ACCELERATING GROWTH IN INDUSTRIAL FABRIC MARKET

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THE INDUSTRIAL FABRIC market has shown a steady growth over the last five years and is increasingly eyed by many textile manufacturers as a partial alternative to the volatile apparel trade.

The attraction of industrial products is underscored by the "Industrial Fabric Products Market Index" offered by the Industrial Fabrics Association International. With the exception of automotive and narrow fabrics, the index for every category is up and in some cases considerably up. Narrow fabrics remains the same, while automotive slipped three points.

This composite index is yardage-weighted for all 15 product groups and is not an average figure. The index has grown roughly 10 per cent a year which is considerably higher than the two per cent annual growth factor for apparel.

In addition, apparel markets are heavily penetrated by imports which account for nearly two-thirds of their growth. Industrial products are much less susceptible to foreign competition.

Some apparel fabric companies, battered by imports and the vagaries of fashion, have set their sights on industrial fields hoping to escape the stresses of foreign competition and enjoy a growth business at a high rate of profit.

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But the "Promised Land" of industrial products proved quite elusive in most cases. It is one thing to design, manufacture and sell fabrics for apparel and quite another to do it for industrial applications.

Apparel does not require conformance to a long set of physical performance requirements such as tear or burst strength, elongation, permeability, torsion, and so on. Nor does it call for the application of expensive specialty or exotic yarns in many industrial products.

The design and development of industrial fabrics is difficult and time-consuming, and runs the risk of failure or rejection by the client. In many cases, development of a new industrial article may take years and it may be undertaken without the assurance of volume sales. At the same time, it may be rendered obsolete before it reaches market by the advances in technology.

Such situations are totally alien to makers of apparel fabrics. They develop new patterns for the upcoming season and expect those new fabrics to generate large volume sales.

A major difficulty of apparel fabric producers entering the industrial fabric market is their lack of the specialized sales experience required in dealing with engineers, architects, builders, chemists, construction specialists and other professionals, government agency personnel and those whose business code is quite different from that of apparel makers.

To become a bona fide supplier of industrial products is a difficult and often unrewarding proposition for the following reasons:

- The parameters for the development of apparel fabrics include fashion appeal, economics, novelty effect and quick response to seasonal, large volume demand. In the industrial sector, the market, niche or specific applica-

tion must first be located and evolved before product development can start. This is a slow, time- and resource-consuming undertaking with frequently disappointing results.

•Volume products are subject to strong import competition. Such markets as tarpaulins, sail cloth, tents and casual furniture are seriously impacted by imports.

•Industrial fabrics must conform to stringent performance specifications. If they fail to meet them, no "deals" can be made with the customers by offering them an allowance such as is the case in the apparel trade. A rejected lot may be quite difficult to dispose of on the seconds market, unlike the case in apparel goods.

•Development of new products for industrial fabrics requires much closer cooperation between fiber producers, equipment makers, customers and mill technicians than in the apparel area. It usually takes much longer and requires extensive "fine tuning" before final acceptance. Some sophisticated medical or aerospace products may take years to develop. Automotive seat cover fabrics require three to four years lead time with a rather low probability of final adoption.

•The problems of product liability insurance, patent protection, trademarking and potential litigation are much more severe than for apparel fabrics.

•Sales techniques, which are effective in the apparel world, do not work in the industrial fabrics world. Here, the clients are primarily interested in performance, specifications, tolerances, ease of fabrication and other technical considerations. Price, though important, does not carry the same inducement value as for apparel. Little wonder then that salesmen skilled in, for example, promoting blouse fabrics could make little headway when exploring the medical, structural or roofing markets. In this arena, a fast-talking, deal-offering salesman is a poor substitute for a trained engineer who speaks the language of colleagues employed by his customer.

At the same time, the home furnishings and industrial fabrics markets combined consume more fabric on a square yard basis than does apparel. While the latter accounts for roughly 45 per cent of the total fabrics market, home furnishings accounts for slightly more than 30 per cent and industrial fabrics slightly more than 20 per cent.

INDUSTRIAL FABRIC PRODUCTS MARKET INDEX

BASE YEAR OF 1983 – 100

END MARKET	1986	1987	1988	1989	1990*
Air, Tension Structures	116	119	123	141	162
Air Bags**	NA	NA	NA	NA	100
Automotive	111	106	110	110	108
Awning	144	161	181	203	225
Casual Furniture	134	146	159	159	175
Geomembrane	184	184	212	248	285
Geotextile	160	183	210	231	254
Marine	125	138	150	150	150
Narrow Fabric	103	102	102	103	103
Protective Clothing	134	146	161	177	200
Sail	114	116	118	120	121
Single-Ply Roofing	171	194	221	230	242
Tarpaulin	151	156	161	164	164
Tent Rental	154	172	196	225	259
Truck Cover	108	112	115	116	127

***projected** ****1990 is base year at 100**
SOURCE: Industrial Fabrics Association International

In the industrial fabrics market, automotive, geotextile, tarpaulins, truck covers and single-ply roofing are the leading consumers. These four groups are still expected to lead the industry in 1991, although geotextiles with about 386 million square yards is expected to take the lead from automotive fabrics which are expected to total about 319 million square yards.

Markets that are expected to grow about 10 per cent between 1987 and 1991 include protective apparel which is expected to consume 56.4 million square yards in 1991; geomembranes, expected to consume 82.2 million square yards; dry filtration fabric, expected to consume 60 million square yards; awning fabrics, which will go up to nearly 47 million square yards; and single-ply roofing, which should reach nearly 257 million square yards in 1991.

Among the industrial fabric markets are:

Air and Tension Structures: These encompass air-supported, tension and air-inflated structures. Air-supported fabrics are made up of membrane structures inflated continuously by compressors. Tension structures are fabrics stretched on poles or cables, and air-inflated fabrics are assembled of air-filled fabric tubes.

Fabrics used in this area are mainly woven, but the wider-width warp knits with multi-axial warp and weft reinforcement yarns are capturing an increasing share of the market. Polyester, nylon and fiber glass remain the dominant fibers. The fabrics are coated with PVC (polyvinyl chloride), urethane, acrylics and silicone to reduce permeability to air and rain and enhance durability.

Predictions are that air and tension structures will grow about 15 per cent. It was noted that when commercial construction goes into a decline, as is now the case, business looks to temporary structures as a less costly option.

Air Bags: This is a new category that appeared only a few years ago, although until now their high price and lack of government mandate for their use retarded development of this potentially large market.

Now, according to the IFAI, about 75 per cent of the cars produced in the United States by 1994 are expected to be equipped with air bags. According to the IFAI, that converts to about 10 million square yards for driver side air bags, and 18 million square yards for passenger side air bags. An additional 22 million square yards of fabric would be added to this market by 1994 if light trucks are added to the passive restraint law, the IFAI indicated.

Automotive Fabrics: In 1989, 11.55 million vehicles were built in the U.S., according to the IFAI. That is down from the 12.5 million vehicles built domestically in 1988. This year, the IFAI estimates, 10.45 million vehicles will be built domestically, although by 1992 that figure is expected to rise again to about 11.7 million vehicles.

The figures include passenger cars, vans, station wagons, pick-ups and light trucks. Buses, trucks, mobile homes and special purpose vehicles account for another million units, approximately. That Japanese auto makers are now increasingly producing their models in U.S. plants, also increases the automotive fabric market.

Carpeting and upholstery account for the bulk of the automotive fabric market. Other textile products, in addition to air bags, include trunk liners, spare tire, rear deck and side panel covers, head-liners, sun visors, mats, pockets and seat belts.

This category also includes the "invisible" textile materials such as yarn components in V-belts, scrims in gaskets and seals, reinforcement fabrics in radiators and power steering hoses, and tire cords, among others.

A large market also exists in seat cover replacements, car shrouds and covers. Car care products such as polishing cloths, wipes and buffing wheels, among others, also consume fair quantities of fabric.

Truck Covers: These are designed to protect the cargo of flat bed, open-top or dump trucks or trailers. The choice of cover is based on the covers' condition of use such as rain, wind and snow.

Most fabrics are now vinyl coated polyester or nylon, woven or warp knitted. Lighter weight covers are made of Raschel knit mesh, vinyl coated and calendered. Polypropylene is beginning to become a factor in this market, which has grown by about three per cent.

Tarpaulins: These are used in such fields as construction, industrial applications, agriculture, household and transportation. A large proportion of tarpaulins are semi-disposable and made of vinyl films and tape-woven polypropylene. A more durable variety includes coated nylon and polyester, either woven or warp knitted. In 1989, this market was expected to grow about two per cent.

Rental Tents: This business is booming with 15 per cent annual rates of increase. Fabrics used are either vinyl laminates or cotton canvas. The camping tent market is heavily penetrated by imports which account for about 85 per cent of this segment. These fabrics include those of polypropylene, polyester, coated and uncoated nylon and polyester/cotton blends.

Awnings: This important market was expected to grow about 12 per cent last year. Commerical awning installations account for about 70 per cent of this market, with the balance residential.

Fabrics used for awnings include vinyl coated cotton, vinyl laminated polyester, acrylic coated polyester, solution dyed modacrylics and vinyl coated polyester/cotton blends. Acrylic and vinyl laminated materials have enjoyed the best growth because of their excellent colorfastness and durability.

Casual and Outdoor Furniture: The market for fabrics used in outdoor, summer and casual furniture has shown solid growth over the last few years, with a 10-15 per cent growth expected for 1989. The fabrics used here are vinyl coated polyester, either woven or Raschel knit mesh products, acrylics, nonwovens and vinyl laminates.

PVC yarn coated polyester is the predominant fabric now, accounting for 80 per cent of the market. Acrylics, once very strong, have been displaced by polyester products, primarily because of price.

Geotextiles: These are permeable woven or non-woven materials whose main function is to reinforce, drain, separate, stabilize and support earthworks. Polypropylene and polyester are the main fibers used, with polypropylene accounting for the vast majority of the market.

Non-wovens account for about 70 per cent of the market, wovens about 25 per cent and specialty products such as warp knits, the balance. This market was also expected to grow about 10 per cent last year.

Among the chemical fiber companies engaged in this area are Hoechst Celanese, BASF and Allied Fibers.

The aim of this market is to replace steel in many civil engineering construction projects and thus eliminate the corrosion problems and cutting, forming and handling of metal. A number of fiber variants, especially high-density extruded polyethylene, are already available in a geogrid form that is as strong as steel and much easier to use.

Hoechst Celanese is supplying its Trevira Type 800 polyester in 1000 denier to specialty weavers for high strength reinforcement fabrics. Some of them weigh as much as 70 ounces a square yard (2,400 grams a square meter) and are used in the construction of dams, river embankments and flood prevention projects, among others.

In addition, a number of specialty firms have sprung up offering a wide variety of sophisticated geotextile products of woven, warp knit, non-woven, needle punched and composite nature. They are supported closely by the fiber makers who evolve new yarn variants for the expanding applications of geotextiles.

The most intensive development work is taking place in the non-woven segment with needle punched and spunbonded products. A new fabric is a continuous filament spunbonded needle punched material made from recycled polyester bottle resin. The fiber spun from this resin has a 7 gram/denier tenacity, much stronger than that of a conventional staple.

Geomembranes: Really geotextiles, geomembranes are endowed with very low permeability to act as a barrier to fluid migration. This segment of the market was expected to grow about 17 per cent last year, spurred by federal and state legislation.

The textile components of geomembranes serve as reinforcements and

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must be coated with PVC or other compounds to render them impermeable. The fabrics are woven, non-woven and warp knits. The latter can combine a multi-axial inlay structure with a non-woven sheeting.

Roofing: Single-ply roofing membranes, which are much easier to apply and substantially lighter and maintenance-free than tar paper, now make up about 60 per cent of the commerical roofing market with an annual growth of about four per cent.

Single-ply roofing consists of a variety of supported and unsupported membranes that are either calendered, laminated or coated. The membrane consists of scrim support fabric that may be woven, non-woven or warp knit, coated with vulcanized or non-vulcanized elastomers, PVC, CIP, modified bitumens, and other compounds.

Protective Clothing: A very large and complex market, it includes apparel for fire or chemical protection, medical, electronic, hazardous work or ballistics, among others. Fabrics are chosen according to the elements against which they are protecting.

For fire protection and protection against dangerous chemicals, vinyl coated nylon, neoprene coated polyester and aramids are used, among others.

Disposable protective garments are gaining in importance in a number of industrial markets because of the cost saving, convenience and performance they offer. The most frequently used fabrics in this segment are spunbonded olefin and polypropylene, cellulose fiber products and composite fabrics. This market, too, is experiencing a 10 per cent growth.

Sails: A larger market than most assume, sails are quite expensive because of the great amount of work involved in design, fabrication and manufacture of these high performance products.

The main requirement of a sail is that it does not stretch and elongate in use. Sails that stretch lose their aerodynamic characteristics and with it, their effectiveness. Woven fabrics, though rigid in the warp and filling directions, have a diagonal stretch which is a sailmaker's nemesis. To eliminate this bias stretch, Mylar polyester film is laminated to the woven fabric. Triaxial woven cloth with diagonal stability have also been used.

Recently, warp knit multi-axial fabrics have been introduced. Here, the straightline inlay yarns, configurated in a star-like direction, impart the structure with all around stability and superior strength.

Fabrics used in sail making consist of polyester or nylon wovens, polyester film (Mylar) and to a lesser extent aramids and polyethylene.

Marine Uses: Aside from sails, the largest textile usage in this market is in boat tops and covers. This market grew about seven per cent last year.

The fabrics used here include acrylics, vinyl laminated polyester, cotton, cotton/polyester blends, polypropylene and polyethylene. Acrylics are gaining in popularity because of their durability and colorfastness as well as the range of colors in which they are available.

Filtration Fabrics: Produced of woven fabrics, non-wovens, felts and other materials, the products are for both dry and liquid filtration systems. There are now more than 1,500 types of woven and non-woven filter products available to fill different needs.

Dry filtration textiles alone consume about 25 million pounds of fiber a year. Polyester is the most commonly used fiber followed by fiber glass, Du Pont's Nomex, and acrylics. Nylon, polypropylene, cotton and Teflon are used in limited quantities.

Liquid filtration products include both woven and knit fabrics, non-wovens, needled felts, paper, films, membranes, porous ceramics and plastics, and sintered metal powders. Although a number of fibers are used in wet filtration, polypropylene and polyester dominate the field.

Other industrial fabric products also abound. These are: inflatable boats where woven reinforcement scrim in either nylon or polyester and coated with PVC are standard; pool covers of either polyester warp knit mesh or woven or weft inserted scrim vinyl coated; soft luggage usually made of air-textured nylon; belting and strapping, woven or warp knit of nylon or polyester; life preservers of nylon scrim coated with PVC or other compounds; wall coverings where some weft inserted warp knits also appear; protective netting in heavy denier polyester knit on coarse gauge Raschel machines; and ballistic protection, woven of such fibers as Du Pont's Kevlar aramid.

Aerospace represents another significant market for industrial fabrics. These products have to pass the most stringent physical performance requirments, although they are not usually used in their original form. For the most part, they are converted into composites by encasing them in resin compounds.

Over the next three to five years, it is estimated, the rate of growth of knits in the industrial fabrics market will be about 10 per cent a year. Much of that growth is expected to come at the expense of woven fabrics.

In addition to fiber glass, the best known composite material, the most common composites are made with Kevlar, Nomex, graphite yarns and boron fibers. These composites offer high strength and low weight as well as ease of fabrication.

Industrial Knit Products: In the last decade the knitting industry has made a determined bid to enter the industrial markets on a broad front. This effort met with considerable success, especially for the warp knitters, and now a significant segment of the industrial fabrics market is being served by knit products.

The prognosis, according to trade sources, is very good. Over the next three to five years, it is estimated, the average rate of growth will be about 10 per cent a year. Much of this growth is expected to take place at the expense of woven goods. KT