organisers of the Techtexil Shows and described in Exhibit A1.1, Appendix 1. A list of the products which use polypropylene, together with their application area and brief product description, is provided in Exhibit 1.3.

**Exhibit 1.3**

**List of the 66 Polypropylene End-Use Products Covered in this Report, with relevant Application Area**

Application Area and Product	Product Description and Function
Agrotech: Woven crop cover, protection	General agricultural, horticultural wovens for protection: wind-breaks, ground matting, tobacco cloth, etc (including tarpaulins)
Agrotech: Land netting	Nets for crop protection, fruit collection, etc, plus balewrap
Agrotech: Nonwoven crop cover, protection	Fabrics for crop cover, protection, mulching, etc
Agrotech: Capillary matting	Capillary matting, ground cover and similar heavy weight nonwovens for agriculture/horticulture
Agrotech: Fishing ropes	Ropes for fishing - towing nets, fish farms, etc (only)
Agrotech: Fishing nets	Nets for all fishing purposes, including seine nets fish farms etc
Agrotech: Baler twine	Twine used to tie bales of hay etc. (excludes balewrap)
Buildtech: Housewrap	Membranes for insulating houses, some breathable
Buildtech: Concrete reinforcement	Loose fibre used to reinforced concrete
Clothtech: Interlinings, nonwoven	Nonwoven fabrics used to provide support and structure to garments
Clothtech: Waddings	Wadding/fibrefill used to provide insulation in garments
Clothtech: Shoe components	Linings, components etc for most shoes and trainers, (excluding artificial suede, leather substrates and PVC substrates)
Geotech: Ground stabilisation	Geotextile fabrics for stabilisation, separation, drainage
Geotech: Soil reinforcement	Geotextile fabrics for reinforcement of soil
Geotech: Pit linings	Geotextile fabrics for lining waste ponds, pits, landfill, etc
Geotech: Erosion control	Geotextile fabrics for erosion control
Homotech: Nonwoven wipes	Cleaning wipes for domestic applications in nonwoven form including floor mops, etc
Homotech: Vacuum filters	Filter media for domestic and industrial vacuum cleaners
Homotech: Pillow tickings	Tickings for filled products (pillow, duvet, cushion)
Homotech: Mattress components	Flanging and quilt backing for mattresses
Homotech: Mattress spring wrap	Fabrics used to wrap springs in sprung beds
Homotech: Spring insulators	Flat fabrics (decking) used to cover springs in beds or upholstery
Homotech: Dust cloths	Fabrics attached to base of furniture
Homotech: nonwoven furniture Components	Skirt linings and other fabrics for use in upholstered furniture, bedding etc, not elsewhere specified
Homotech: furniture webbings	Strapping used to support seating in upholstered furniture, etc
Homotech: Curtain tapes	Header tapes for drapes and nets
Homotech: Woven carpet backings	Woven fabrics used as a primary or secondary backing for tufted carpets (excluding ground yarns for woven carpets)
Homotech: Nonwoven carpet backings	Nonwovens used as a primary and secondary backing for carpets, underlay and backing to carpet tiles
Homotech: Carpet ground yarns	Ground yarns for woven carpets
Indutech: Nonwoven wipes	Cleaning wipes for industrial applications in nonwoven form
Indutech: Woven filters	All woven filters for use in industrial applications
Indutech: Nonwoven air filters	High Efficiency Particulate (HEPA) and Ultra Low Penetration (ULPA) products and other non-HVAC air filters for industry.
Indutech: Nonwoven dust filters	Filter media for dust bag-houses
Indutech: Nonwoven liquid filters	Filter media for swimming pools, food, vessel bags, etc.
Indutech: Other nonwoven filters	All other nonwoven filters
Indutech: Cigarette filters	Tow for cigarette filters
Indutech: Papermaking felts	Batting and support elements of press, forming and drying fabrics (or felts) in papermaking
Indutech: Battery separators, etc	Fabrics for battery separators, floppy disc liners, transformers, etc - excludes PCBs
Indutech: Fibrefill	Fibrefill and waddings for miscellaneous industrial applications

Continued...

**Exhibit 1.3**  
(continued)

**List of the 66  
Polypropylene  
End-Use  
Products Covered  
in this Report,  
with relevant  
Application Area**

Application Area and Product	Product Description and Function
Indutech: Ropes	Ropes and cords for use in industry
Medtech: Nonwoven gowns, drapes	Lightweight nonwoven garments used in protective and medical situations
Medtech: Woundcare woven, knit	All medical wovens and knits such as bandages and dressings, gauze, slings, etc
Medtech: Woundcare nonwoven	Nonwovens for bandages, dressings and other medical end-uses not elsewhere specified
Medtech: Sterile packaging	Sterile medical packaging
Medtech: Coverstock	Outer fabrics used in sanitary towels, diapers, incontinence pads
Medtech: Cotton wool	Loose fibre used for removing or applying powders or liquids
Medtech: Wipes	Wipes for cleansing skin, face, hands, etc
Mobiltech: Cabin filters	Filter media for automotive, mainly cabin filters, but also engine filters, air-intake filters, fuel filtration
Mobiltech: Tufted carpet	Tufted automotive floor-covering - face fabric only
Mobiltech: Needled carpet	Needlepunched nonwoven automotive floor-covering
Mobiltech: Auto carpet backing	Primary (for tufted) and secondary carpet backing for automotive end uses
Mobiltech: Nonwoven trim	Nonwoven automotive trim : boot liners, head liners, shelving, door panels, etc
Mobiltech: Upholstery	Woven & knitted automotive seating face and backing fabric
Mobiltech: Ropes	Ropes used in transport, including marine, tethering, etc
Packtech: FIBC big bags	Flexible Intermediate Bulk Containers, ("Big Bags"), laundry bags and other bulk packaging products
Packtech: Sacks	Sacks for storage, etc
Packtech: Twine	Twine and string for tying packages, etc (excludes agricultural applications)
Packtech: Misc. nonwoven packaging	All nonwoven packaging items except tea bags, e.g. food soaker pads, envelopes, durable papers
Packtech: Misc. woven packaging	Miscellaneous woven packaging items such as lightweight mail - bags, fibre strapping
Protech: Face masks	Face masks for medical, industrial (clean room), and domestic applications
Protech: Dust protection	Lightweight barrier fabrics for garments worn to provide protection against dust or other particulate matter
Protech: Disposable chemical protection	Fabrics for disposable garments worn to provide protection against harmful chemicals and gases, pesticides, etc
Sporttech: Shopping bags	Outer fabrics plus substrates for soft sided shopping and other small bags, carriers, etc (excluding handbags, leathersgoods)
Sporttech: Sports bags, luggage	Face fabrics and substrates for soft sided luggage, bags for carrying sports gear, rucksacks
Sporttech: Artificial turf	Material used to provide surface for sporting activities
Sporttech: Climbing ropes	Ropes and cords used for climbing, yachting, etc
Sporttech: Sports nets	Nets for soccer, tennis, cricket, etc and for court protection
Sporttech: Animal webbing	Pet leads, collars, horse halters, etc

Source: DRA

## 1.6 LEVELS OF DETAIL IN THIS REPORT

Not all variables included in the DRA consumption forecasting system are relevant to polypropylene. Hence, in this report, the physical make-up of each of the 66 polypropylene products listed in Exhibit 1.1 is analysed in terms of 8 polymer/fibre forms and 6 fabric/final textile product types as shown in Exhibit 1.2. Also, for the sake of conciseness, the 210 countries in the consumption forecasting system have been condensed into 8 regions.

### Exhibit 1.4

Reporting Levels used in this Report

Regions	Polymer/Fibre Forms (Yarn Types)	Fabric and other End-Use Product Types
N America	Polymer Chip	Unspun Fibre
S America	Staple Fibre	Woven
W Europe	Spun Staple	Knitted
E Europe	Textile Multifilament (regular tenacity)	Nonwoven
S Asia	Industrial Multifilament (high tenacity)	Yarn-Type Products
N E Asia	BCF	Other Fabrics
S E Asia	Monofilament	
Rest of World (Central Asia, Middle East, Africa, Oceania)	Tape/Slit Film	
<b>Total: 8</b>	<b>Total: 8</b>	<b>Total: 6</b>

Source: DRA

Further details of the variables used in this report are given in Exhibit A1.3, Appendix 1.

## 1.7 SCOPE AND STRUCTURE OF THE REPORT

**Chapter 2: The Relative Importance of Polypropylene in the Technical Textiles Market** provides summary forecasts for the technical textiles market in total and then compares the current size and prospects for synthetic fibres/polymers in technical textile markets with the other broad fibre groups: natural, inorganic and regenerated. It then looks briefly at inter-fibre competition between polypropylene and other individual fibre types (e.g. polyester).

**Chapter 3: Polypropylene End-Use Products and Markets** draws on the detailed Tables in Chapter 4 to highlight some of the important trends in the use of polypropylene in technical textiles and nonwovens

**Chapter 4: Polypropylene End-Use Products: Detailed Forecast Tables** provides a set of 60 Forecast Tables drawn from the DRA consumption forecasting system analysing the world market for polypropylene in technical applications from 1995 to 2010. These tables are split into 7 Parts:

**Part A** consists of **5 Summary Tables**, which provide an overview of polypropylene consumption worldwide over the period 1995-2010. These Tables split polypropylene consumption by polymer/fibre form, fabric type, region, application area and end-use product.

**Parts B-D** provide a detailed analysis of **66 individual polypropylene end-use products** with consumption forecasts to 2010:

- Part B (10 tables) shows the relative importance of each of the **8 polymer/fibre forms** (e.g. slit film) in the production of each polypropylene product over the period 1995-2010.
- Part C (9 tables) provides estimates and forecasts of consumption for each product across **8 regions** of the world (e.g. North America) over the period 1995-2010.
- Part D (8 tables) shows the relative importance of each of the **6 fabric types** (e.g. nonwovens) in the production of each polypropylene product over the period 1995-2010.

**Parts E and F** provide an analysis of **overall polypropylene end-use consumption by the 8 main polymer/fibre forms** with forecasts to 2010:

- Part E (10 Tables) provides estimates and forecasts for the use of each polymer/fibre form in each of the **6 fabric types** (e.g. polymer in nonwovens) over the period 1995-2010.
- Part F (10 Tables) provides estimates and forecasts for the use of each polymer/fibre form in each of **8 regions** of the world (e.g. high tenacity multifilament in South Asia) over the period 1995-2010.

**Part G** (8 Tables) provides an analysis of **overall polypropylene end-use consumption** by the **6 fabric types** in each of **8 regions** of the world over the period 1995-2010 (e.g. woven fabrics in North East Asia)

**Appendix 1: Definitions and Assumptions** outlines the main assumptions and definitions underlying the projections in this report and provides a description of the main table formats used to present the forecasts.

**Appendix 2: The DRA Textile Products End-Use Consumption Forecasting System** describes the consumption forecasting system developed by David Rigby Associates which is the basis of the volume and value estimates presented in this report.