

NYLON in Technical Textiles and Nonwovens World Market Forecasts To 2010

PRODUCED FOR:
DRA Limited

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1. OVERVIEW

1.1 NYLON IN TECHNICAL TEXTILES: THE WORST IS NOW OVER

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

1.2 NYLON TECHNICAL TEXTILES DEFINED

This report considers all technical textiles that use nylon (polyamide) in the form of polymer chip (for extruded nonwovens), staple fibre, spun staple yarn, multifilament yarn or monofilament 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 nylon in nonwovens and other technical textiles by individual end-use product
- ii) to provide estimates of current end-use consumption levels for 63 separate end-use products containing nylon by region and by physical make-up (polymer/fibre form or 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 nylon polymer/fibre in technical applications.

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

- Producers of fibre intermediates, 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, coatings, effect chemicals, etc.
- Manufacturers of machinery for fibre production and processing, textile production, coating, 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 63 products which use nylon) 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 used (e.g. unspun 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 NYLON INCLUDED IN THIS REPORT

Each of the 63 individual end-use technical textile products in which nylon is used 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 products which use nylon, together with their application area and brief product description, is provided in Exhibit 1.2.

Exhibit 1.2

**List of the 63 Nylon
End-Use Products
Covered in this
Report, with
Relevant
Application Area**

Application Area and Product	Product Description and Function
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
Buildtech: Tarpaulins	Heavy woven fabrics for protection and storage applications
Buildtech: Scaffold nets	Scaffolding nets to protect against falling debris; façade netting without printed advertising
Buildtech: Concrete reinforcement	Loose fibre used to reinforce concrete
Clothtech: Interlinings, nonwoven	Nonwoven fabrics used to provide support and structure to garments
Clothtech: Shoe laces	Shoe and boot laces
Clothtech: Sewing threads	Threads used in all garment applications
Clothtech: Fasteners	Zip teeth and Velcro (hook and loop) fastenings
Clothtech: Labels	Printed and woven labels for all applications
Hometech: Furniture webbings	Strapping used to support seating in upholstered furniture, etc
Hometech: Curtain tapes	Header tapes for drapes and nets
Hometech: Nonwoven carpet backings	Nonwovens used as a primary and secondary backing for carpets, underlay and backing to carpet tiles
Hometech: Sewing threads	Threads used in all furnishing, household textile applications
Indutech: Conveyor belt	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 filters	All woven filters for use in industrial applications
Indutech: Nonwoven liquid filters	Filter media for swimming pools, food, vessel bags, etc.
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: Lifting webs	Webs and roundslings for lifting purposes
Indutech: Ropes	Ropes and cords for use in industry
Indutech: Misc. coated fabrics	Heavy coating substrates for covers and miscellaneous applications such as storage (silos), military, oil booms, etc
Medtech: Woundcare woven, knit	All medical wovens and knits such as bandages and dressings, gauze, slings, etc
Medtech: Medical mattresses	Waterproof coated fabrics for mattresses
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: Air bags	Fabric for reinforcement of automotive safety air bags
Mobiltech: Tufted carpet	Tufted automotive floor-covering - face fabric only
Mobiltech: Needled carpet	Needlepunched nonwoven automotive floor-covering
Mobiltech: Woven & knit trim	Woven, knitted automotive trim: boot liners, head liners, shelving, door panels, etc

Continued...

**Exhibit 1.2
(continued)**

**List of the 63 Nylon
End-Use Products
Covered in this
Report, with
Relevant
Application Area**

Application Area and Product	Product Description and Function
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: 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: Ropes	Ropes used in transport, including marine, tethering, etc
Packtech: Misc. woven packaging	Miscellaneous woven packaging items such as lightweight mail bags, fibre strapping
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: 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 (excludes FWC)
Protech: Harnesses	Safety straps for workers, climbing, push chairs, child car seats, etc
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 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: 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: Animal webbing	Pet leads, collars, horse halters, etc
Sporttech: Flags	Fabrics for flags, pennants, bunting, for parades, shows, etc.
Oekotech: Woven filters (Indutech), Nonwoven dust filters (Indutech).	<i>Products extracted from the above list that are used for environmental control purposes</i>

Source: DRA

1.6 LEVELS OF DETAIL IN THIS REPORT

Not all variables included in the DRA consumption forecasting system are relevant to nylon. Hence, in this report, the physical make-up of each of the 63 nylon products listed in Exhibit 1.2 is analysed in terms of 7 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 1.3

Reporting Levels used in this Report

Regions	Polymer/Fibre Forms (Yarn Types)	Fabric and Other End-Use Product Types
N America	Polymer	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)		
Total: 8	Total: 7	Total: 6

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 Nylon in the Technical Textiles Market provides summary forecasts for the technical textiles market in total and then compares the current size and prospects for man-made fibres and polymers in technical textile markets with the other broad fibre groups such as natural, inorganic and regenerated. It then looks briefly at inter-fibre competition between nylon and other individual fibre types (e.g. polyester).

Chapter 3: Nylon End-Use Products and Markets draws on the detailed Forecast Tables in Chapter 4 to highlight some of the important trends in the use of nylon in technical textiles and nonwovens.

Chapter 4: Nylon End-Use Products: Detailed Forecast Tables provides a set of 57 Tables drawn from the DRA consumption forecasting system analysing the world market for nylon in technical textiles and nonwovens from 1995 to 2010. These tables are split into 7 Parts:

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

Parts B-D provide a detailed analysis of **63 individual nylon end-use products** with consumption forecasts to 2010:

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

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

- Part E (9 Tables) provides estimates and forecasts for the use of each polymer/fibre form in each of the **6 fabric and other end-use product types** over the period 1995-2010 (e.g. unspun fibre in nonwovens)
- Part F (9 Tables) provides estimates and forecasts for the use of each polymer/fibre form in each of **8 regions** of the world over the period 1995-2010 (e.g. spun staple yarns in Eastern Europe).

Part G (8 Tables) provides an analysis of **overall end-use nylon consumption** by the **6 fabric types** in each of **8 regions** of the world over the period 1995-2010 (e.g. nonwoven fabrics in Western Europe).

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.

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