

New Developments in MICRODENIER FIBERS AND FABRICS

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Microdenier fibers—one of the biggest developments in textiles in the last decade—will give consumers lighter, softer, yet more durable fabrics. Some buyers have already had experiences with microfibers, for example, UltraSuede and Thinsulate.

Jacket or coat weight microdenier fiber fabrics (polyester or nylon) can provide rain resistance and breathability with minimal finishing. Microfibers blended with natural fibers improve durability and ease of care.

Definition

The name for these new fibers, *microdenier* or *microfibers*, comes from *micron*, a unit of measurement of fiber. To understand how small a micron is, 1 inch equals 25.4 millimeters, and 1 micron equals 1/1,000 of 1 millimeter. Or, to put it another way, 1 micron is less than 1/25,000th of an inch. By comparison, cotton fiber ranges from 16 to 20 microns in diameter, wool from 10 to 70 microns, and silk from 11 to 12 microns.

In Europe, the measurement of fineness is the *decitex* (pronounced dek-i-tex) or *dtex*. A 10,000 meter length of fiber weighing 1 gram is 1 decitex.

Denier, the term used in the United States primarily to describe the fineness of filament fibers and filament yarns, is the weight in grams of 9,000 meters of yarn or filament. A filament fiber 9,000 meters long that weighs 1 gram is 1 denier and is referred to as *dpf* (denier per filament). The various microdenier fibers are 0.9 dpf or smaller.

Microfibers refer to fibers ranging from 11.1 to 6.4 microns in diameter, which is the diameter of silk and smaller. (There are also ultrafine and superfine microfibers.)

When you are shopping, look for the brand names that represent the microfibers. You will find the generic name of the fiber as well. Until these fibers become widely available, you may also pay more for garments and fabrics containing the new microfibers.

Manufacture

Microfibers may be blended with wool, cotton, silk, acrylics, and polyesters. Because the microfibers are currently very expensive, there is a concern that very small amounts will be used with other fibers solely for the advertising value and the opportunity to put *microfiber* on the label.

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More versatile than other fibers, some fabrics incorporating microfibers are suedes, velvets, pannelé velvet, satins, jacquards, gabardines, twills, poplins, and materials used in upholstery, drapery, and curtain fabrics.

Among the first mass-produced uses for many of these fibers will be ready-to-wear garments, including rainwear, sportswear, shirting, and fashion and tailored clothing.

Table 1.—Microfiber brands

Fiber	Manufacturer	Brand Name*	Uses
Acrylic	American Cyanamid	MicroSupreme	Hosiery, sweaters, stretch fabrics
Polyester	American Micrell	Micrell	Apparel, activewear, blends
Polyester	DuPont	Micromattique	Apparel, Home Furnishings
Polyester	Fiber Industries	MicroSpun	Apparel, Home Furnishings
Polyester	Hoechst Celanese	Trevira Finesse	Activewear apparel
Polyester	Hoechst Celanese	Trevira Microness	Fashion apparel
Nylon	American Cyanamid	MicroSupreme	Apparel, hosiery, home furnishings
Nylon	BASF Fiber Division	Silky Touch	Intimate apparel
Nylon	DuPont	Microfine	Activewear apparel
Nylon	DuPont	Microsupplex	Activewear apparel
Nylon	ICI Fibres	Tactel Micro	Activewear apparel, hosiery
Rayon	Courtalds	(No brand name)	Blends with polyester

* Most microfibers are not identified by the fiber manufacturer's brand name; they may be identified by a brand name given by the fabric

Qualities

The fineness and the increased number of filaments required to produce the yarn allow for a tight weave that provides windproof and water-resistant qualities to fabrics that are soft, washable and that breathe.

Besides waterproofing, some of the other finishes that are especially suitable for microfiber fabrics are sanded and sueded finishes, which give the fabric a buttery-soft, chamois-like texture with the look of sandwashed or sueded silk.

The construction of the fabric makes the dye process more difficult, but ironically the resulting color is stronger. The microfiber fabrics drape well without being stiff; they also have a soft surface without synthetic shine. They are lighter in weight yet more opaque than other fabrics. They recover from wrinkling, and they are easy to wash and dry—all advantages when traveling. These features will make the fabrics popular with consumers despite their higher price.

Sewing Hints

Pattern selection. Consider fabrics of 100% microfibers according to weight. Most microfibers will be used in fabrics that are similar to silk such as crepe de chine, tissue faille, and sanded satin.

Select patterns with drape such as cowl necklines, gathers, unstructured jackets, wrap or sarong skirts. These fabrics do not ease well, so select drop shoulder set-in sleeves rather than the standard eased, set-in sleeves. These fabrics do not hold creases either, so avoid styles with pleats or folds.

Construction. Use lightweight interfacings. Among the fusibles use the tricot knits or warp insertion knits for shirts, blouses, and dresses or weft insertion knits for jackets and coats. Lightweight sew-in woven interfacings such as polyester organdy are also good. When using a fusible interfacing, the iron temperature may have to be reduced and the time for fusing

increased to compensate for the cooler iron.

Use long-staple polyester thread or cotton-wrapped polyester thread. Bulky thread will cause seams to pucker. Set the stitch length to 12 stitches per inch. If puckering occurs, adjust to a longer stitch length (10 stitches per inch). Another solution to puckering is to use a straight stitch presser foot and a straight stitch throat plate. If these are not available for your machine, move the needle to the left position. If needed, try taut sewing by holding the fabric firmly in front of and behind the needle.

Supplies. Pins and needles must be very fine. Use silk pins, and keep the pins within the seam allowance. Do not stitch over pins. Use machine stitching as much as possible. Use *new* 8/60 sharp needles or 10/70 jeans/denim needles in the machine. The fabric density causes machine needles to dull quickly, and the slightest burr or needle damage will damage the fabric. Plan to use several needles on lengthy projects. If hand sewing is necessary, use size 10 hand-sewing needles.

Finishing. Test a sample for both stitching, pressing, and general care. For some fabrics, seam finishes may be unnecessary. For those fabrics that tend to ravel, a line of machine stitching about 1/8 inch from the cut edge may be enough, or consider a zigzag, turned and stitched or bound finish. Serging may be useful with a textured nylon thread in the loopers to prevent a thread imprint from showing on the right side of the fabric.

To press, start with the iron set on the appropriate fiber content, such as polyester. Generally, a cooler iron is necessary. A higher temperature may cause the fabrics to fuse or glaze and may leave a sticky residue on the iron. (The residue can be removed with a hot iron cleaner.) Use light pressure. A damp press cloth may add the necessary moisture and protect the fabric when pressing on the right side or when pressing fabrics with a shiny finish.

Care. Machine wash and dry on gentle cycle, or dry clean if component parts and construction require it.

Suggested Reading

Brandes, K. (1991). "Small fibers, big news." *Sew News*. (109).

Schleif, S. (Spring 1992). "Modern technology at its best." *McCall's Patterns*. p. 16.

Scriber, A. (1992). "Microdenier fibers." *International Fabricare Institute Bulletin*. FF-399.

"Fabric innovation: the new microfibers." (Jan/Feb 1991). *Vogue Patterns*. p 30.

Sources of Information

Bowen, D.A. (October 1991). "How microdenier fiber will change your processes." *Textile World*.

Brandes, K. (1991). "Small fibers, big news." *Sew News*. (109).

Davidson, W.A.B. (November 1991). "That allure of microfibers." *America's Textiles International*.

Dockery, A. (November 1991). "Supplex goes micro." *America's Textiles International*.

Dupeuble, J.C. (May 1991). "Microfilament yarn texturing and dyeing." *America's Textiles International*.

Edwards, N. (February 1991). "Microdenier: made in the USA." *Earnshaw's*.

Fulmer, T.D. (November 1991). "Microfibers: a new challenge to dyers." *America's Textiles International*.

Henricks, M. (1991). "Managing microfibers." *Apparel Industry Magazine*.

Isaacs, M. and Kalogeridia, C. (March 1991). "Microdenier fibers create latest rage for apparel." *Textile World*.

Jerg, G. and Baumann, J. (1990). "Polyester microfibers: A new generation of fabrics." *Textile Chemist and Colorist*.

LaForce, R.A. (November 1991). "Developing new fabrics from microfibers." *America's Textiles International*.

Rudie, R. (May 1991). "Microfiber moving forward." *Bobbin*.

Scriber, A. (1992). "Microdenier fibers." *International Fabricare Institute Bulletin*.

Thomas, M. (October 1991). "BASF, Du Pont debut microfiber nylons." *Textile World*.

"Products of the year: microfibers." (January 1992). *America's Textiles International*.

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