

**150 End-Use Products
in Technical Textiles and Nonwovens
World Market Forecasts to 2010**

GEOTECH

PRODUCED FOR:
DRA Limited

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1. OVERVIEW

1.1 TECHNICAL TEXTILES DEFINED

In this report technical textiles are defined as comprising all those textile-based products (either finished products in their own right, such as ropes or tarpaulins, or components of other products, such as tyre cord for tyres or coverstock for diapers), 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. So nonwoven carpet backing (functional) is included as technical, but needlepunched carpets (largely aesthetic) are not, except for those used in automotive (i.e. high technical specification) applications. Similarly, shoe components (hidden, functional) are included as technical, whilst shoe uppers (visible, largely aesthetic) are treated as non-technical.

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.

1.2 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 technical textiles and nonwovens by individual end-use product.
- ii) to provide estimates of current end-use consumption levels for each separate, or small grouping of, end-use product by region and by physical make-up – polymer/fibre type, polymer/fibre form (yarn type) and 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 technical textiles and nonwoven products.

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

- Producers of fibres, yarns, fabrics and end-use products 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

1.3 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 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, polyester, 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 variables contained within the DRA consumption forecasting system are given in Exhibit A2.2 in Appendix 2.

1.4 PRODUCTS INCLUDED IN THIS REPORT

For the purposes of statistical analysis in this report, some of the smaller or overlapping individual end-use technical textile products have been combined, resulting in a list of 138 separate product headings. Each of the individual end-use technical textile products has been assigned to one of the relevant 12 application areas as defined by Messe Frankfurt, the organisers of the Techtextil Shows and described in Exhibit A1.1, Appendix 1. A list of the 150 products and the 138 product headings used in the statistical analysis, together with their application area and brief product description, is provided in Exhibit 1.1, overleaf.

Exhibit 1.1

List of End-Use Products Covered in this Report, with relevant Application Area

Application Area and Product Name	Products included and Brief Description
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. Includes balewrap nets
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 line	Lines for fishing (long line, rod and line)
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 nets)
Buildtech: Tarpaulins	Heavy woven fabrics for protection and storage applications
Buildtech: Textile structures	Heavy woven fabrics for marquees, tenting, roofs, etc - including architectural membranes
Buildtech: Awnings, canopies	Woven fabrics for commercial and industrial awnings and canopies
Buildtech: Roofing felts	a) Fabrics, impregnated with bitumen or similar, for use as roofing felts (flat roofs and underlay). b) Sewer linings.
Buildtech: Woven roofing	Fabrics for use as substrates in single ply roofing
Buildtech: Roof scrim	Support for nonwovens (e.g. felt) and for PVC coating, for use on roofs
Buildtech: Shingles	Nonwoven fabrics, primarily of glass, for roofing/shingles
Buildtech: Hoardings	Fabrics for billboards, hoardings, mostly for advertising.
Buildtech: Scaffold nets	Scaffolding nets to protect against falling debris; façade netting with or without printed advertising
Buildtech: Housewrap	Membranes for insulating houses, some breathable
Buildtech: Concrete reinforcement	Loose fibre used to reinforce concrete
Buildtech: Composites	a) Fibre reinforced plastic for building components, shower trays, swimming pools, wind blades, etc. b) Scrim for concrete reinforcement
Clothtech: Interlinings, woven & knit	Woven and knitted fabrics used to provide support and structure to garments
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 laces	Shoe and boot laces
Clothtech: Shoe components	Linings, components etc for most shoes and trainers, (excluding artificial suede, leather substrates and PVC substrates)
Clothtech: Sewing threads	Threads used in all garment applications
Clothtech: Fasteners	a) Zip teeth b) Velcro (hook and loop) fastenings
Clothtech: Labels	Printed and woven labels for all applications
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: Woven & knit wipes	Cleaning wipes for domestic applications in woven, or knit form
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

Exhibit 1.1
(continued)

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

Application Area and Product Name	Products included and Brief Description
Homotech: HVAC filters	Heating, ventilation and air conditioning filters for domestic and industrial use
Homotech: Pillow tickings	Tickings for filled products (pillows, duvets, cushions)
Homotech: Mattress tickings	Outer fabrics for wrapping mattresses
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: Platform cloth	Fabrics used as a base for cushions on upholstered furniture
Homotech: Dust cloths	Fabrics attached to base of furniture
Homotech: Other furniture components	Skirt linings and other fabrics for use in upholstered furniture, bedding etc, not elsewhere specified
Homotech: Fibrefill & waddings	Pillow, cushion, duvet filling; wadding used in upholstered furniture and mattresses
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	a) Woven fabrics used as a primary backing for tufted carpets (excluding ground yarns for woven carpets) b) Woven fabrics used as a secondary backing for tufted carpets
Homotech: Nonwoven carpet backings	a) Nonwovens used as a primary backing for carpets b) Nonwovens used as a secondary backing for carpets, underlay and backing to carpet tiles
Homotech: Carpet ground yarns	Ground yarns for woven carpets
Homotech: Sewing threads	Threads used in all furnishing, household textile applications
Homotech: Composites	Fibre-reinforced plastic materials for household use (e.g. consumer appliances, white goods)
Indutech: Conveyor belting	Woven fabrics for conveying and speciality applications
Indutech: Hoses	Braids, woven and knitted fabrics used to reinforce rubber and polymer hoses for industrial applications
Indutech: Drive belting	Machine drive and power transmission belting including flat and coated products as well as V-type designs
Indutech: Brushes	Bristles for brushes of all types
Indutech: Abrasives	Fabrics for a variety of polishing and abrasion applications
Indutech: Woven & knit wipes	Cleaning wipes for industrial applications in knit/woven form
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	a) Fabrics for battery separators b) Fabrics for floppy disc liners, transformers, etc (excludes PCBs)
Indutech: Cable components	Central strength members and rip cord yarns for use in cables
Indutech: Electrical composites	a) PCBs b) Other GRP composites for electrical applications, including other producer durable equipment
Indutech: Seals gaskets	Materials used for industrial seals and gaskets

Exhibit 1.1
(continued)

List of End-Use Products Covered in this Report, with relevant Application Area

Application Area and Product Name	Products included and Brief Description
Indutech: Fibrefill	Fibrefill and waddings for miscellaneous industrial applications
Indutech: Anti-corrosion composites	GRP for anti-corrosion end-uses - storage pipes, tanks, etc
Indutech: Liftingwebs	Webs and roundslings for lifting purposes
Indutech: Ropes	Ropes and cords for use in industry
Indutech: Misc coated fabrics	a) Coated fabrics storage silos b) Coated fabrics for oil booms c) Heavy coating substrates for covers and miscellaneous applications
Medtech: Woven gowns, drapes	Patient and surgeon gowns, drapes and garments used in surgical and other medical situations (excluding nurse-type garments)
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: Medical mattresses	Waterproof coated fabrics for mattresses
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: Car tyre cord	Fabric for reinforcement of car tyres
Mobiltech: CV tyre cord	Fabric for reinforcement of tyres other than for cars
Mobiltech: Auto drive belt	Fabric for reinforcement of automotive drive belts, etc
Mobiltech: Auto hose	Fabric for reinforcement of automotive hoses
Mobiltech: Cabin filters	Filter media for automotive, mainly cabin filters, but also engine filters, air-intake filters, fuel filtration
Mobiltech: Seat belts	Narrow woven safety belt fabric for vehicles
Mobiltech: Air bags	Fabric for reinforcement of automotive safety air bags
Mobiltech: Tufted carpet	Tufted automotive floor-coverings - face fabric only
Mobiltech: Needled carpet	Needlepunched nonwoven automotive floor-coverings
Mobiltech: Auto carpet backing	Primary (for tufted) and secondary carpet backing for automotive end uses
Mobiltech: Woven & knit trim	Woven, knitted automotive trim : boot liners, head liners, shelving, door panels, etc
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: Insulation	Insulation for engine compartments, wheel arches, foot-wells, etc
Mobiltech: Truck covers	Heavy woven fabrics for truck covers, curtain-sides and other protection and storage applications (e.g. ships' hold covers)
Mobiltech: Tiedowns	Narrow woven belts for truck curtain-sides and cargo restraints
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
Mobiltech: Ropes	Ropes used in transport, including marine, tethering, etc
Packtech: FIBC big bags	a) Flexible Intermediate Bulk Containers ("Big Bags") b) 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: Teabags	Non-paper tea bags and coffee filters
Packtech: Misc. nonwoven packaging	a) Food soaker pads b) All other nonwoven packaging items except tea bags, e.g. envelopes, durable papers

Exhibit 1.1
(continued)

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

Application Area and Product Name	Products included and Brief Description
Packtech: Netting	Net packaging for storing, packing, transporting, retailing foodstuffs, toys, and other
Packtech: Misc. woven packaging	a) Woven fibre strapping b) Other miscellaneous woven packaging items such as lightweight mail-bags
Protech: FR clothing	Fabrics for use in clothing worn to protect against flame and heat
Protech: NBC	Fabrics to protect against nuclear, biological and chemical exposure
Protech: Cut, slash protection	Fabrics for garments and gloves used to provide protection from knives, glass or other sharp implements; chain saw protection
Protech: Ballistic protection	Fabrics designed to deflect or absorb impact of bullets, etc
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
Protech: Durable chemical protection	Fabrics for durable garments and gloves worn to provide protection against harmful chemicals and gases
Protech: FWC	Fabrics for foul weather clothing using coating or laminates, for all end uses
Protech: Hi-vis	Fluorescent and phosphorescent (not retro-reflective) fabrics for gilets, trousers, etc (excludes FWC)
Protech: Harnesses	Safety straps for workers, climbing, push chairs, child car seats, etc
Sporttech: Boat covers	Boat covers and other fabrics used to provide protection from adverse weather on pleasure craft
Sporttech: Bookcloth	Substrate for leather-type covering of hard backed books
Sporttech: Shopping bags	Outer fabrics plus substrates for soft sided shopping and other small bags, carriers, etc (excluding handbags, leathersgoods)
Sporttech: Artificial leather substrates	Coating substrates for artificial leather handbags, luggage, small goods
Sporttech: Sports bags, luggage	Face fabrics and substrates for soft sided luggage, bags for carrying sports gear, rucksacks
Sporttech: Sailcloth	Fabrics used in mainsails, foresails and spinnakers
Sporttech: Artificial turf	Material used to provide surfaces 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: Footballs	Coating substrates for artificial leather used to cover footballs and similar
Sporttech: Equipment composites	Materials used in the production of skis, racket frames, canoes, jet-skis
Sporttech: Air sport fabrics	Fabrics for balloons, kites, para-gliders, parachutes
Sporttech: Tents	Fabrics for use in lightweight, portable tents for personal camping/sleeping purposes
Sporttech: Sleeping bag fabrics	Outer fabrics for sleeping bags
Sporttech: Sleeping bag filling	Fibrefill/wadding for sleeping bags
Sporttech: Animal webbing	Pet leads, collars, horse halters, etc
Sporttech: Flags	Fabrics for flags, pennants, bunting, for parades, shows, etc.
<i>Oekotech: Housewrap (Buildtech), Erosion control (Geotech), Pit linings (Geotech), Woven filters, (Indutech), Nonwoven dust filters (Indutech), Automotive insulation (Mobiltech)</i>	<i>Products extracted from the above list that are used for environmental control purposes</i>

1.5 LEVELS OF DETAIL IN THIS REPORT

Not all variables included in the DRA consumption forecasting system are included in this report. The physical make-up of each of the 138 product headings listed in Exhibit 1.2 is described in terms of 4 polymer/fibre types, 6 polymer/fibre forms and 6 fabric/final textile product types as shown in Exhibit 1.3. Also, for the sake of conciseness, the 210 countries in the consumption forecasting system have been condensed into 8 regions.

Exhibit 1.2
Reporting Levels used in this Report

Regions	Polymer/Fibre Group Types	Polymer/Fibre Forms (Yarn Types)	Fabric Types
N America	Natural	Polymer Chip	Unspun Fibre
S America	Regenerated	Staple Fibre	Woven
W Europe	Synthetic	Spun Staple	Knitted
E Europe	Inorganic	Multifilament	Nonwoven
S Asia		Monofilament	Yarn Type Products
N E Asia		Tape/Slit Film	Other Fabrics
S E Asia			
Rest of World (Central Asia, Middle East, Africa, Oceania)			
Total: 8	Total: 4	Total: 6	Total: 6

Source: DRA

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

1.6 SCOPE AND STRUCTURE OF THE REPORT

Chapter 2: The Technical Textiles Market provides summary forecasts for the technical textiles market overall and then looks briefly at the 11 end-use application areas.

Chapters 3-14: End-Use Products by Individual Application Area analyses in detail the relevant end-use products by individual application area. Each Chapter provides a set of 20 Forecast Tables drawn from the DRA consumption forecasting system analysing the world market for technical textiles from 1995 to 2010. These Tables are split into 3 Parts:

Part A consists of 6 **Summary Tables**, which provide an overview of technical textile consumption worldwide in the **application area** over the period 1995-2010. These tables split total consumption by polymer/fibre type and by polymer/fibre form in volume terms, and by fabric type, coating level and region in volume and value terms.

Part B (2 Tables) provides world consumption forecasts to 2010 for the individual **end-use products** contained within the application area, in volume and value terms.

Part C (12 Tables) provides a detailed analysis of the relevant individual **end-use products split** by polymer/fibre type and polymer/fibre form in volume terms, and by fabric type, region and application area in volume and value terms, in 2000 and 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.