

NONWOVEN END-USE PRODUCTS WORLD MARKET FORECASTS TO 2010

PRODUCED FOR:
DRA Limited

Contents

	Page
1 OVERVIEW	1.1
1.1 Nonwovens: A Growing and Evolving Market	1.1
1.2 What are Nonwovens?	1.2
1.3 Aims of the Report	1.5
1.4 The Source of the Forecasts	1.5
1.5 Nonwoven Products included in this Report	1.6
1.6 Levels of Detail in this Report	1.9
1.7 Scope and Structure of the Report	1.9
2 THE RELATIVE IMPORTANCE OF NONWOVENS IN THE TECHNICAL TEXTILES MARKET	2.1
2.1 Overall Market Size and Growth Rates for Technical Textiles	2.1
2.2 The Role of Nonwovens	2.2
3 NONWOVEN END-USE PRODUCTS AND MARKETS	3.1
3.1 Outline of the Chapter	3.1
3.2 End-Use Consumption of Nonwovens by Web Technology	3.2
3.3 End-Use Consumption of Nonwovens by Application Area and Product	3.4
3.4 The Highest Volume and Fastest Growing Products	3.13
3.5 End-Use Consumption of Nonwovens by Region	3.22
3.6 End-Use Consumption of Nonwovens by Polymer/Fibre Type	3.24
4 NONWOVEN END-USE PRODUCTS: DETAILED FORECAST TABLES	4.1
Part A: Nonwoven World Totals, 1995-2010	4.3
Part B: End-Use Consumption Analysis by Product against Region	4.9
Part C: End-Use Consumption Analysis by Product against Polymer/Fibre Type	4.28
Part D: End-Use Consumption Analysis by Product against Web Technology	4.31
Part E: End-Use Consumption Analysis by Web Technology against Region	4.42
Part F: End-Use Consumption Analysis by Polymer/Fibre Type against Web Technology	4.45
Appendix 1: DEFINITIONS AND ASSUMPTIONS	A1.1
Appendix 2: THE DRA TEXTILE PRODUCTS END-USE CONSUMPTION FORECASTING SYSTEM	A2.1

List of Exhibits

Exhibit		Page
Chapter 1: OVERVIEW		
1.1:	Principal Nonwoven Bonding Technologies	1.2
1.2:	Points in Supply Chain where “End-Use Consumption” is Measured	1.4
1.3:	List of Nonwoven End-Use Products Covered in this Report, with relevant Application Area	1.6
1.4:	Reporting Levels Used in this Report	1.8
Chapter 2: THE RELATIVE IMPORTANCE OF NONWOVENS IN THE TECHNICAL TEXTILES MARKET		
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 Fabrics and other Final Textile Products Used in Technical Textiles	2.3
2.4:	World End-Use Consumption of Technical Textiles by Fabric and other Final Textile Product, 1995-2010 (‘000 tonnes)	2.4
2.5:	World End-Use Consumption of Technical Textiles by Fabric and other Final Textile Product, 1995-2010 (US\$ million)	2.4
2.6:	Forecast Growth Rates of Technical Textiles by Fabric and other Final Textile Product, 2000-2004 (Volume Terms)	2.5
2.7:	World End-Use Consumption Analysis by Fabric and other Final Textile Product against Application Area, 2000 (‘000 tonnes)	2.6
2.8:	World End-Use Consumption Analysis by Fabric and other Final Textile Product against Region, 2000 (‘000 tonnes)	2.6
Chapter 3: NONWOVEN END-USE PRODUCTS AND MARKETS		
3.1:	World End-use Consumption of Nonwoven Fabrics in Technical Textiles by Web Technology, 2000 (% Split in Volume Terms)	3.2
3.2:	Growth Rates for Each Nonwoven Web Technology, 1995-2010 (Volume Terms)	3.4
3.3:	World End-Use Consumption of Nonwoven Fabric in Technical Textiles by Application Area, 2000 (% Split in Volume Terms)	3.4
3.4:	Medtech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.5
3.5:	Buildtech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.6
3.6:	Clothtech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.6
3.7:	Hometech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.7
3.8:	Production of Secondary Backing in Belgium (msm)	3.7
3.9:	Indutech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.8
3.10:	Mobiltech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms)	3.9

List of Exhibits (continued)

Exhibit	Page
Chapter 3: NONWOVEN END-USE PRODUCTS AND MARKETS (continued)	
3.11:	Geotech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms) 3.10
3.12:	Agrotech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms) 3.11
3.13:	Protech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms) 3.12
3.14:	Packtech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms) 3.12
3.15:	Sporttech Nonwoven Products: World End-Use Consumption, 2000 & 2010 (Volume Terms) 3.13
3.16:	Ten Highest Volume Nonwoven Products (All Web-Technologies) 3.13
3.17:	Top Ten Fastest Growing Nonwoven Products between 2000 and 2010 (All Web Technologies) 3.14
3.18:	Matrix of Nonwoven Product End-Use Consumption by Growth Rate and Current Consumption Level 3.15
3.19:	Individual Products that Account for 80% of Extruded Nonwoven Consumption, 2000 3.16
3.20:	Individual Products that Account for 80% of Wet-Laid Nonwoven Consumption, 2000 3.16
3.21:	Individual Products that Account for 80% of Dry-Laid Nonwoven Consumption, 2000 3.17
3.22:	Competition Between Nonwovens and Other Fabrics by Product, 2000 3.18
3.23:	Increase in Demand for Nonwovens between 1995 and 2010 showing Impact of Increased Market Share of Nonwovens 3.19
3.24:	Group A Products: End-Use Consumption of Products which use only Nonwovens, 1995 and 2010 ('000 tonnes) 3.20
3.25:	Group B Products: Change in Market Share To/From Nonwovens From/To All Other Fabric Types by Selected Individual Product between 1995 and 2010 (% Points) 3.21
3.26:	World End-Use Consumption of Nonwovens by Region, 2000 and 2010 ('000 tonnes) 3.22
3.27:	Extruded Nonwovens: World End-Use Consumption by Region, 2000 and 2010 ('000 tonnes) 3.23
3.28:	Dry-Laid Nonwovens: World End-Use Consumption by Region, 2000 and 2010 ('000 tonnes) 3.23
3.29:	Wet-Laid Nonwovens: World End-Use Consumption by Region, 2000 and 2010 ('000 tonnes) 3.24
3.30:	World End-Use Consumption of Nonwovens by Polymer/Fibre Type, 2000 and 2010 ('000 tonnes) 3.25
3.31:	World End-Use Consumption of Wet-Laid Nonwovens by Polymer/Fibre Type, 2000 (% Split in Volume Terms) 3.25
3.32:	World End-Use Consumption of Extruded Nonwovens by Polymer/Fibre Type, 2000 (% Split in Volume Terms) 3.26
3.33:	World End-Use Consumption of Dry-laid Nonwovens by Polymer/Fibre Type, 2000 (% Split in Volume Terms) 3.26

List of Exhibits (continued)

Appendix 1: DEFINITIONS AND ASSUMPTIONS

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

Appendix 2: THE DRA TEXTILE PRODUCTS END-USE CONSUMPTION FORECASTING SYSTEM

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 Detailed Forecast Tables

Table	Page
Chapter 4: NONWOVEN END-USE PRODUCTS: DETAILED FORECAST TABLES	
Part A: Nonwoven World Totals, 1995-2010	
4.1: End-Use Consumption Analysis by Product, Volume ('000 tonnes)	4.3
4.2: End-Use Consumption Analysis by Product, Value (US\$ mn)	4.4
4.3: End-Use Consumption Analysis by Web Technology, Volume ('000 tonnes)	4.5
4.4: End-Use Consumption Analysis by Web Technology, Value (US\$ mn)	4.5
4.5: End-Use Consumption Analysis by Region, Volume ('000 tonnes)	4.6
4.6: End-Use Consumption Analysis by Region, Value (US\$ mn)	4.6
4.7: End-Use Consumption Analysis by Application Area, Volume ('000 tonnes)	4.7
4.8: End-Use Consumption Analysis by Application Area, Value (US\$ mn)	4.7
4.9: End-Use Consumption Analysis by Polymer/Fibre Type, Volume ('000 tonnes)	4.8
Part B: End-Use Consumption Analysis by Product against Region	
4.10: All Regions, 2000, Volume ('000 tonnes)	4.10
4.11: All Regions, 2000, Value (US\$ mn)	4.11
4.12: All Regions, 2010, Volume ('000 tonnes)	4.12
4.13: All Regions, 2010, Value (US\$ mn)	4.13
4.14: North America, 1995-2010, Volume ('000 tonnes)	4.14
4.15: North America, 1995-2010, Value (US\$ mn)	4.15
4.16: South America, 1995-2010, Volume ('000 tonnes)	4.16
4.17: South America, 1995-2010, Value (US\$ mn)	4.17
4.18: Western Europe, 1995-2010, Volume ('000 tonnes)	4.18
4.19: Western Europe, 1995-2010, Value (US\$ mn)	4.19
4.20: Eastern Europe, 1995-2010, Volume ('000 tonnes)	4.20
4.21: Eastern Europe, 1995-2010, Value (US\$ mn)	4.21
4.22: South Asia, 1995-2010, Volume ('000 tonnes)	4.22
4.23: South Asia, 1995-2010, Value (US\$ mn)	4.23
4.24: North East Asia, 1995-2010, Volume ('000 tonnes)	4.24
4.25: North East Asia, 1995-2010, Value (US\$ mn)	4.25
4.26: South East Asia, 1995-2010, Volume ('000 tonnes)	4.26
4.27: South East Asia, 1995-2010, Value (US\$ mn)	4.27

List of Detailed Forecast Tables (continued)

Table	Page
Part C: End-Use Consumption Analysis by Product against Polymer/Fibre Type	
4.28: All Polymer/Fibre Types, 2000, Volume ('000 tonnes)	4.29
4.29: All Polymer/Fibre Types, 2010, Volume ('000 tonnes)	4.30
Part D: End-Use Consumption Analysis by Product against Web Technology	
4.30: All Web Technologies, 2000, Volume ('000 tonnes)	4.32
4.31: All Web Technologies, 2000, Value (US\$ mn)	4.33
4.32: All Web Technologies, 2010, Volume ('000 tonnes)	4.34
4.33: All Web Technologies, 2010, Value (US\$ mn))	4.35
4.34: Extruded Nonwovens, 1995-2010, Volume ('000 tonnes)	4.36
4.35: Extruded Nonwovens, 1995-2010, Value (US\$ mn)	4.37
4.36: Dry-Laid Nonwovens, 1995-2010, Volume ('000 tonnes)	4.38
4.37: Dry-Laid Nonwovens, 1995-2010, Value (US\$ mn)	4.39
4.38: Wet-Laid Nonwovens, 1995-2010, Volume ('000 tonnes)	4.40
4.39: Wet-Laid Nonwovens, 1995-2010, Value (US\$ mn)	4.41
Part E: End-Use Consumption Analysis by Web Technology against Region	
4.40: All Regions, 2000, Volume ('000 tonnes)	4.43
4.41: All Regions, 2000, Value (US\$ mn)	4.43
4.42: All Regions, 2010, Volume ('000 tonnes)	4.44
4.43: All Regions, 2010, Value (US\$ mn)	4.44
Part F: End-Use Consumption Analysis by Polymer/Fibre Type against Web Technology	
4.44: All Web Technologies, 2000, Volume ('000 tonnes)	4.46
4.45: All Web Technologies, 2010, Volume ('000 tonnes)	4.46

1. OVERVIEW

1.1 NONWOVENS: A GROWING AND EVOLVING MARKET

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

1.2 WHAT ARE NONWOVENS?

1.2.1 Terms and Processes

For the purpose of this report a “nonwoven” fabric is defined as a sheet or web structure made of fibres bonded or interlocked together by mechanical, chemical, thermal or solvent means. This definition excludes all fabrics that are woven, knitted or tufted, together with all papers. This definition is largely based on that used by the American Society for Testing Materials.

This report focuses on nonwovens used in technical textiles, where the vast majority of nonwovens are consumed; exceptions include shoe uppers, artificial suede and needlepunched carpets for domestic and contract applications. More information on the definition of technical textiles and product coverage in this report is given in Appendix 1.

Polymers and fibres are the most important elements of the nonwoven fabric in terms of their contribution to its technical performance characteristics, aesthetics, softness, flexibility, etc. A wide range of fibres can be used in nonwovens but only a small number of fibres have achieved any significant market share. Whilst 15 polymers/fibres are analysed in this report, four of these, polyester, polypropylene, viscose and glass, account for over 90% of end-use fibre consumption in nonwovens in 2000.

These fibres are processed into webs (also known as a batts, mats or sheets) through a variety of mechanisms that are derived from the textile, paper and plastic extrusion industries. Web technologies can be divided into four broad types:

- Dry-laid
- Extruded (including spunbond, melt-blown, flash-spun)
- Wet-laid
- Air-laid (sometimes included within dry-laid but reported on separately within this report).

Nonwoven fabrics are subsequently formed by bonding the fibres in the webs together. This can be achieved by either mechanical, chemical, solvent, and/or thermal processes. The type of bonding has a direct influence of the fabric properties in terms of density, strength, flexibility, softness, etc. Whilst bonding can take place as a separate process to

web forming it is often carried out at the same time as the web is formed. Some webs are bonded using more than one technique to achieve specific fabric characteristics.

Exhibit 1.1

**Principal
Nonwoven
Bonding
Technologies**

Mechanical:	Includes needlepunching, stitchbonding and hydro-entangling.
Chemical:	Involves the application of adhesive binders by a range of processes including spraying, printing, saturating and foaming.
Solvent:	Achieved by softening or partially dissolving fibres with a solvent to provide self-bonding surfaces.
Thermal:	Involves heat and/or pressure to fuse or weld fibres together at points of intersection or in patterned bond sites. This usually involves including a fibre with a lower melting point in the web.

Source: DRA & Nonwovens.com

A wide range of finishing techniques can be applied to nonwoven fabrics in their roll goods state to provide additional properties. These techniques are becoming progressively more important as nonwovens are used in increasingly demanding applications.

Some common finishes or coatings which can be applied include

- fusible coatings for interlinings, packaging or for lamination applications
- specialist finishes to give specific properties such as softness, anti-static, water or oil repellency, flame retardency or colour
- absorptive material e.g. activated carbon for air-filtration
- superabsorbent polymers for use in medical, packaging and cable applications
- abrasive materials for sanding and polishing.

Nonwovens can also be used in conjunction with, or directly laminated to, a wide range of other fabrics and films in composite materials to solve specific end-user problems.

1.2.2 Definition of End-Use Product Consumption

Exhibit 1.2 provides a simplified outline of the nonwovens industry and indicates the points at which this report measures end-use product consumption.

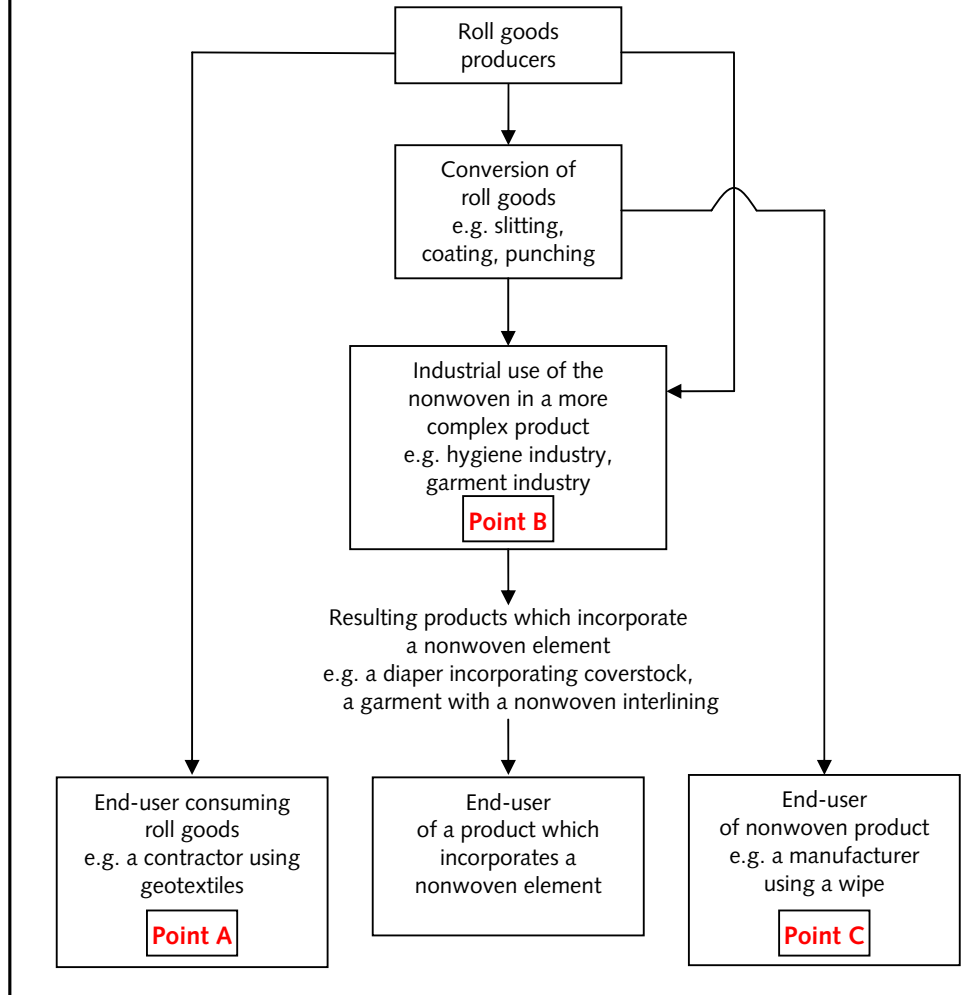
Exhibit 1.2

Points in the Supply Chain where "End-Use Consumption" is Measured

This report calculates market volumes at the point where a nonwoven is "consumed" outside the textile industry. Consumption can happen at three distinct points in the nonwoven supply chain depending on the nonwoven product:

- Point A:** where a nonwoven is used as a final product in its roll goods state e.g. geotextiles
- Point B:** where a nonwoven is used as a component in another product e.g. when coverstock is incorporated into a diaper
- Point C:** where a nonwoven is consumed as a finished product after conversion e.g. wipes

We **do not** therefore class a diaper as a nonwovens product, as it contains many non-textile elements, but would classify wipes as nonwoven products as these are not incorporated into another product but are sold in their own right.



Source: DRA

Further details on the definition of end-use product consumption are provided in Appendix 1 pages A1.1 and A1.2.

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 nonwovens by individual product
- ii) to provide estimates of current end-use consumption levels for 52 separate end-use nonwoven products by region and by physical make-up (web technology, polymer/fibre type)
- iii) to provide forecasts by region to 2010 at the same level of product detail based on a well defined and internally consistent set of assumptions, in order to provide a clear picture of future nonwovens markets.

The report covers all binding types for nonwovens but does not specifically investigate the outlook for each. Nor does it describe individual companies and their activities.

The report identifies the most important features of the nonwovens market currently and up to 2010. This information is expected to be useful to the following types of organisations:

- Nonwovens companies already operating in the sector
- Companies who would like to be in the nonwovens industry
- Producers of the polymers and fibres used by the nonwovens industry
- Suppliers of textile chemicals to the nonwovens industry: process chemicals, coating compounds, adhesives, effect chemicals, etc
- Manufacturers of nonwovens textile machinery
- Converters and other downstream processors of nonwovens
- Nonwovens trade associations
- Ultimate commercial end-users of products containing nonwovens.

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 in total (including 52 where nonwovens are used) included in the technical textiles partition of the consumption forecasting system, is analysed across 210 individual country markets into:

- 19 individual polymer/fibre types (e.g. cotton, viscose, polyester, etc)
- 8 forms of polymer/fibre used (e.g. unspun fibre, spun 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 all the technical textile products and the other variables and their subsets contained within the DRA consumption forecasting system are given in Exhibits A2.1 and A2.2 in Appendix 2.

1.5

NONWOVEN PRODUCTS INCLUDED IN THIS REPORT

The current study identifies and quantifies the 52 individual end-use products in which nonwovens are used out of the total population of 150 technical textile products contained in the DRA consumption forecasting system. Each of these 52 products has been assigned to one of the 12 application areas as defined by Messe Frankfurt, the organisers of the Techtextil shows and as described in Exhibit A1.1, Appendix 1. A list of the products which use nonwovens, together with their application area and product description, is provided in Exhibit 1.3.

Exhibit 1.3**List of the 52
Nonwoven End-
Use Products
Covered in this
Report, with
relevant
Application Area**

Application Area and Nonwoven Product	Product Description and Function
Agrotech: Crop Cover, Protection	Fabrics for crop cover, protection, mulching, etc
Agrotech: Capillary Matting	Capillary matting, ground cover & similar heavy weight nonwovens for agriculture/horticulture
Buildtech: Roofing Felts	Fabrics, impregnated with bitumen or similar, for use as roofing felts (flat roofs and underlay). Also sewer linings.
Buildtech: Shingles	Nonwoven fabrics, primarily of glass, for roofing/shingles
Buildtech: Housewrap	Membranes for insulating houses, some breathable
Buildtech: Composites	Fibre reinforced plastic for building components, shower trays, swimming pools, wind blades, etc. Scrims for concrete reinforcement
Clothtech: Interlinings	Fabrics used to provide support & structure to garments
Clothtech: Shoe Components	Linings, components etc for most shoes & trainers (excluding artificial suede, leather substrates & PVC substrates)
Geotech: Ground Stabilisation	Geotextile fabrics for stabilisation, separation, drainage
Geotech: Pit Linings	Geotextile fabrics for lining waste ponds, pits, landfill, etc
Geotech: Erosion Control	Geotextile fabrics for erosion control
Homotech: 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: HVAC Filters	Heating, ventilation and air conditioning filters for domestic & industrial use
Homotech: Pillow Tickings	Tickings for filled products (pillows, duvets, cushions)
Homotech: Mattress Tickings	Outer fabrics for wrapping mattresses
Homotech: Mattress Components	Flanging & 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: Furniture Components	Skirt linings & other fabrics for use in upholstered furniture, bedding etc, not elsewhere specified
Homotech: Carpet Backings	Nonwovens used as a primary & secondary backing for carpets, underlay & backing to carpet tiles
Indutech: Abrasives	Fabrics for a variety of polishing & abrasion applications
Indutech: Wipes	Cleaning wipes for industrial applications in nonwoven form
Indutech: Air Filters	High Efficiency Particulate (HEPA) & Ultra Low Penetration (ULPA) products & other non-HVAC air filters for industry
Indutech: Dust Filters	Filter media for dust bag-houses
Indutech: Liquid Filters	Filter media for swimming pools, food, vessel bags, etc.
Indutech: Other Filters	All other nonwoven filters
Indutech: Papermaking Felts	Batting & support elements of press, forming & drying fabrics (or felts) in papermaking
Indutech: Battery Separators, etc	Fabrics for battery separators, floppy disc liners, transformers, etc - excludes PCBs
Medtech: Gowns, Drapes	Nonwoven garments used in protective & medical situations
Medtech: Woundcare	Nonwovens for bandages, dressings & other medical end-uses not elsewhere specified

continued...

**Exhibit 1.3
(cont.)**

**List of the 52
Nonwoven End-
Use Products
Covered in this
Report, with
relevant
Application Area**

Application Area and Nonwoven Product	Product Description and Function
Medtech: Sterile Packaging	Sterile medical packaging
Medtech: Coverstock	Outer fabrics used in sanitary towels, diapers, incontinence pads
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: Needled Carpet	Needlepunched nonwoven automotive floor-coverings
Mobiltech: Auto Carpet Backing	Primary (for tufted) & secondary carpet backing for automotive end uses
Mobiltech: Trim	Nonwoven automotive trim: boot liners, head liners, shelving, door panels, etc
Mobiltech: Insulation	Insulation for engine compartments, wheel arches, etc
Mobiltech: Transport Composites	FRP for use in cars, trains, buses (mostly components, aerofoils, spoilers, seats) etc
Mobiltech: Marine Composites	Glass fibre for use in boat bodies GRP - hand lay-up, etc
Packtech: Teabags	Non-paper tea bags & coffee filters
Packtech: Misc. Packaging	All nonwoven packaging items except tea bags, e.g. food soaker pads, envelopes & durable papers
Protech: Cut, Slash Protection	Fabrics for garments & gloves used to provide protection from knives, glass or other sharp implements; chain saw protection
Protech: Face Masks	Face masks for medical, industrial (clean room), & 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 & gases, pesticides, etc
Sporttech: Shopping Bags	Outer fabrics plus substrates for soft sided shopping & other small bags, carriers, etc (excluding handbags, leathersgoods)
Sporttech: Artificial Leather Substrates	Coating substrates for artificial leather handbags, luggage, small goods
Sporttech: Equipment Composites	Materials used in the production of skis, racket frames, canoes, jet-skis
Sporttech: Flags	Fabrics for flags, pennants, bunting, for parades, shows, etc.
<i>Oekotech: Housewrap (Buildtech), erosion control, pit linings (Geotech), dust filters (Indutech), automotive insulation (Mobiltech)</i>	<i>Products included in the list above that are used for environmental protection applications.</i>

Source: DRA

1.6 LEVELS OF DETAIL IN THIS REPORT

Not all of the variables included in the DRA consumption forecasting system are relevant to nonwovens. Hence in this report, the physical make-up of each of the 52 products listed in Exhibit 1.3 is analysed in terms of 15 polymer/fibre types and 4 web technologies as shown in Exhibit 1.4. 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	Fibre/Polymer Types	Web Technologies
N America	Cotton	Dry-laid
S America	Wool	Extruded (including spunbond, melt-blown, flash-spun)
W Europe	Other natural fibres	Wet-laid
E Europe	Wood-pulp	Air-laid
S Asia	Viscose	
N E Asia	Polyester	
S E Asia	Polyamide	
Rest of World (including Central Asia, Middle East, Africa, Oceania)	Polypropylene	
	Polyethylene	
	Acrylic	
	Aramid	
	Other synthetic high performance fibres	
	Carbon	
	Glass	
	Ceramic	
Total 8	Total 15	Total 4

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 Nonwovens in the Technical Textiles Market provides summary forecasts for the technical textiles market in total and then compares the current size and prospects for nonwovens in technical textile markets with other final textile products such as wovens, knits and yarn-type products.

Chapter 3: Nonwoven End-Use Products and Markets draws on the detailed Forecast Tables in Chapter 4 to highlight some of the important trends in nonwovens markets.

Chapter 4: Nonwoven End-Use Products: Detailed Forecast Tables. This chapter provides a set of forecasts drawn from the DRA consumption forecasting system analysing in great detail the world market for nonwovens from 1995 to 2010. These tables are split into 6 parts:

Part A consists of **7 Summary Tables**, which provide an overview of the nonwovens market worldwide over the period 1995-2010. The Tables split total world nonwovens consumption by individual product, by web technology, by region, by application area and by polymer/fibre type.

Parts B to D provide a detailed analysis of **52 individual nonwoven products** with consumption forecasts to 2010:

- Part B (18 Tables) shows the consumption of each product across **8 regions** over the period 1995-2010
- Part C (2 Tables) shows the relative importance of each of **15 polymer/ fibre types** in the production of each nonwoven product for 2000 and 2010
- Part D (10 Tables) shows the relative importance of each of **4 web technologies** in the production of each nonwoven product over the period 1995-2010

Parts E and F provide an analysis of **overall end-use nonwovens consumption by the 4 main web technologies** with market forecasts to 2010:

- Part E (4 Tables) provides estimates for the use of each web technology in each of **8 regions** of the world for 2000, with forecasts for 2010.
- Part F (2 Tables) provides estimates for the use of each of **15 polymer/fibre types** in each web technology for 2000, with forecasts for 2010.

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.