

Textile, Textile Product, and Apparel Manufacturing

(NAICS 313, 314, 315)

SIGNIFICANT POINTS

- Employment is expected to decline because of technological advances and imports of apparel and textiles from lower-wage countries.
- Extensive on-the-job training is required to operate new high-technology machinery.
- Production workers account for almost 2 out of 3 jobs.
- About 1 out of 3 jobs are in three States—North Carolina, South Carolina, and Georgia.

Nature of the Industry

This statement covers closely related industries: Textiles and apparel. The *textile mills and products industry* comprises establishments that produce yarn, thread, and fabric and a wide variety of other textile products for use by individuals and businesses, but not including apparel. Some of the items made in this industry include household items, such as carpets and rugs; towels, curtains, and sheets; cord and twine; furniture and automotive upholstery; and industrial belts and fire hoses. Because the process of converting raw fibers into finished nonapparel textile products is complex, most textile mills specialize.

Textile mills take natural and synthetic fibers, such as cotton and polyester and transform them into yarn, thread, or webbing. Yarns are strands of fibers in a form ready for weaving, knitting, or otherwise intertwining to form a textile fabric. They form the basis for most textile production and commonly are made of cotton, wool, or a synthetic fiber such as polyester. Yarns also can be made of thin strips of plastic, paper, or metal. To produce spun yarn, natural fibers such as cotton and wool must first be processed to remove impurities and give products the desired texture and durability, as well as other characteristics. After this initial cleaning stage, the fibers are spun into yarn.

Fabric and textile products are mostly produced by means of weaving, knitting, or tufting. Workers in weaving mills use complex, automated looms to transform yarns into cloth, a process that has been known for centuries. Looms weave or interlace two yarns, so they cross each other at right angles to form fabric. Knitting uses automated sewing machines to interlock a series of loops of one or more yarns to form goods, such as sweaters, socks, and underwear. Tufting, used by carpeting and rug mills, is a process by which a cluster of soft yarns is drawn through a backing fabric.

At any time during the production process, a number of processes, called finishing, may be performed on the fabric. These processes, which include dyeing, bleaching, and stonewashing, among others, may be performed by the textile mill or at a separate finishing mill. Finishing encompasses chemical or mechanical treatments performed on fiber, yarn, or fabric to improve appearance, texture, or performance.

The *apparel manufacturing industry* transforms fabrics produced by textile manufacturers into clothing and accessories that fill the Nation's retail stores. By cutting and sewing fabrics or other materials, such as leather, rubberized fabrics, plastics, and furs, workers in this industry help to keep consumers warm, dry, and in style.

The apparel industry traditionally has consisted mostly of production workers who performed the cutting and sewing functions in an assembly line. This industry remains labor-intensive, despite advances in technology and workplace practices. Although many workers still perform this work in the United States, the industry increasingly contracts out its production work to foreign suppliers to take advantage of lower labor costs in other countries. In its place, a growing number of apparel manufacturers are performing only the entrepreneurial functions involved in apparel manufacturing such as buying raw materials, designing clothes and accessories and preparing samples, arranging for the production and distribution of the apparel, and marketing the finished product.

Many of the remaining production workers work in teams. For example, sewing machine operators are organized into production "modules." Each operator in a module is trained to perform nearly all of the functions required to assemble a garment. Each module is responsible for its own performance, and individuals usually receive compensation based on the team's performance.

The textile and apparel manufacturing industries are rapidly modernizing, as new investments in automation and information technology have been made necessary by growing international competition. Firms also have responded to competition by developing new products and services. For example, some manufacturers are producing textiles developed from fibers made from recycled materials. These innovations have had a wide effect across the industry. Advanced machinery is boosting productivity levels in textiles, costing some workers their jobs while fundamentally changing the nature of work for others. New technology also has led to increasingly technical training for workers throughout the industry. Computers and computer-controlled equipment aid in many functions, such as design, patternmaking, and cutting. Wider looms, more computerized equipment, and the increasing use of robotics to move material within the plant are other technologies recently designed to make the production plant more efficient. Despite these changes, however, the apparel industry—especially its sewing function—has remained significantly less automated than many other manufacturing industries.

One advantage the domestic industry has is its closeness to the market and its ability to react to changes in fashion more quickly than its foreign competitors can. Also, as retailers consolidate and become more cost conscious, they require more apparel manufacturers to move toward a just-in-time delivery system, in which purchased apparel items are quickly replaced

by the manufacturer rather than from a large inventory kept by the retailer. Through electronic data interchange—mainly using barcodes—information is quickly communicated to the manufacturers, providing information not only on inventory, but also about the desires of the public for fashion items.

Some apparel firms have responded to growing competition by merging with other apparel firms and by moving into the retail market. They also are contracting out functions in addition to the production of garments—for example, warehousing and order fulfillment functions—to concentrate on their strengths: Design and marketing. Such changes may help the apparel manufacturing industry meet the growing competition and continue to supply the Nation’s consumers with garments at an acceptable cost.

Working Conditions

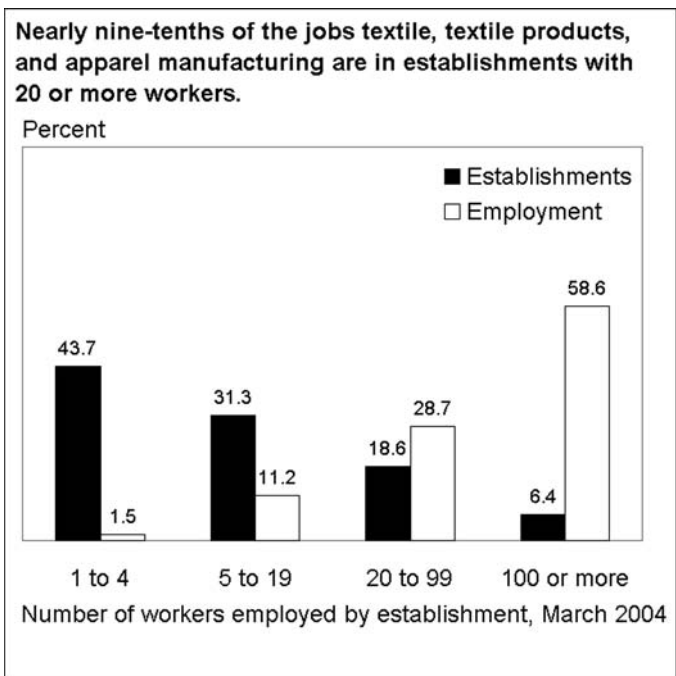
Working conditions vary greatly. Production workers, including frontline managers and supervisors, spend most of their shift on or near the production floor. Some factories are noisy and can have airborne fibers and odors, but most modern facilities are relatively clean, well lit, and ventilated.

In 2003, work-related injuries and illnesses in textile mills averaged 5.0 per 100 full-time workers, compared with 6.8 percent for all manufacturing and 5.0 percent for the entire private sector. Work-related injuries and illnesses in textile product mills averaged 5.5 per 100 full-time workers, and in apparel manufacturing, the rate was 3.6 per 100 full-time workers.

When appropriate, the use of protective shoes, clothing, facemasks, and earplugs is required. Also, new machinery is designed with additional protection, such as noise shields. Still, many workers in textile production occupations must stand for long periods while bending over machinery, and noise and dust still are a problem in some plants. Apparel manufacturing operators often sit for long periods and lean over machines. New ergonomically designed chairs and machines that allow workers to stand during their operation are some of the means that firms use to minimize discomfort for production workers. Another concern for workers is injuries caused by repetitive motions. The implementation of modular units and specially designed equipment reduces potential health problems by lessening the stress of repetitive motions. Workers sometimes are exposed to hazardous situations that could produce cuts or minor burns if proper safety practices are not observed. Also, some workers are occasionally exposed to the fumes and odors of coolants and lubricants used in machines.

Because many factories run 24 hours a day as the cost of new machinery continues to increase, production workers may work evenings and weekends. Many operators work on rotating schedules, which can cause sleep disorders and other stress from constant changes in work hours. Overtime is common for these workers during periods of peak production. Managerial and administrative support personnel typically work a 5-day, 40-hour week in an office setting, although some of these employees also may work significant overtime. Travel is an important part of the job for many managers and designers, who oversee the design and production of the apparel. As more production moves abroad, foreign travel is becoming more common. Quality-control inspectors and other workers also may need to travel to other production sites, especially if working for large companies.

The movement away from traditional piecework systems in



apparel manufacturing often results in a significant change in working conditions. Modular manufacturing involves teamwork, increased responsibility, and greater interaction among coworkers than on traditional assembly lines.

Employment

In 2004, 416,000 workers were employed by the textile mills and textile product industries, while 285,000 worked in the apparel manufacturing industry (table 1). Most of the wage and salary workers employed in the textile mills, textile product, and apparel manufacturing industries in 2004 were found in southeastern States. North Carolina accounted for about 15 percent of these jobs. South Carolina and Georgia combined to provide employment for another 18 percent of the workers in this industry. The remaining jobs primarily were found in California and the Northeast.

Most apparel and textile production is concentrated in large mills. In fact, establishments employing 20 persons or more accounted for 87 percent of all apparel and textile workers (chart 1).

Table 1. Percent distribution of establishments and wage and salary employment in textile, textile product, and apparel manufacturing by detailed industry, 2004

Industry segment	Establishments	Employment
Total	100.0	100.0
Textile mills	18.3	34.1
Fiber, yarn, and thread mills	2.2	7.7
Fabric mills	7.0	16.5
Textile and fabric finishing and fabric coating mills	9.1	9.9
Textile product mills	31.8	25.3
Textile furnishings mills	12.3	14.5
Other textile product mills	19.5	10.8
Apparel manufacturing	49.9	40.8
Apparel knitting mills	2.7	6.0
Cut and sew apparel manufacturing	43.7	31.6
Apparel accessories and other apparel manufacturing	3.5	3.2

Occupations in the Industry

The textile industry offers employment opportunities in a variety of occupations, but production occupations accounted for 64 percent of all jobs. Some of these production occupations are unique to the industry (table 2). Additional opportunities also exist in material-moving, administrative support, maintenance, repair, management, and professional occupations. The industry also employs a small number of workers in service and sales occupations.

Many workers enter the textile industry as *machine setters and operators*, the largest occupational group in the industry. They are responsible for setting each machine and monitoring its operation. They inspect their machines to determine if they need repairs or adjustments. They may clean and oil their machines and repair or replace worn parts. Additionally, they must diagnose problems when the machinery stops and must restart it as soon as possible to reduce costly machine idle time. Textile machine setters and operators also install, level, and align components such as gears, chains, dies, cutters, and needles.

Textile machine setters and operators thread yarn, thread, or fabric through guides, needles, or rollers. Extruding machine operators load chemicals or wood pulp into their machines. They adjust the controls for proper tension, speed, and heat; for electronically controlled equipment, they program controls or key in instructions using a computer keyboard. Operators then start the machines and monitor their operation, observing control panels and gauges to detect problems.

Skilled production occupations also include quality-control inspectors, who use precision measuring instruments and complex testing equipment to detect product defects, wear, or deviations from specifications.

Among installation, maintenance, and repair occupations, *industrial machinery mechanics* account for about 2 percent of industry employment. They inspect machines to make sure they are working properly. They clean, oil, and grease parts and tighten belts on a regular basis. When necessary, they make adjustments or replace worn parts and put the equipment back together. Mechanics are under pressure to fix equipment quickly because breakdowns usually stop or slow production. In addition to making repairs, mechanics help install new machines. They may enter instructions for computer-controlled machinery and demonstrate the equipment to machine operators.

Plant workers who do not operate or maintain equipment mostly perform a variety of other material-moving tasks. Some drive industrial trucks or tractors to move materials around the plant, load and unload trucks and railroad cars, or package products and materials by hand.

Engineers and engineering technicians, although a vital part of the textile and apparel industries, account for less than 1 percent of employment in the industry. Some engineers are *textile engineers*, who specialize in the design of textile machinery, the study of fibers, and textile production. The industry also employs other types of engineers, particularly *industrial and mechanical engineers*.

Fashion designers are the artists of the apparel industry. They create ideas for a range of products including coats, suits, dresses, hats, and underwear. Fashion designers begin the process by making rough sketches of garments or accessories, often using computer-assisted design (CAD) software. This software prints detailed designs from a computer drawing. It can also store fashion styles and colors that can be accessed and

easily changed. Designers then create the pattern pieces that will be used to construct the finished garment. They measure and draw pattern pieces to actual size on paper. Then, they use these pieces to measure and cut pattern pieces in a sample fabric. Designers sew the pieces together and fit them on a model. They examine the sample garment and make changes until they get the effect they want. Some designers use assistants to cut and sew pattern pieces to their specifications.

Before sewing can begin, pattern pieces must be made, layouts determined, and fabric cut. *Fabric and apparel pattern-makers* create the “blueprint” or pattern pieces for a particular apparel design. This often involves “grading,” or adjusting the pieces for different-sized garments. Grading once was a time-consuming job, but now it is quickly completed with the aid of a computer. *Markers* determine the best arrangement of pattern pieces to minimize wasted fabric. Traditionally, markers judged the best arrangement of pieces by eye; today, computers quickly help determine the best layout.

The layout arrangement is then given to *cutters*. In less automated companies, cutters may use electric knives or cutting machines to cut pattern pieces. In more automated facilities, markers electronically send the layout to a computer-controlled cutting machine, and *textile cutting machine setters, operators, and tenders* monitor the machine’s work.

Sewing machine operators assemble or finish clothes. Most sewing functions are specialized and require the operator to receive specific training. Although operators specialize in one function, the trend toward cross-training requires them to broaden their skills. *Team assemblers* perform all of the assembly tasks assigned to their team, rotating through the different tasks, rather than specializing in a single task. They also may decide how the work is to be assigned and how tasks are to be performed.

Pressers receive a garment after it has been assembled. Pressers eliminate wrinkles and give shape to finished products. Most pressers use specially formed, foot-controlled pressing machines to perform their duties. Some pressing machines now have the steam and pressure controlled by computers. *Inspectors, testers, sorters, samplers, and weighers* inspect the finished product to ensure consistency and quality.

Training and Advancement

As the textile industry becomes increasingly automated, production workers need to be prepared. A high school diploma or GED may be necessary for many entry-level positions, and extensive postsecondary training is required for more technical jobs. This training may be obtained at technical schools and community colleges. More often, job applicants are screened through the use of tests, to ensure that they have the necessary skills. Most apparel production workers are trained on the job. Although a high school diploma is not required, some employers prefer it. Basic math and computer skills are important for computer-controlled machine operators.

Extensive on-the-job training has become an integral part of working in today’s textile mills. Technical training is designed to help workers understand complex automated machinery, recognize problems, and restart machinery when the problem is solved.

Installation, maintenance, and repair workers, such as industrial machinery mechanics, also require extensive training. Training may help experienced workers advance to more skilled jobs or even supervisory positions.

Increasingly, training is offered to enable people to work

Table 2. Employment of wage and salary workers in textile, textile product, and apparel manufacturing by occupation, 2004 and projected change, 2004-14
(Employment in thousands)

Occupation	Employment, 2004		Percent change, 2004-14
	Number	Percent	
Total, all occupations	701	100.0	-45.8
Management, business, and financial occupations	34	4.8	-36.9
Top executives	12	1.7	-36.8
Industrial production managers	5	0.8	-36.5
Professional and related occupations	17	2.5	-38.0
Designers	8	1.1	-43.8
Sales and related occupations	21	2.9	-38.7
Retail salespersons	5	0.7	-39.1
Sales representatives, wholesale and manufacturing	12	1.7	-37.4
Office and administrative support occupations	76	10.8	-43.5
First-line supervisors/managers of office and administrative support workers	4	0.6	-42.3
Bookkeeping, accounting, and auditing clerks	7	1.0	-43.4
Customer service representatives	6	0.9	-34.9
Shipping, receiving, and traffic clerks	15	2.2	-44.3
Stock clerks and order fillers	6	0.9	-49.6
Office clerks, general	11	1.6	-42.3
Installation, maintenance, and repair occupations	33	4.8	-36.1
Industrial machinery mechanics	12	1.7	-37.4
Maintenance and repair workers, general	11	1.5	-36.4
Production occupations	450	64.2	-49.5
First-line supervisors/managers of production and operating workers	26	3.7	-36.0
Team assemblers	17	2.4	-26.4
Pressers, textile, garment, and related materials	9	1.3	-53.9
Sewing machine operators	159	22.7	-57.6
Sewers, hand	6	0.9	-48.1
Tailors, dressmakers, and custom sewers	4	0.6	-54.9
Textile bleaching and dyeing machine operators and tenders	19	2.7	-51.9
Textile cutting machine setters, operators, and tenders	15	2.2	-47.2
Textile knitting and weaving machine setters, operators, and tenders	42	6.0	-59.4
Textile winding, twisting, and drawing out machine setters, operators and tenders	46	6.6	-49.9
Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	7	1.0	-45.5
Fabric and apparel patternmakers	5	0.8	-52.6
Textile, apparel, and furnishings workers, all other	9	1.3	-53.6
Cutters and trimmers, hand	6	0.8	-32.7
Inspectors, testers, sorters, samplers, and weighers	26	3.7	-40.6
Packaging and filling machine operators and tenders	7	1.0	-36.4
Helpers—Production workers	16	2.2	-33.9
Transportation and material moving occupations	60	8.6	-37.2
Industrial truck and tractor operators	10	1.4	-28.8
Laborers and freight, stock, and material movers, hand	19	2.7	-42.3
Packers and packagers, hand	19	2.7	-34.1

Note: May not add to totals due to omission of occupations with small employment

well in a team-oriented environment. Many firms have established training centers or hosted seminars that encourage employee self-direction and responsibility and the development of interpersonal skills. Because of the emphasis on teamwork and the small number of management levels in modern textile mills, firms place a premium on workers who show initiative and communicate effectively.

Cutters and pressers are trained on the job, while pattern-makers and markers usually have technical or trade school training. All of these workers must understand textile characteristics and have a good sense of three-dimensional space. Traditional cutters need exceptional hand-eye coordination. Computers are becoming a standard tool for these occupations because patternmakers and markers increasingly design pattern pieces and layouts on a computer screen. New entrants seeking these jobs should learn basic computer skills. Those running automatic cutting machines could need technical training, which is available from vocational schools.

Sewing machine operators must have good hand-eye coordination and dexterity, as well as an understanding of textile fabrics. They normally are trained on the job for a period of several weeks to several months, depending on their previous experience and the function for which they are training. Operators usually begin by performing simple tasks, working their way up to more difficult assemblies and fabrics as they gain experience.

Modular manufacturing requires operators to perform more than one function, so they usually are trained to perform several duties. In addition to this functional training, workers in a modular system may also be offered courses in the interpersonal and communication skills necessary to work as part of a team. Further, the added responsibility of self-managing their modules may lead these workers to receive training in problem-solving and management.

Advancement for sewing machine operators, however, is limited. Advancement often takes the form of higher wages as workers become more experienced. Experienced operators who have good people and organizational skills may become supervisors. Operators with a high school diploma and some vocational school training have more chances for advancement.

Designers need a good sense of color, texture, and style. In addition, they must understand the construction and characteristics of specific fabrics, such as durability and stiffness. Many employers seek designers who know how to use computer-assisted design. This specialized training usually is obtained through a university or design school that offers 4-year or 2-year degrees in art, fine art, or fashion design. Many schools do not allow entry into a bachelor's degree program until a student has completed a year of basic art and design courses. Applicants may be required to submit drawings and other examples of their artistic ability. Formal training also is available in 2- and 3-year fashion design schools that award certificates or associate degrees. Graduates of 2-year programs generally qualify as assistants to designers.

Beginning designers usually receive on-the-job training. They normally need 1 to 3 years of training before they advance to higher level positions, such as assistant technical designer, pattern designer, or head designer. Sometimes fashion designers advance by moving to bigger firms. Some designers choose to move into positions in business or merchandising.

Engineering applicants generally need a bachelor's or ad-

vanced degree in a field of engineering or production management. Degrees in mechanical or industrial engineering are common, but concentrations in textile-specific areas of engineering are especially useful. For example, many applicants take classes in textile engineering, textile technology, textile materials, and design. These specialized programs usually are found in engineering and design schools in the South and Northeast. As in other industries, a technical degree with an advanced degree in business can lead to opportunities in management.

Outlook

Wage and salary employment in the apparel and textile industry is expected to decline by 46 percent through 2014, compared with a projected increase of 14 percent for all industries combined. Declining employment will result from growth in imports and from technological advances. Nevertheless, some job openings will arise as experienced workers transfer to other industries or retire or leave the workforce for other reasons.

Changing trade regulations are the single most important factor influencing future employment patterns. Because the apparel industry is labor intensive, it is especially vulnerable to import competition from nations in which workers receive lower wages. In 2005, quotas for apparel and textile products were lifted among members of the World Trade Organization, including most U.S. trading partners and, in particular, China. Although some bilateral quotas have been re-imposed between the United States and China, the lifting of many import restrictions allows for more apparel and textile products to be imported into the United States. Because many U.S. firms will continue to move their assembly operations to low-wage countries, this trend is likely to affect the jobs of lower skilled machine operators most severely. It does not, however, have as adverse an effect on the demand for some of the pre-sewing functions, such as designing, because much of the apparel will still be designed in the United States.

Some segments of the textile industry, like industrial fabrics, carpets, and specialty yarns, are highly automated, innovative, and competitive on a global scale, so they will be able to expand exports as a result of more open trade. Other sectors, such as fabric for apparel, will be negatively impacted, as a number of apparel manufacturers relocate production to other countries. Textile mills are likely to lose employment as a result. The expected increase in apparel imports will adversely affect demand for domestically produced textiles.

Increasing investment in technology by textile firms, and the resulting increase in labor productivity, is another major reason for the projected decline in employment in the textile industry. Wider looms, robotics, new methods for making textiles that do not require spinning or weaving, and the application of computers to various processes are resulting in fewer workers needed to produce the same amount of textile products. Companies are also continuing to open new, more modern plants, which use fewer workers, while closing inefficient ones. As this happens, overall demand for textile machine operators and material handlers will continue to decline, but demand for those who have the skills to operate the more high-technology machines will grow.

New technology will increase the apparel industry's productivity, but, unlike other industries, the apparel industry is likely to remain labor-intensive. The variability of cloth and the intricacy of the cuts and seams of the assembly process have

been difficult to automate. Machine operators, therefore, will continue to perform most sewing tasks, and automated sewing will be limited to simple functions. In some cases, however, computerized sewing machines will increase the productivity of operators and reduce required training time.

Technology also is increasing the productivity of workers who perform other functions, such as designing, marking, cutting, and pressing. Computers and automated machinery will continue to raise productivity and reduce the demand for workers in these areas, but the decline will be moderated by growth in demand for the services of these workers generated by offshore assembly sites. The rapid rate at which fashions change also will boost demand for workers employed in U.S.-based firms that have quick-response capabilities.

Continuing changes in the market for apparel goods will exert cost-cutting pressures that affect all workers in the textile and apparel industries: Consumers are becoming more price conscious, retailers are gaining bargaining power over apparel producers, and increasing competition is limiting the ability of producers to pass on costs to consumers. Apparel firms are likely to respond by relying more on foreign production and boosting productivity through investments in technology and new work structures. These responses will adversely affect employment of U.S. apparel workers.

The trend today is for apparel firms to merge or consolidate to remain competitive. This trend continues to drive down the number of firms in this industry. In the future, the apparel industry will be dominated by highly efficient, profitable organizations that have developed their dominance through well-recognized strategies that enable them to be among the lowest cost producers of apparel. Consolidation and mergers are likely to result in layoffs of some workers.

Technology also has its bright side. The United States is leading the world in discovering new fibers and finding new uses for high-technology textiles. For example, biotechnology research is expected to lead to new sources of fibers, such as corn, and to improvements in existing fibers. Some fibers currently being introduced have built-in memories of color and shape, and some have antibacterial qualities. As these technologies and engineering advancements in textile production are implemented, the need will arise for more highly skilled workers who can work in an increasingly high-technology environment.

Earnings

Average weekly earnings of nonsupervisory textile production workers were \$487 in textile mills and \$443 in textile product mills in 2004, compared with \$659 for production workers in all manufacturing and \$529 for workers throughout private industry. Wages within the textile industry depend upon skill level and type of mill. In addition to typical benefits, employees often are eligible for discounts in factory merchandise stores.

Average weekly earnings for apparel production workers were \$351 in 2004, significantly lower than the overall \$659 per week in manufacturing and \$529 in the entire private sector.

Earnings in selected occupations in textile and apparel manufacturing appear in table 3. Traditionally, sewing machine operators are paid on a piecework basis determined by the quantity of goods they produce. Many companies are changing to incentive systems based on group performance that consider both the quantity and the quality of the goods produced. A few companies pay production workers a salary.

Table 3. Median hourly earnings of the largest occupations in textile, textile product, and apparel manufacturing, May 2004

Occupation	Textile mills	Textile product mills	Apparel manufacturing	All industries
First-line supervisors/managers of production and operating workers	\$19.35	\$18.49	\$15.23	\$21.51
Textile knitting and weaving machine setters, operators, and tenders	11.91	11.77	9.68	11.48
Inspectors, testers, sorters, samplers, and weighers	10.87	10.50	8.62	13.66
Textile bleaching and dyeing machine operators and tenders ..	10.80	10.59	9.82	10.56
Textile winding, twisting, and drawing out machine setters, operators, and tenders	10.54	11.74	9.55	10.87
Team assemblers	10.40	11.45	9.07	11.42
Laborers and freight, stock, and material movers, hand	10.09	9.22	8.60	9.67
Helpers—Production workers	9.83	9.30	8.00	9.70
Sewing machine operators	9.35	9.08	8.08	8.61
Packers and packagers, hand	9.30	8.55	8.46	8.25

Relatively few workers in the textile and apparel industry belong to unions. Only 7 percent of apparel and textile workers were union members or were covered by a union contract in 2004, compared with 14 percent for the economy as a whole.

Sources of Additional Information

Information about job opportunities in textile, apparel, and furnishings occupations is available from local employers and local offices of the State employment service. Information about job opportunities in technical and design occupations in the apparel industry can be obtained from colleges offering programs in textile and apparel engineering, production, and design.

Information on the following occupations employed in the textile, textile product, and apparel manufacturing industry can be found in the 2006-07 edition of the *Occupational Outlook Handbook*.

- Commercial and industrial designers
- Engineers
- Engineering technicians
- Industrial machinery mechanics and maintenance workers, machinery
- Inspectors, testers, sorters, samplers, and weighers
- Machinists
- Material moving workers
- Textile, apparel, and furnishings workers