AgriLIFE EXTENSION
Texas A&M System

Performance Properties in Fibers and Fabrics

Colorfast - a term used to describe fibers or fabrics of sufficient color retention so that no noticeable change in shade takes place during the "normal" life of the garment.

Luster - the amount of light reflected by the fiber. Man-made fibers have a bright luster. These may need delustering to make them usable.

Flexibility - ability of a fiber to be bent or folded without breaking, or wearing when folded or creased. Inflexible fibers are difficult to spin into yarns and the resulting fabrics are stiff, do not drape well, and may be uncomfortable to wear.

Elasticity - ability to stretch and recover.

Resiliency - ability of the fiber to resist wrinkling from folding, crushing, or wearing. Fabric will spring back to its natural shape; wrinkle resistant.

Abrasion resistance - ability to resist damage from wear or rubbing.

Pilling resistance - resist formation of balls or pills. (Balls of tangled fibers on the surface of the fabric.)

Crocking - the transfer of color from the surface of a fabric to another surface by rubbing.

Absorbency - ability of fiber to take water into itself. Moisture actually goes into the fiber.

Wicking - some fabrics seem to absorb but actually the moisture travels along the surface of the fibers; fabrics made of fibers with wicking properties dry more quickly than fabrics made of absorbent fibers.

Thermal Properties - a fiber's reaction to heat and flame. Flammability is the property of a fiber to burn readily. Heat has several effects of fibers. Some fibers only scorch or char while others soften and melt, while others are non-flammable.

Burning - fibers which burn are classified as flammable, which refers to the degree or rate of speed a fabric flames - fast, slow or moderate.
Non-flammable - will not burn or melt. Asbestos and glass are non-flammable.
Thermoplastic - these fibers soften and melt and "bubble" in the presence of heat. Some thermoplastic fibers can be "heat set." Creases and other design details can be made permanent because of this quality.

Static Electricity - created by friction in the absence of moisture, man-made fibers especially exhibit this property.

Dimensional stability - fabrics resist shrinking or stretching. Dimensional stability is the tendency of a fabric or garment to retain its original shape and size after wear, laundry, or dry cleaning. This property may be due to fiber content, yarn structure, and/or fabric construction.

Information prepared by Amy Erwin, County Extension Agent - Family and Consumer Sciences, Crosby County

AgriLIFE EXTENSION
Texas A&M System

FIBER IDENTIFICATION AND PERFORMANCE PROPERTIES

FIBER	PROPERTIES	CARE	USES
NATURAL FIBERS			
Cotton - a natural cellulose fiber obtained from the boll of the cotton plant.	Good to excellent: absorbency, color-fastness, dyeability, softness, wet and dry strength, resistance to heat, moths, perspiration. Fair to poor: dimensional stability, crease retention, resistance to mildew, sunlight, wrinkling.	Cotton can be: sterilized, machine washed, tumble dried, dry cleaned, and bleached. Excessive use of bleach may weaken the fabric. A safe ironing temperature is 400° F.	Apparel, carpets, rugs, home furnishings and household textile products
Linen - produced from the fibrous materials in the stem of the flax plant.	Good to excellent: absorbency, color-fastness, dimensional stability, durability, launderability, resistance to heat, moths, perspiration. Fair to poor: crease retention, resistance to mildew, sunlight, wrinkling.	Linen can be: machine washed, tumble dried, dry cleaned, bleached, and ironed (best results when damp) at 400° F. Creases should not be pressed in and table linens should be rolled on cardboard rollers rather than folded.	Apparel, handkerchiefs, home furnishings, table linens, towels
Silk - the only natural continuous filament fiber, obtained by unreeling the cocoon of the silkworm.	Good to excellent: absorbency, color-fastness, dimensional stability, drapability, dyeability, hand and appearance, strength when dry, wrinkle resistance. Fair to poor: pressed in crease retention, resistance to aging, abrasion, heat, perspiration, sunlight, strength when wet.	Silk can be: hand laundered, certain dyes may "bleed" when washed, dry cleaned, ironed with warm iron (200-275° F), chlorine bleach should NOT be used.	Apparel, home furnishings
Wool - obtained from the fleece of the sheep or lamb, includes mohair, cashmere, camel, vicuna, alpaca, llama, buffalo.	Good to excellent: absorbency, colorfastness, dyeability, resiliency, shape retention, sunlight resistance, warmth, wrinkle recovery. Fair to poor: pilling, resistance to bleaches, friction, moths, perspiration, strong soaps, water repellency, wash-and-wear qualities.	Wool can be: laundered with extreme care using cool water, mild detergent, and gentle action. Never rub. Laundered garments should be dried on a flat surface. Garments may be dry cleaned and pressed with a cool iron and steam. Brush garments and allow 24 hours to rest before wearing. Moth-proof wool articles before storing.	Apparel, blankets, carpets, rugs

MAN-MADE FIBERS	(also called manufactured fibers)		
Rayon - the first of the man-made fibers, made from cellulose, least expensive man-made fiber, combines well with other fibers.	Good to excellent: absorbency, colorfastness to-dry cleaning, perspiration, sunlight, washing, drapability, dyeability, hand and appearance. Fair to poor: dimensional stability, resiliency, resistance to abrasion, mildew, wrinkling, wash-and-wear qualities, wet strength.	Rayon can be: washed by hand with lukewarm water, unless manufacturers specify otherwise. Squeeze gently; do not wring or twist. Can be machine washed and tumble dried, bleached (unless resin finished), ironed with moderate iron (300-350° F), and dry cleaned.	Apparel, home furnishings, household textile products, linings, rugs, and carpets.
Acetate - made from cellulose, combines well with other fibers, often made into fabrics such as taffeta, bengaline, crepe, brocade.	Good to excellent: appearance, dimensional stability (if dry cleaned), drapability, hand (crisp or soft), colorfastness to light, resistance to mildew, moths. Fair to poor: absorbency, colorfastness, pressed-in crease retention, wash-and-wear qualities, resistance to abrasion, wrinkling, strength, dry and wet washability.	Acetate can be: hand laundered, in some constructions, using warm water and gentle agitation. Garments should not be soaked, wrung out, or twisted. Can be dry cleaned. Can be ironed with a cool iron (250-300° F). ACETATE FIBERS WILL MELT! Garments should be protected from nail polish, paint remover, and some perfumes since these substances dissolve the fibers.	Apparel, foundation garments, home furnishings, linings, tricot-bonded fabrics.
Triacetate - similar to acetate, can withstand higher temperatures than acetate, can be heatset.	Good to excellent: appearance, dimensional stability, drapability, pressed-in crease retention, hand, wash-and-wear qualities, resistance to heat, wrinkling. Fair to poor: absorbency, strength, resistance to abrasion.	Triacetate can be: machine washed and tumble dried, ironed with hot iron (450° F).	Knits, permanently pleated garments, sportswear, bonded fabrics.
Nylon - the strongest of all man-made fibers, was the first truly synthetic fiber to be developed, versatile, blends well with other fibers, can be heatset.	Good to excellent: colorfastness, dimensional stability, pressed-in crease retention, strength, elasticity, resiliency, resistance to abrasion, mildew, moths, perspiration. Fair to poor: absorbency, resistance to pilling, sunlight, wrinkling.	Nylon can be: machine washed and tumble dried at low temperature, bleached and ironed (300-375° F).	Apparel, home furnishing, hosiery, household textile products, rugs, carpets, tents, tires, parachute cloth.

Modacrylic - modified acrylic fiber, heat sensitive.	Good to excellent: colorfastness, resiliency, softness, warmth, wash-and-wear qualities, resistance to chemicals, moths, mildew, sunlight and wrinkling. Fair to poor: dimensional stability, strength, resistance to abrasion, pilling	Modacrylics can be: machine washed in warm water and tumble dried at low temperatures. Remove articles from machine as soon as tumble cycle stops, ironed, if necessary (200-250° F), or dry cleaned. The fur cleaning process is recommended for deep pile fabrics.	Blankets, carpet, doll's hair, draperies, fur-like pile fabrics, knitwear, wigs.
Rubber - natural rubber comes from the latex of certain plant, man-made rubber is a chemical compound produced from petroleum.	High: elongation. Good: elasticity, holding power. Poor: strength, resistance to body oils, cosmetics, light, perspiration.	Products made of rubber yarns should be laundered in accordance with the manufacturer's recommendations. If omitted, wash with water at a low temperature. Avoid high concentrations of bleaches, heat exposure to sunlight. Do not dry clean or dry in automatic dryers.	Elastic webbings, bands, tapes, core threads, elastic fabrics, girdles and other foundation garments, swimwear.
Spandex - man-made fiber with great elasticity.	Excellent: elasticity, flexibility, resistance to cosmetic lotions, body oils, and sunlight.	Spandex can be: machine washed and tumble dried at low temperatures, bleached (no chlorine bleach), ironed (below 300° F, quickly), and dry cleaned.	Apparel, elastic waist bands, foundation garments, surgical hose.
Anidex - the newest elastic fiber, blends with other fibers well.	Excellent: flexlife, resistance to ageing, body oils, chlorine bleaches, cosmetic lotions, dry cleaning solvents, heat, household detergents, light, normal atmospheric fumes. Moderate: holding power, strength.	Anidex can be: machine washed and tumble dried at normal settings, bleached with chlorine bleaches, and ironed (320° F).	Hosiery, knit and woven outerwear, lingerie, stretch fabrics, upholstery fabrics.
Glass - suitable for industrial and home furnishing products, heavy weight, provides excellent insulation, fire resistant.	Good to excellent: colorfastness, dimensional stability, strength, resistance to chemicals, heat, mildew, moths, sunlight, weather, wrinkling. Fair to poor: flexibility, resistance to abrasion. Glass fibers are non-absorbent.	Glass fiber cloth can be: machine washed if agitated gently, but hand washing is safer. Drip dry. It should not be spin dried, twisted, or wrung out, no ironing necessary. Rinse washer thoroughly before washing apparel.	Curtains, draperies.

Polyester - blends well with other fibers, easy care, can be heatset.	Good to excellent: colorfastness, dimensional stability, pressed-in crease retention, strength, resiliency, wash-and-wear qualities, resistance to abrasion, mildew, moths, perspiration, sunlight, wrinkling. Fair to poor: absorbency, resistance to oily stains, pilling.	Polyester can be: machine washed and tumble dried, bleached, ironed (300-325° F), and dry cleaned.	Apparel, carpets, curtains, fiberfill, home furnishings.
Olefin - polyethylene and polypropylene are petroleum products which are derived from gases, the lightest weight of all fibers, difficult to dye.	Good to excellent: resistance to abrasion, ageing, chemicals, mildew, perspiration, pilling, stains, sunlight, weather, wrinkling. Fair to poor: absorbency, dyeability (now can be dyed with modern methods), resistance to heat.	Olefin can be: machine washed in lukewarm water, tumble dried at a low temperature. Do not tumble dry when fiber is used as a batting material, fire may result. Can be bleached and dry cleaned. Iron at low temperature (250° F or lower) if blended with other fiber. Do not iron 100% olefin articles.	Apparel, blankets, floor coverings (indoor and outdoor), household textile products, nonwoven products, upholstery.
Saran - use in apparel fabrics is very limited, mainly used in outdoor applications.	Good to excellent: resiliency, resistance to abrasion, chemicals, fading, mildew, staining, sunlight, water, weathering. Fair to poor: absorbency, strength, washability, resistance to heat.	Saran can be: washed with soap detergent, bleached. Water temperature must be below 100° F.	Awnings, carpets (indoor and outdoor), garden furniture, handbags and luggage, home furnishings, screening, shoes.
Acrylic - wool-like qualities, easy care, light weight, versatile.	Good to excellent: colorfastness, dimensional stability, hand (wool-like), moth and mildew resistance, pressed-in crease retention, resiliency, sunlight resistance, warmth, wash-and-wear qualities, wrinkle resistance, chemical resistance. Fair to poor: abrasion resistance, pilling resistance, strength (but stronger than wool).	Acrylic can be: machine washed and tumble dried at low temperatures, dry cleaned, ironed (300-350° F). Can be bleached.	Apparel (sweaters), blankets, carpets, fleece and fur-like fabrics, home furnishings, work clothing.

Metallic - composed of metal, plastic-coated metal, metal-coated plastic.	Excellent: appearance, and feel of metal, resistance to chlorine, salt water, weathering. Metallic yarns are non-absorbent and non-tarnishing. They are extremely sensitive to heat.	Metallic fabrics can be: washed, when the amount of metallic yarn is small. If metallic yarns are used as decoration, clean the garment by method allowed for the base material. Iron at low temperature. Read care labels.	Apparel, braid, decorations, home furnishings, hosiery.
Aramid - polyamid fiber.	Excellent strength, flexibility, and abrasion resistance. Does not burn. 2 types: Nomex and Kevlar	Specified by manufacturer.	Nomex - marine and sporting goods, ropes, sail cloth, ironing board covers, drapery and upholstery fabric, fire-fighters uniforms, space garments. Kevlar - bullet-proof vests.

Information prepared by Amy Erwin, County Extension Agent - Family and Consumer Sciences, Crosby County