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Fibers and Fabrics Update

Today's consumer can choose apparel made from a range of fibers and fabrics. Some are naturally produced and others are manufactured. Fibers and fabrics for apparel are both made in the United States and imported from foreign countries.

Natural Fibers

Cotton. Cotton has increased in popularity in the past few years because consumers appreciate its comfort, wearability, natural look, and machine washability. Much of the renewed use of cotton is the result of research, product development, and promotional programs by Cotton Incorporated, a trade association. They have developed such new products as no-iron all-cotton sheets, garment dyeing, and fashion fabrics with structural texture. Cotton Inc. promotes cotton by means of two trademarks, the Cotton Seal logo for 100 percent cotton and the Cotton Seal plus the words "Natural Blend" for blends of 60 percent or more cotton.

Linen. New linen blends keep this fiber popular. One blend mixes linen with nylon or Lycra spandex to add stretch to linen fabrics for lingerie and other knits. Linen manufacturers now use finer yarns and new techniques to make linen softer and less prone to wrinkling and creasing.

Ramie. Pronounced ray-mee, this natural fiber comes from the stalk of a plant, just like linen. Similar to cotton and linen in its characteristics, ramie wrinkles readily and may shrink during laundering, but is stronger than cotton and slightly more lustrous.

Recently, consumers saw more ramie garments in stores because of increased trade with China and a loophole in U.S. trade policy. Originally trade quotas (limits) were imposed on cotton, wool, and manufactured fibers coming into this country. However, if another fiber such as ramie was more than 50 percent of a blend with cotton, wool, or man-made fiber, the item was not subject to quota limits. To evade the trade quotas for cotton, blends of ramie and cotton were imported. Changes in the 1986 Multifiber Arrangement (MFA) resulted in quotas for ramie, silk, and linen.

Silk. "Washable crushed silk" is the result of new methods of dyeing and finishing silk. Consumers need to read and follow instructions for either dry cleaning or washing "washable" silks. They should never wash colored silks with white or light items. A cool water wash is best, with a mild detergent such as liquid dishwashing detergent. Silks should not soak a long time.

Consumers should not have washable silks dry cleaned. International Fabricare Institute tests have shown that most dyes bled badly in the dry cleaning solvent.

Silks that are not dyed with the new dyes permitting hand washing are labeled for dry cleaning care. It is the consumer's responsibility to follow the instructions on the care label.

Manufactured Fibers

Changes in manufactured fibers are the result of overproduction, changes in consumer buying, competition from foreign countries, an increase in imports, and the elimination of fibers such as Arnel triacetate, which was not profitable to manufacture. Most new developments are variations of existing fibers and engineering of fiber developments to meet specific uses such as breathable rainwear for sportswear.

Rayon. Two major types of rayon are produced in the U.S.—regular viscose rayon, and rayon made by an improved process, called polynosic or high wet-modulus rayon. Regular rayon or viscose is a weak fiber, even when dry, and needs to be dry cleaned since it loses half its strength and can stretch or shrink when wet. Dry cleaning can cause problems with the loss of sizings (starch or resins that give firmness to rayon). Sizings are also sensitive to water and water spots. If you and your dry cleaner have problems with rayon garments, you should return them to the retailer.

LoErna P. Simpson, former assistant professor, textiles, Department of Apparel, Interiors, and Merchandising; and Ardis W. Koester, Extension textiles and clothing specialist emeritus, Oregon State University.



The newer polynosic or high wet-modulus rayons are stronger and can be machine-washed on a gentle cycle. The generic term "rayon" is the only term required to appear on labels by the Textile Fiber Products Identification Act, so the adjective describing the new type may not be identified. Improved rayons use the trade names Avril, Avtex, Zantrel, and Prima.

Nylon. Nylon celebrated its 70th birthday in 1998. Its properties of strength, lighter weight, abrasion resistance, crush resistance, and resistance to many chemicals have given it a reputation as a "miracle fiber." Continued development of nylon fibers is an example of today's fiber development and marketing of specialized fibers.

Cordura nylon (DuPont) is especially strong and is used in soft-sided luggage.

Hydrous (Allied) is the first water-loving nylon. It has a copolymer (two-fiber) structure of 85 percent nylon and 15 percent polyethylene oxide diamine, which makes it absorb moisture and wick it away from the body. Because this fabric dries quickly, it's used for thermal underwear; lingerie fabrics; socks; and linings for shoes, gloves, and garments.

Sheerspeed 289 (DuPont) is a fine denier (small diameter) hosiery yarn designed to be used with high-speed knitting equipment.

Supertec 90 (DuPont) is a fine denier hosiery yarn that can be texturized on high-speed equipment, then knitted and finished to the hosiery maker's specifications.

Supples nylon (DuPont) has been introduced for active sportswear for its softness, flexibility, and lighter weight. It's used in windbreakers that don't make crisp, crackly sounds.

Polyester. Polyester also is available in many specialized variations. Some of the polyesters include:

Ceylon (Hoechst Celanese) has a silk-like luster and softness.

Comfort Fiber (Hoechst Celanese) has absorbency and comfort similar to cotton.

Coolmax (Type 729W by DuPont) is for cooler, drier athletic wear, with a four-channeled cross section that wicks perspiration away from the skin and helps it evaporate at more than twice the rate of polypropylene.

ESP (Hoechst Celanese) is used in denim to give it stretchiness.

Great Feelings Knitwear (Type 740W by DuPont) is used for soft, breathable knit fabrics. It has a dual-denier design where filaments are different thicknesses in the same yarn structure.

Light Spirit Blend (Type 720W by DuPont) is specially designed to blend with cotton for cool, airy, comfortable sportswear.

Thermax (Type 727W by DuPont) is a cold-weather thermal wear fabric made from a hollow-core fiber that holds air, providing thermal insulation for warmth while transporting moisture away to keep the body dry.

Thermolite and *Thermoloft* (DuPont) are sheath-core fibers within a fiber. The outer sheath melts during processing to interlock the core fibers together in insulation batting. The battings do not shift or become compact during wear and use. Thermolite is for less bulky insulation batting and Thermoloft is more bulky.

Trevira Lienesque (Hoechst Celanese) has the look of natural linen, but out-performs linen in wrinkle resistance and easy care.

Acrylic. *Ultratech Orlon* acrylic is DuPont's newest acrylic fiber. It has a channel-T-shaped cross section that wicks moisture away three times more rapidly than cotton. It is designed for athletic socks.

AccuColor Orlon acrylic is another recent DuPont development. It's a solution-dyed fiber, where the dye is added to the liquid polymer fiber before formation into a fiber. This means the accuracy of the color is guaranteed from lot to lot. AccuColor Orlon is used in sweaters, socks, woven fabrics, and other apparel.

Spandex. *Lycra spandex* is DuPont's stretch fiber, which finds wide use in swimwear fabrics, exercise wear, and hosiery. The newest Lycra spandex is a specialized fiber that is flattened to be thinner and sheerer, while still providing silk-like luster, stretch, and support to hosiery. Hosiery with this Lycra spandex is identified by the brand name Silken Sheers.

Triacetate. *Arnel triacetate fiber*, made by Celanese, is no longer made in the U.S. because it is not profitable; however, it is still made in Europe. The U.S. manufacturing plant has been converted to make PBI, a relatively new flame-resistant fiber for fire fighters and others.

Note: No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.



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