

## **The Technical Textiles Industry in North America**

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### **Introduction**

It is hard to look find good news about the textile industry in North America. But the technical textiles industry in North America, the largest in the world, is, as a whole, alive and well - for now. Largely unheralded and under-reported, its hard to get a completely accurate picture, but most observers feel that, while slowing, the industry is in good shape with its long term future depends on the economic situation not only in NA but the world. While NA industry has had a tendency to look inward, it is becoming much more globally oriented.

Yes, the NA technical textiles industry is feeling the impact of a slowing economy, even a recession in some manufacturing areas. And the industry is highly sensitive to the economy. But most indicators, those areas that have a major influence on the industry, is in reasonably good shape. Even with a slowdown, many areas are at historic highs. Yes, NA industry is losing some business to low wage countries, especially in the routine, high volume, lower technology items. And, yes, it has been changed a bit by imports and various trade agreements, and will be even more in the future. By 2005 when all US duties for WTO countries are eliminated there will be a real test to see who survives and prospers. The leading companies are developing strategies and making moves to be prepared.

Trade agreements, particularly NAFTA and the CBI agreements, have caused revision in business strategies. NAFTA (the North American Free Trade Agreement) is the most prominent one and concerns primarily Mexico, Canada, and the United States. The CBI (Caribbean Basin Initiative) involves more than a dozen near-by countries and allows US textiles or components to be shipped for sewing and fabrication and shipped back with duties only on value added. While imports were at the highest level, US exports set new records in 2000, mostly to Mexico as part of the NAFTA and CBI. Those two agreements have had a major impact on apparel, but less so on industrial textiles. But there has been impact, and some leading companies are using the trade agreements to help compete, even to find and exploit new markets.

But the changes have been more toward consolidation, developing and utilizing new technology, changing the way business is done, becoming more competitive, more innovative, and solidifying positions in several markets - even becoming more active in exporting.

### **The Industry**

The industrial or technical textiles industry (IT/TT) -- here treated as the same -- is highly fragmented. No one really knows its size as no one agrees on the actual definition and makeup of the industry. For our purposes, we will use a very general definition and say that if you don't wear it as routine wearing apparel, and if you don't use it to decorate your home, then it is industrial -- materials chosen for function rather than aesthetics. That's imprecise, but it is functional and we'll accept it.

Messe Frankfurt commissioned David Rigby Associates (UK) a few years ago to try and categorize and get a better understanding of just how large the industry and its segments might really be. It is a landmark study, a great place to start. While one may disagree with some of the numbers, and some markets have changed, it serves to put the industry in perspective, and in a way not previously known.

According to the Rigby study, North America accounted for about 33% of all IT/TT world consumption in 1995. Today it is about 30% - and by 2005, it will be about 28% due to off shore competition, particularly China, taking larger market shares. While the NA world *market share* may decline -- overall production will increase. What the change in market share may really mean to us is that other countries are developing uses for IT/TT as well. But this growth also creates opportunity, especially for exporting of high-end specialty products.

An adapted version of Rigby's numbers is given in Table 1. This table summarizes the information for Messe Frankfurt's 12 segments (renamed) as they pertain to North America.

Application	Poundage 1995 (Tons)	\$ Value 1995 (\$Million)	Poundage 2005 (Tons)	\$ Value 2005 (\$Million)	%CAGR '95-'05 (Consumption)
Agricultural	150	590	168	663	1.1
Construction	405	1147	528	1551	2.7
Clothing/Shoes - Technical Components	176	1485	154	1287	(-1.3)
Geotextiles	84	389	143	659	5.4
Home Applications - Technical Components	554	2443	788	3385	3.6
Industrial Applications	544	2579	739	3543	3.1
Medical	368	2021	409	2276	1.1
Transportation	530	3139	633	3612	1.8
Environmental	56	312	90	458	4.9
Packaging	119	524	154	700	2.6
Protective	45	435	61	620	3.0
Sport/Leisure	82	513	109	628	2.9
<b>Totals</b>	<b>3113T</b>	<b>\$15,577</b>	<b>3976T</b>	<b>\$19,382</b>	<b>2.4%</b>

Source: David Rigby Associates, Manchester, UK/Messe Frankfurt, Frankfurt, Germany, 1997

**Table 1 - North American textile volume (tons) and growth  
By application and dollar value (\$million) by application 1995-2005**

Table 2 presents data from another perspective – how many pounds of fibers are used for *selected end uses*. Though significant, these markets are only a small part of the overall industry.

U.S. Industrial Market for Textile Fibers By Application (Millions of pounds)				
Application	1983	1993	1998	AGR % 93/98
Tires	334	353	392	2.2
Coated Fabrics	111	251	300	3.9
Transportation Fabrics	64	113	130	5.0
Hose & Belting	82	89	100	2.5
Filtration	30	32	35	1.9
Electrical and Related	15	56	75	6.8
Felts	27	52	60	3.1
<b>Total</b>	<b>663</b>	<b>946</b>	<b>1092</b>	<b>3.0</b>

AGR 93/98 = % Annual Growth Rate 1993 to 1998

Source: The Freedonia Group & Technical Textiles International

**Table 2 – U.S. Industrial Markets for Fibers - by Specific Applications**

Table 3 presents data on other selected subsets that might otherwise get lost – including such things as rope and cordage and sewing thread.

<b>Selected Markets – Industrial Textiles</b> (millions of square yards or pounds as indicated)	
Hose..... 41**	Impression..... 50
Rope & Cordage..... 210*	Wall covering.....700
Sailcloth..... 10	Apparel care labels..... 15
Tufted Carpet backing... 970	Filtration..... 49
Sewing thread .....145*	

\* millions of pounds \*\* prorated to yards

Estimated 1999 Data from various sources

**Table 3 – Usage in selected industrial textile markets**

The automobile industry is the largest user of industrial textiles, in terms of dollars, in North America, with most items, especially the decorative interior items, are relatively high in price.

	<u>Cars</u>	<u>Lt. Trucks</u>
Seating -	7.2	4.9
Headliner -	4.8	3.3
Carpeting -	4.5	3.2
Trunks -	1.5	1.1
Quarterpanels	4.3	3.0
Misc.:	2.5	1.7
	24.8 sy	17.2 sy

**Table 4 - Automotive Interiors - Average usage by square yards.**

The figures in table 4 do not include airbags, an application using over 70 million square yards in North America alone. Nor does it include textiles in tires, belts, hoses, filters, sound/vibration dampening, etc. Add that to the fact overall usage of textiles in automotives is increasing; so, even with an anticipated drop in car production, textile usage could actually grow.

There are many millions of yards used in medical or hygiene areas, most of it single use nonwovens of lesser value than, say, the needled nonwoven fabric used for headliner in a car, or even for trunk lining. And where do you include diaper stock, cosmetic wipes, and the like? And what of the papermaking fabrics used in giant paper machines, often not counted but a billion dollar market? We could list many more "where do you put it?" items. But this data serves our purposes to put things in perspective.

When the DRA study was first done, I thought the overall NA numbers were a little low, and they may have been considering the unprecedented robust economy in the United States. Given today's perceived outlook and projections, the 2.4% overall growth may be about right, at least 2005 when most import duties will be eliminated for WTO countries.

### **Impacting The Industry**

There are many factors, of course, that impact the industry - for good or bad. Not all of them are due to a slowing economy. We are experiencing many textile plant closings in my area, the so-called "textile belt." Much of this news gives a false impression of the industry, at least where IT/TT are concerned. Imports and a slowing economy are often blamed, and for many, that is certainly the case, much is also due to increased production efficiencies rendering an older plant obsolete and/or no longer needed. Too, markets shift and change. Nonwovens may have taken away a market for woven fabrics. In some cases customers of the fabric producers are putting in fabric making equipment of their own. At least one major coater has become a net fabric producer and seller. One IT/TT company even makes its own fibers, selling the excess of his unique product. This isn't practical for everyone, but a number are doing it and we can expect to see more. Such extensions of their business will

When doing interviews for this presentation, one respondent had firm ideas. Business is definitely slow for most everyone, he says, and definitely softer everywhere. But two major things are happening.

1) Last year when business was good, manufacturers maintained excessive inventories. Business still isn't that horribly bad now, but companies need work off excessive stock and/or adjust capacity.

Companies making fibers, yarns, nonwovens, and woven or knitted fabrics are seeking a larger share of the business in those areas where the buying is still strong. In many cases, price-cutting is being used to obtain business needed to run plants and not lay off or lose the precious work force that has been difficult to obtain and train in the boom and labor shortage.

2) There simply are too many suppliers in the textile and nonwoven industry for when business gets slow. Unless things pick up, it could be a problem by the 3rd quarter with many weak companies failing and/or be bought out or merged. Some feel that might be a good thing for the industry overall and make it stronger.

Many areas are still reasonable strong, but no market segment is outstanding. New technology or needs - like the introduction and rapid growth of airbags and adoption of single-ply membrane roofing - often result in new products and create new market segments for industrial textiles. Personal body armor - ballistic vests - are doing well as many foreign governments are upgrading their military, with much of this utilizing the para-aramid Kevlar. But DuPont cannot make enough Kevlar to meet all needs, in part due to the rapid expansion of Kevlar as reinforcement in fiber optic reinforcement.

There is some room for optimism. Some of the other factors giving hope to a reasonably good year include:

- 1) Housing starts, tho down, are at a historical high. Construction is one of the largest industrial textile markets.
- 2) An expected 10% drop in car sales still means almost 16 million cars – normally that would be considered a good year
- 3) Emphasis on cleaning environment, though enforcement is spotty in bad times, and if plants are not running, then filter fabrics are not being used.
- 4) Emphasis on rebuilding infrastructure - bridges and roads need a lot of rework and industrial textiles are heavily used, albeit nonwoven.
- 5) Oil/Energy Production at high levels and expected to increase.
- 6) Power Plants running full tilt requiring filter fabrics, among other materials.
- 7) 2000 was a boom year for tire shipments, partly due to the large recall, but with good car year and with a heavy buying of used cars, more tires are needed -- and tires use a lot of fabric.

So, while the general economy may slow down, things are reasonably well.

### **And The Future?**

There's no question, the future of the industrial textile industry in North America will depend heavily on new technology and the application of that technology to solve problems. Others can beat us with items that require a lot of hand labor. But as North America extends trade agreement with central and ultimately to South America, lower cost labor, will be less of a factor.

And the NA industry is creative and innovative in finding new products and applications.

What will impact the industry favorably? Some of the things coming along that will make a great impact include:

- 1) Smart textiles - Call them smart, intelligent or interactive. Such textiles react to outside stimuli and do something -- conduct electricity to open or close switches, to give off heat, change color. or other special features.

- 2) New fibers/yarns - What's on the horizon? PLA (poly lactic acid) fibers from corn have good properties, comparable to polyester, and are rapidly being commercialized. And eventually, extreme strength fabrics made from spider web silk, produced with the help of biotechnology. What about self-repairing fibers/yarns/fabrics? Not out of the question. A form of self-repairing plastic has been announced, why not yarn and fibers? One of the fastest growing developments is the use of bicomponent fibers for special properties, special monofilaments designed for unique end uses such as elastomers, optics, high strength, etc.. And those are only some of the new ideas, only a beginning.
- 3) And of course innovative and creative application for this new technology, new uses and markets, applications we did not have before. Airbags are perhaps the most dramatic new volume application. The aforementioned application of para-aramids to reinforce fiber optics, a rapidly growing market, is creating a greater demand for these fibers. And there is growth in advanced composites and architectural fabrics. And there are more.

## Trends

1) The traditional vendor-user supply chain is changing. A major trend worth noting is the extensive integration/consolidation resulting from companies buying other companies, including intercontinental alliances, and by traditional suppliers vertically integrating, adding value, and going the "next step" in production, often doing those things their customers do. By contrast, many of the fabric supplier's customers are themselves integrating downward by producing their own fabric in-house, even selling surplus fabric to others, becoming more like "traditional" textile companies. Some companies are adding fiber/yarn-making capabilities, some from recycled materials, even selling excess capacity. They have, in effect, become their own suppliers as well as providers of materials to their competition, thereby competing with conventional suppliers. Others are getting out of less profitable, commodity items, and/or greige goods to concentrate on areas providing better return, more often with value-added products. The defining lines are blurring further.

2) Another major trend is globalization. NA companies are making alliances overseas, setting up joint ventures, plants, and more effective distribution channels. And a growing number of overseas companies are expanding in NA by setting up shop here, establishing joint ventures, buying existing companies, or setting up entirely new operations, often less expensively than in their home region – a rather interesting change. Reflecting the changing global economy, some are even opening North American operations specifically to produce materials to be used in products exported back to their home country or region; not unlike some NA companies setting up operations in the far east or Mexico to produce products for familiar trade names, where the high-cost labor component is done offshore, often using US or locally fabricated NA components for finished products shipped back to NA. And NAFTA has had a major influence on US producers. Many have set up operations in Mexico.

Trade agreements are becoming an important business factor in NA. With such a large market, the need to export has been not as great as in many other areas. However, as we become more global, it is necessary to look to exports as a growth area. NAFTA and CBI offer mostly places where goods can be fabricated and shipped back to the US, taking advantage of lower cost labor. Canada has expanded exports to the United States. Mexico export growth to the United States is in double digit increases.

3) The primary vehicle for growth in export and foreign markets, as it is in NA, is specialty and/or niche markets.

Many of specialty materials go into unique and narrowly focused products – often with detailed specifications, and other restrictive provisions - products and restrictions not easily obtained or mastered by many of the high volume far east and Pacific Rim producers, especially in the marketing, technical, and service areas. Maintaining inventory on those items would not be cost effective, so many are just-in-time or custom-made type situations. While those specialty areas are likely to be more "import resistant", the great majority of technical or industrial fabrics are easily produced anywhere in sufficient quantities and quality levels to compete with US companies – so the vulnerability is there. It is the service to the customer that gives NA companies an edge. The key is innovation in applying

Niche markets/specialty textiles are getting more respect from suppliers. Chemical companies and machinery manufacturers are recognizing the potential, they are listening, and they are focusing considerable efforts on more effective and efficient materials and machinery to produce specialty industrial fabrics. As one major loom supplier representative put it, the special demands of the industrial textiles can often result in more profit on just one or two customized machines than a sale of many machines to produce commodity materials.

4) Traditional producers are also gearing up for more efficient production of smaller runs, cutting costs and becoming lean, low-cost producers. While smaller, such runs can be more profitable if properly done. Inventory, except for the most basic items, is being curtailed and production more closely matched to actual need. In some cases, suppliers are setting up operations near their major customer; a needle felt producer locating near a major filtration customer, an automotive carpet supplier locating near the assembly plant. The automotive industry is a good example – relying on just-in-time concepts, consolidation of efforts, buying companies, locally and abroad, to become Tier 1 suppliers, to gain market share, reduce inventory, and help to make a profit in spite of reduced selling prices.

And everyone who plans to stay in business is concentrating on reducing cost in order to effectively compete in the market place. If you haven't already done that, you are in trouble.

5) And E-commerce is a reality. One industry executive feels e-commerce is as important as the industrial revolution as to how it will impact our lives. The question is how, not whether will happen. We may not have found the right model yet and some companies in the field will fade out, companies must find ways to make e-commerce work for them. Not just websites and email, but full, on-line, functional catalogs and detailed product information, inventory review, transmittal of test data, order placement, order tracking, invoicing, funds transfers -- all will be a reality soon. In many cases, it already affects how we run our business and it will affect how we do business with others. And the successful company will be prepared. NA is rapidly developing this capability.

Truly, the IT/TT industry is truly a dynamic and constantly evolving one. And the NA industry will continue to be a leader in product development and application. Yes, we are concerned. We do track the economy in many vital ways. But we will weather the current storm and be ready to lead the industry to the future.