4-H SEWING PROJECT
FABRIC CARE AND USE GUIDE

Revised January 2014
The 4-H Motto
“Learn to Do by Doing”

The 4-H Pledge
I pledge
My Head to clearer thinking,
My Heart to greater loyalty,
My Hands to larger service,
My Health to better living,
For my club, my community, and my country

The 4-H Grace
(Tune of Auld Lang Syne)

We thank thee, Lord, for blessings great
on this, our own fair land.
Teach us to serve thee joyfully,
with head, heart, health and hand

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The purpose of this guide is to give a more in-depth look at fabrics, their care and how to sew with them. It is important to understand the qualities of fabric in order that you make the right choices when choosing them and sewing with them. Using the proper techniques for your fabric will produce the best results.

**Fibres, Fabrics and Finishes**

There are so many fabrics available in stores today, which can make choosing a fabric for a project very confusing. Having some basic knowledge of fibres and fabrics and how they are constructed is very useful in order to help you make good decisions when buying fabric.

**Fibres**

Textile fibres can be created from many natural and synthetic sources and even minerals such as gold. Fibres are processed into threads or yarn and then into fabrics. There are too many fibres to list here but the following selection describes the fibres most commonly used in the clothing industry.

**Acetate** - Acetate is a synthetic fibre that comes from wood pulp. Acetate can also be made from the cotton linters (fibres sticking to cotton seeds). It is manufactured by pushing a chemical solution through spinnerets and then treated with an acid to harden the strands that are produced.

Acetate is thermoplastic which means it will melt if it gets too hot. It is also non-absorbent, pills and collects static electricity and it is recommended that fabric softener be used when washing anything made of acetate. Acetate won’t shrink or stretch very much but it does wrinkle easily. It is moth resistant but may be weakened by light or ageing.

Acetate should be dry-cleaned unless the label states otherwise. If you launder acetate at home, launder it by hand in lukewarm water and do not wring as it will crease. Avoid chlorine bleach. Use caution when pressing acetate and do not use a hot iron. Acetate should be ironed damp on the wrong side at low temperature.

**Alpaca** - A member of the camel family, the alpaca is native to the Andes Mountains of South America. The fibre is sheared from the animal once every two years. The fine fibres, which are separated from the coarse guard hairs, are used in fabric manufacturing.

Alpaca is similar to camel hair and offers excellent warmth and insulation. The fibres are strong and glossy and make fabrics similar in appearance to mohair. Alpaca fabrics are used for suits, dresses, plush upholstery and linings. The natural colour of the fibres ranges from white to brown and black and a variety of attractive fabrics can be created without additional dyestuffs.

**Acrylic** - DuPont introduced the first acrylic fibres to the clothing industry with the production of Orlon in 1950. The manufacture of acrylic is similar to most other synthetic fibres as it is produced from chemicals, pushed through spinnerets to form strands and then hardened in fibre form.

Acrylics feel warm and soft to touch. Creases are not a problem as the fabric is resilient which means that is springs back easily. One big disadvantage with acrylic is that it can pill quite badly. Static electricity may also be a problem. Acrylics have low moisture absorption so you wouldn’t wear anything acrylic on a hot sunny day. Acrylic, like acetate or polyester, is thermoplastic. Use cool iron set at rayon temperature. Most acrylics are machine washable and require little or no ironing. Garments are generally quick drying. If using bleach, select one that contains chlorine not oxygen.
**Blends** - Fibres are often combined to produce a fabric that has the best characteristics of each fibre. For instance, cotton is often blended with polyester to produce what we commonly call a cotton-polyester blend. The cotton adds comfort to the polyester; the polyester adds easy care to the cotton.

The purpose of blends may also be to cut costs by blending a cheaper fibre with a more expensive one. For example, silk or linen may be blended with a cheaper fibre such as rayon to reduce costs.

Blends may also be produced to achieve a specific appearance. Rayon and acetate are often used for this purpose because they add sheen or lustre to fabrics.

**Camel Hair** - The two-humped camel is the source of the camel hair fibre. The two-humped camel serves as a means of transportation in Asia in the desert regions of China, Tibet and Mongolia. This animal sheds about 2.5kg (5½ lb.) of fibre each year, which is used in textile products. The outer camel fibres are coarse and used only in low-quality merchandise, but the short, fine under hairs are as soft and as fine as top-quality wool. In addition, since camel hair possesses thermal properties similar to those of wool, garments made of it keep wearers warm in cold weather.

Fine camel-hair products require the same handling and care as cashmere and mohair. Camel hair is used in coating fabrics, sportswear and knitted products. The natural tan to reddish brown colour is very attractive and is retained for many choice fabrics.

Coarse camel-hair fibres are used in industry for special belting, ropes and artists’ brushes. Natives in various areas use the coarse fibres to make blankets.

**Cashmere** - is the fibre of the Kashmir goat, which is raised in Asia. The soft fibres are 2.5 to 9 cm (1-31/2”) long are very fine and soft; longer fibres 5 to 13 cm (2-5”) in length are somewhat coarse and stiff.

Although similar to wool in most properties, cashmere does differ in that it is more easily damaged by alkalis than sheep’s wool.

The yearly production of true cashmere is very small, so the fibre is expensive. Fabrics made of cashmere are warm and comfortable. The fibre can be produced in thick, medium-weight or lightweight fabrics.

Cashmere fabrics are considered luxury items. However, if properly treated and maintained, they can last a very long time and are appropriate in both warm and cool climates.

**Cotton** - is a natural cellulose fibre that comes from the seed pods of the cotton plant. Cotton was first produced for fabric making purposes in India and Pakistan and its use eventually spread to South America, and later to the United States. Cotton fibres grow in the boll or seed pod of cotton plants. After the cotton is picked, a machine called a cotton gin takes out the dirt, seed and leaves. It is then baled and looks like the cotton batting that you find in your first aid kit. After much combing or carding, the cotton is twisted into ropes or slivers. With each twisting the rope gets thinner and thinner and finally becomes yarn. The yarn is then woven or knit into fabric form.

Cotton is lightweight, strong and easy to sew but it wrinkles easily. It is comfortable to wear and can
be washed and ironed at high temperatures although it may shrink during the washing process unless it has been specially treated. Cotton is not attacked by moths but may be affected by mildew.

**Linen** - is considered to be the oldest of all the fibres. A natural cellulose fibre, linen is made from the stem of the flax plant. After the plants are harvested, dried, and the seed pods removed, a process called retting is used to rot away the fibres from the flax stalk. Then the fibres are combed to separate the shorter fibres from the longer ones.

Linen is used mostly for table linens and other household fabrics, but may be used for dresses and suits as well. Linen wears well but wrinkles easily unless treated with a special finish.

**Metallic Fibres** - are the oldest type of man-made fibre and as the name suggests they originate from minerals. Gold, silver and aluminum were the metals most often used in textile products but because of the high cost of gold and silver, aluminum, stainless steel, copper and other cheaper metallic fibres are now the most commonly used fibres. Usually the metals are coiled around a core of fine wire or thread and the yarns are then encased in a plastic coating, which prevents discoloration.

Metallic yarns are not especially strong but they are adequate for normal decorative purposes. The yarns are colourfast to light and mild laundering however high temperatures may soften the plastic coating.

Metallic yarns can withstand laundering and some may be dry-cleaned. Avoid high temperatures when laundering or ironing as it may melt the plastic coating. These yarns may be used in home furnishings, evening wear, and even sportswear and accessories.

**Modacrylic** - as in most synthetics, modacrylics are made by combining chemical compounds.

Modacrylics are soft and delicate. They are thermoplastic and will melt at high temperatures or even soften at some mid-range temperatures. Iron carefully at a low temperature setting. Modacrylics have excellent resistance to wrinkling and perspiration. Deep pile modacrylics and false furs made of modacrylics must usually be dry-cleaned unless labelled otherwise.

Because it is too weak to be used by itself, modacrylics are often used in blends for wigs, rugs, coats, deep pile and fleecy fabrics.

**Mohair** - comes from the Angora goat located in Turkey, South Africa and, more recently, the United States.

Angora goats are usually sheared twice a year. The fibres are fine and silky and measure 10 to 15cm (4-6”) in length. If sheared only once a year, fibres are 23 to 30 cm (12”) long.

Mohair is similar to wool in both physical and chemical properties. Its major advantages include remarkable resistance to wear and abrasion, a high degree of lustre or shine and excellent resiliency. Suiting and sportswear fabrics, upholstery, rugs and draperies may be made of mohair or a blend containing mohair.

**Nylon** - Nylon is a synthetic fabric that was first introduced in the 1940’s for use in nylon stockings

Nylon is made from coal, air and water and the fibre is made by being pushed through a spinneret and hardened.
Nylon is very elastic so that it is wrinkle-free. It is a very strong fibre and does not shrink, nor will it mildew or attract moths. Nylon has a tendency to build up static electricity and pill. Low moisture absorption and the ability to be weakened by sunlight are also characteristics of this fibre.

Nylon dries quickly. White garments should be washed only with other whites as nylon may pick up colour from other garments. Nylon is thermoplastic and caution must be used when ironing. Nylon is used to make rope as well as clothing.

**Polyester** – DuPont produced the first polyester fibres in 1953 and the fibre came into widespread use for clothing in the 1960’s.

As in other synthetics, chemical compounds are mixed together. The mixture is forced through spinnerets and hardened to form fibres suitable for fabric use.

Polyesters have good strength and dry quickly. They have low moisture absorption which means that they are uncomfortable in hot weather as they cannot breathe, and they keep moisture and heat trapped next to the skin, rather than allowing the moisture and heat to escape. Polyester microfibres have improved breathability and fabrics produced from these fibres are similar to silk in both feel and appearance.

Polyesters have excellent resistance to wrinkling and creasing and will spring into shape easily after being crushed or wrinkled and soil and stains are not easily absorbed. Polyesters are affected by pilling and static electricity.

Polyesters aren’t affected by dry cleaning, solvents or bleaches. They are easy to wash and quick to dry. Turn the garment inside out before washing to reduce pilling. Polyesters require little or no ironing and the fibres can melt very easily. Polyester is also used for household furnishings.

**Olefins** - First manufactured in 1949, it has only been lately that olefins have become popular synthetics for use in fashion textiles. Polypropylene, produced from a component of natural gas called propylene gas, is the olefin fibre most often used in the production of fabrics. The fibres are produced by melting and spinning the raw materials into fibres or by extruding a film, which is stretched and split into a network of fibres.

Polypropylene fibres are strong, have excellent resiliency and are dimensionally stable except at very high temperatures. Acids, alkalis, mould, mildew, insects or ageing, do not affect this fibre. Some solvents used in dry-cleaning may deteriorate the polypropylene fibre and prolonged sunlight may also damage it.

Besides being used for felted fabrics, polypropylene is used in the production of blankets, carpeting, upholstery and ropes.

**Ramie** - Ramie or China grass is a natural cellulose fibre that is obtained from a plant in the nettle family and is grown in countries such as the Philippines, China, and Brazil. The fibre comes from the stalk of the plant.
Ramie has good strength, has a high shine, or lustre, dyes easily and has high absorbency. This fibre also has good resistance to microorganisms. Ramie has many linen-look qualities but is less expensive to produce than linen.

Ramie fabrics are machine washable and require ironing as they wrinkle easily. Ramie-polyester and ramie-acrylic blends have easy-care characteristics and are less stiff than 100% ramie fabrics.

**Rayon or viscose** - is a synthetic cellulose-based fibre and comes from the same source as paper-wood pulp. The pulp is chemically treated and aged, and the solution is then pushed through tiny holes or spinnerets to form yarns. An acid is used to harden the strands. As these strands harden, they are stretched to give strength and elasticity. Rayon was first produced in 1924 and was called artificial silk.

Rayon is absorbent, which means that it is quite comfortable to wear in hot humid weather because of its ability to absorb moisture. Rayon wrinkles easily, may shrink, will not pill but like cotton, it is susceptible to mildew. Rayon may be weakened by light if exposed for a long period of time.

Rayon is best dry cleaned unless the fabric care label says that it is washable. If you do wash rayon it is usually washed by hand; do not wring it out. Avoid chlorine bleach, as bleach will weaken the fabric. Iron damp on the wrong side at rayon setting (low).

**Silk** - is a natural protein fibre that originated in China and is a product of the silkworm, which feeds on the leaves of the mulberry tree. The silkworm spins silk as it builds its cocoon.

The silk fibre is the strongest, lightest, and finest of natural fibres. It has good moisture absorption and thus is comfortable to wear. Perspiration will deteriorate this fibre, and insects may attack it if the fabric is stored in a soiled condition.

Silk is often best cleaned by dry-cleaning; however, there are some silks that can be hand washed or are machine washable. Follow the label for care instructions. Do not use chlorine bleach on silk fabric, as the chlorine will damage the fibres.

**Spandex** - Manufactured since 1959, spandex is a type of synthetic rubber composed of a substance known as polyurethane. Complex chemical reactions produce this polyurethane, which is then pushed through spinnerets to form fibres. Lycra is a type of Spandex.

This fibre is very resilient and has a high amount of stretch and will return to its original shape. Spandex has low moisture absorption so that it is also fairly uncomfortable to wear in hot sticky weather. Chlorine bleaches can degrade spandex.

Spandex can be dry-cleaned or laundered depending on garment construction. Follow the care instructions on the label. Avoid high temperatures in cleaning or ironing. Repeated machine laundering and tumble-drying can result in a loss of strength and elasticity as well as a grey discolouration. Hand washing and air-drying can lengthen the life of spandex garments. Do not bleach with chlorine bleach as it may damage spandex fibres.

With its close-fitting figures and ability to retain shape, spandex is widely used in swimsuits and lingerie.
**Triacetate** – is made from the same material as acetate but one of the steps in making acetate is omitted in producing triacetate, which results in a completely different fibre. Triacetate is thermoplastic, but is usually more heat resistant than acetate. Triacetate is non-absorbent, wrinkle resistant and may develop static electricity. Triacetate may be damaged by sunlight if exposed for a long period of time. This fibre is machine washable and can be ironed at moderate temperatures.

**Wool** - is a natural protein fibre made from the hair of animals, usually sheep. Wool is a very old fibre that has been used for fabric for centuries.

Wool is soft, elastic and springy and is the warmest and most absorbent of fabrics. Under a microscope, wool appears to be rough and have scales that contribute to its absorbency and heat-retaining properties. Wool can be an easy fabric to sew with but must be protected from moths and beetles. Dry-cleaning is the best way to clean it as washing can cause wool to mat, shrink and stretch out of shape.

**Fabrics**

There are three main types of fabric structures; woven, knits and non-wovens. Wovens consist of yarns interlaced at right angles, knits are formed by the interlooping of yarns and non-wovens are fibres that have been pressed into shape.

There are a lot of different types of fabrics produced and it would be impossible to cover every fabric available on the market. The most common types of fabrics found in a fabric store are described below.

**Wovens**

Woven fabrics are constructed of two sets of yarns that run at right angles to each other. The lengthwise yarn or warp runs vertically and is called the lengthwise grain. The crosswise yarn or weft or runs horizontally and is called the crosswise grain. At the outside edge of the lengthwise yarns you will find the selvage where the warp yarns have been woven very close together for approximately 0.6-1.3 cm (1/4 -1/2).

When using a pattern you will notice that there will be a line or arrow indicating that you need to place the pattern piece on the fabric’s straight or lengthwise grain. This means that the line or arrow must be placed along the lengthwise threads parallel to the selvage to ensure that the fabric hangs correctly after it is sewn.

The third fabric grain is the bias. The bias is found by folding a lengthwise thread along a crosswise one. Often cuffs and waistbands are cut on the bias. The diagonal or true bias is the direction with the most elasticity or stretch.

Before weaving, the fibres are first straightened, pulled and twisted into yarns, on a spinning wheel. This process is called spinning. The yarns are then put on a loom and woven into a fabric. Lengthwise or warp yarns are set up on the loom and crosswise or weft yarns are interlaced to produce woven fabric.
Some of the more common weaves of fabric are:

- **The plain weave** is the simplest of weaves. Each filling or weft yarn passes over one warp yarn and then under one warp yarn resembling a checkerboard. Examples of fabrics made in the plain weave are muslin, percale, chambray, gingham and organdy.

- The **rib weave** and the basket weave are variations of the plain weave. In the rib weave, heavier or more yarns are used in either the warp or the filling direction. This forms ribs on the surface. (Examples: broad cloth, poplin, faille, grosgrain and ottoman).

- The **basket weave** is made up of two or more warp yarns woven in with one or more filling yarns to produce a basket effect. Some examples of fabrics woven in the basket weave are Oxford cloth, monk’s cloth, and hopsacking.

- **Twill weave** is the strongest weave. Each filling yarn passes over two warp yarns then under one warp yarn. This makes a diagonal line called a wale. The herringbone weave is a variation of the twill weave. In the herringbone weave, the diagonal lines change directions regularly to form rows of upside down V’s. Examples of the fabric made in the twill weave are denim, gabardine, drill, serge and surah.

- In the **satin weave** the warp and filling yarns are woven to expose more warp than weft or filling yarns. These long warp yarns are called floats and produce a sheen or lustre. This type of weave is not as durable as other weaves because the long warp yarns may catch and pull. Sateen, a variation of the satin weave, has filling yarns that float on the surface so that your hand will slip more easily in the crosswise direction of the fabric. Some examples of fabric made in the satin weave are satin, crepeback satin, charmeuse, messaline and moleskin.

- A **pile weave** uses three sets of yarns. Two sets make up the plain or twill weave. The third set is anchored in the plain weave and is allowed to hang slack during the weaving. This results in a series of loops on the surface. If the loops are left uncut, you have a surface like terry. If the loops are close together and cut, you have velvet, velveteen or corduroy. Care should be taken when cutting and sewing of pile fabric so that the nap is always in the same direction because it may look lighter or darker depending on the light refection. NOTE: pile fabrics should not be confused with “napped” fabrics. A pile fabric has a special weave to produce pile; a napped fabric has just been brushed lightly to produce protruding fuzzy fibres. Pile fabric always has a nap.
but the reverse is not necessarily true. Flannelette is an example of a napped fabric that is not a pile fabric.

- **Double weave** consists of two fabrics woven together. An extra yarn is used to weave two fabrics back to back or the warp of filling yarn of one fabric may be used to interlace the fabrics. A double weave may or may not be reversible. It is thicker, warmer and more absorbent than a single cloth fabric and may be used in such items as blankets or winter coats.

**Knits**

Knits are composed of a series of loops formed on a knitting machine. Knits formed in the horizontal direction are called filing knits whereas knits formed in the vertical direction are called warp knits. A knit may be made in a circular tube or in a flat fashion. The main difference between the properties of knits and woven knits is that knits stretch. This makes them more comfortable to wear as they allow freedom of movement. The looped structure of knits also allows passage of moisture along the surface of the fabric for comfort. This characteristic is known as wicking. As well, knits are usually warmer than woven because of their ability to trap air and form dead air spaces. One disadvantage is that knits snag easily. Knit fabrics come in different weights such as:

- **Single Knit** - uses only one set of needles in its construction. It may be ribbed, plain or patterned.
- **Double Knit** - is produced by two sets of needles. It is double in thickness and rib-like on both sides.
- **Plain (Jersey) Knit** - is a single knit, which forms vertical lines on the face of the fabric and horizontal lines on the back. In hand knitting, this stitch may be called the stockingette stitch. A tendency for these knits to curl may present problems in cutting and sewing them. Runs or ladders may also easily form if a yarn is broken.
- **Knit Pile Fabrics** - are knitted with two yarns feeding into the same knitting needles at the same time. When the fabric is knitted, one yarn appears on the face of the fabric, the other on the back. The yarns on the back of the fabric are pulled through to the face side of the fabric. If the pile is left uncut, knit terry is formed. If the pile is cut and then brushed, a soft, downy texture called knit velour is produced. Knit pile fabrics are often used for sports and leisure wear.
- **Stretch Fabrics** - stretch fabrics are knit fabrics composed of elastic fibres using such fibres as polyester, spandex and the natural fibres. Stretch is the “hidden asset” in a fabric that adds comfort and shape retention, wrinkle resistance and longer wear.

There are three types of stretch:

- **Filling or horizontal stretch** which stretches crosswise form selvage to selvage. It is used for blouses, skirts, dresses, jackets, and skirts.
- **Warp stretch** or vertical which stretches lengthwise or parallel to the selvage. This is not a commonly used type of fabric.
- **Two-Way stretch** stretches in both directions and is used mostly in swimsuits and foundation garments such as girdles, briefs and bras.
Non-wovens
Non-woven fabrics have no knitting or weaving involved in their construction. Fibres are joined by entanglement and held together by using a type of glue or by melting.

Felt is a fabric, which is produced by entanglement of fibres through heat, moisture and pressure. Many interfacings are non-wovens, which are bonded by a type of glue. Fusible Web and heat N’ Bond, used to fuse down hems and buttonholes, are a non-woven fabrics produced by melting fibres together. Non-wovens have poor flexibility and tend to pull apart easily which make them unsuitable for most kinds of clothing.

Finishes
Finish refers to the different treatments applied to a fabric to change such things as its appearance, feel, wearability or care requirements.

Finishes are said to be durable if they can withstand several launderings or dry cleanings without being removed but they tend to gradually lose their effectiveness. Permanent finishes, on the other hand, last the life time of the fabric. Renewable or non-permanent finishes are those that rub off easily by washing or dry cleaning. They can sometimes be replaced.

Finishes can be divided into two different groups:
- Routine or general finishes
- Functional or special finishes

Routine Finishes are the basic steps required in preparing fabrics for consumer use. Routine finishes would include such procedures as scouring, bleaching and mercizing (treatment of cotton so that it won’t shrink). The number and type of such finishes would depend on the fibre content of the fabric and the desired appearance. Cotton fabrics, for example, would undergo different routine finishes than wood-based fabrics.

Special Finishes are those that change the appearance, feel or properties of a fabric. Napping, a fabric finish that produces short fuzzy fibres on the surface of a fabric like flannelette and flocking, an effect created when short fibres are glued on to the surface of a fabric in some sort of pattern, are examples of functional finishes which change a fabric’s appearance. Another examples of functional appearance-altering finishes are sizing which gives limp fabric more body.

Unlike those finishes which change appearance and may be produced chemically or mechanically, any functional finish that changes a fabrics properties are applied chemically. Property-changing functional finishes provide the added qualities desired for a particular fabric or they may be used to change an undesirable property to a more desirable one. The label may indicate which finishes have been applied to the fabric. Commonly applied finishes include:
- Crease Resistant Finishes - are usually applied to cellulose fibres such as cotton, linen and rayon that wrinkle easily. Crease resistant finishes help a fabric to resist wrinkling during wear and help to keep the surface smooth, even after laundering although some touch-up ironing may still be required.
- Permanent Press fabrics - have crease resistant finishes that resist wrinkling and also help to maintain creases and pleats throughout wearing and cleaning.
- Stabilization Finishes - control stretch and shrinkage. These fabrics have been preshrunk to a certain extent but still may shrink considerably. Permanent press and crease resistant finishes, as well as mercerization (treatment of cotton with sodium hydroxide) will also help stabilize fabrics somewhat.
- Stain and Soil Resistant Finishes - prevent soil and stains from being attracted to fabrics. Such finishes may be resistant to oil-borne or water-borne soil and stains or both. Stain and soil resistant finishes can be applied to fabrics used in clothing and furniture. “Scotchguard” is a stain and soil resistant finish commonly applied to carpet and furniture.

- Soil Release Finishes - These finishes attract water to the surface of fibres during cleaning and help remove soil. Moisture is attracted to the surface of the fibre to improve wicking, the ability of a fabric to transport moisture along its length.

- Anti-Static Finishes - reduce static electricity which may accumulate on fibres. The most common type of anti-static finishes is fabric softeners. Home-applied fabric softeners are non-durable anti-static finishes, which must be replaced after every washing.

- Water-Repellent finishes - resist wetting but that does not mean that they are waterproof. A water repellent finish still permit a fabric to be porous and if the fabric becomes very wet, water will eventually pass through. These finishes may be applied to fabrics found in raincoats, all-weather coats, hats, capes, umbrellas, and shower curtains. Water repellent finishes also repel water-borne stains.

- Waterproof Finishes - allows no water to penetrate. For example, coated fabrics (fabrics coated with rubber or plastic) can be waterproof. Such fabrics tend to be uncomfortable because they trap moisture next to the body. Fabrics have been developed that are waterproof, yet are also breathable. These fabrics have a fluorocarbon membrane placed underneath the outer fabric, as well as underneath lining fabric. Trade names include GORE-TEX, Bion II and Dicrylan.

- Flame-Retardant Finishes - are applied to combustible fabrics used in children’s sleepwear, carpets and curtains. This finish prevents highly flammable textiles from bursting into flame. In Canada, laws require that children’s sleepwear and certain household furnishings meet certain standards for flammability resistance.

- Absorbent Finishes - increase fibres’ moisture holding power. Such finishes have been applied to towels, cloth diapers, underwear, sports shirts and other items where moisture absorption is important.

- Mothproofing Finishes - protect protein-containing fibres, such as wool, from being attacked by moths, carpet beetles and other insects.

Now that we understand how fibre, fabric and finish work together we can learn a little about some of the more commonly used textiles these three elements can construct.

**Fake Furs** - Pony skin, zebra skin, and shearling - fake fur or deep pile fabrics are available in a complete range of choices. They vary from long hair to smooth pelt fabrics. The pile is usually synthetic with a knit or woven backing of cotton, acrylic, modacrylic or polypropylene.

**Fleece Fabrics** - Fleece or sweatshirt fabrics have been popular for many years in athletic attire. This fabric is easy to sew and may not need seam finishes. Fleece is often made from a blend of cotton and manufactured fibres, notably polyester and acrylic, to capture the good properties of cotton, such
as softness and absorbency, with the good qualities of man-made fabrics such as resiliency and dimensional stability. As a result, the marketplace abounds with fleece made from various amounts of different types of fibres.

**Insulators** - used in outdoor wear to help maintain a comfortable body temperature. Because of their structure, insulators hold air in place to form “dead air spaces” which prevent air movement and body heat loss. The loft or thickness of the insulation, the amount of wind, the temperature and the wearer’s own metabolism will determine how much insulation is needed for a particular garment.

Down is the soft, fluffy undercoating of geese, ducks and other waterfowl. Individual down pods have many long, fuzzy arms radiating out from one point. When many individual down pods are placed together, these arms mesh and intertwine forming a network of filaments. The network traps air, forming a dead air space as thick as the thickness of the down.

Advantages of down:
- Warmest insulator for its weight.
- Compresses, yet has excellent resilience.
- Soft, yet durable with a long life.
- Breathes, permitting body moisture to escape.
- Odourless and non-toxic.
- Form-fitting, shaping to the body and eliminating large live air spaces.

Disadvantages of down include:
- More expensive than polyester.
- Mats and loses its insulating ability when wet.
- Takes a long time to dry
- Mildews if not thoroughly dried.
- Can aggravate allergy-prone people.
- Must be quilted to prevent shifting.

Polyester battings, in general, are made of 100% polyester fibres that are assembled into sheets and then partially stabilized by bonding or needle punching for easier handling.

Some advantages of polyester batting are:
- Fast drying.
- Machine washable/dryable.
- Less expensive than down.
- Non-allergenic.
- Mildew resistant.
- Maintain their loft when wet.
- Absorb only small amounts of moisture.

Disadvantages of polyester batting are:
- Heavier and bulkier than down.
- Less compressible than down.
Can be damaged by heat
- Shorter life expectancy than down.

Some polyester battings commonly used for outdoor wear include DuPont Hollofil, Celanes Polarguard, Eastman Kodel, 3M Thinsulate and needle punch batting.

Laces - can be woven or knit and are openwork fabrics consisting of a network of looped, twisted or knotted threads or yarns. Laces have intricate designs, most often floral, on a ground of mesh or net and can be manufactured in many widths and shapes. Lightweight to heavy weight fabrics are made from cotton, silk, polyester, rayon or nylon fibres. Some laces have a decorative edge (e.g. a scalloped edge), which can be used to finish the hem and neck edges of garments lace. Yarns used in making lace are stronger and more firmly twisted than those for other types of fabrics. Most lace fabrics are fragile and require special handling, but those made of strong fibres, such as nylon, are durable and give long life.

Leather and Suede - is produced from the skins of animals such as sheep, cattle, pigs and goats. Leather is smooth and has the grainside or hairside on the surface. Suede has a nap and has the flesh side as its surface.

Leather comes in various grades. The highest grade leather is thicker and more uniform in thickness and colour than the lower grade types. It is also free from marks and scars and is finer in texture. Coarse grain leather will stretch more with wear. After the hide is removed from the animal and cleaned, it is tanned this process involves treatment of the skin with oils so as to keep the leather supple and smooth. Improperly tanned leather may become brittle and crack.

Needle-Punched Fabrics - resemble felt in appearance, but are wholly or primarily from fibres other than wool. These fabrics are classified as nonwovens because neither weaving nor knitting is used in their construction. They are joined by entanglement of fibres through the mechanical action of barbed needles (rather than the application of heat, moisture and friction as true felt is produced). Products commonly found that have been made from needle-punched fabrics include carpeting, wall coverings, blankets, padding, insulation and industrial fabrics. Most nonwoven interfacings are needle-punched.

Outdoor Fabrics - are strong, durable and wind resistant. Such fabrics are often 100% nylon, a nylon blend or a polyester-cotton blend like Commander, a fabric commonly used for mountaineering jackets and parkas.

Outdoor nylon can be a variety of weaves. Plain weave nylon is light weight and are useful for shell garments. Heavier oxford weave nylon, such as Cordura, are very strong and durable and are often used for backpacks and luggage. Ripstop nylon is strong and compact and is commonly used for tents and with down insulation for sleeping bags. Taslin nylon, which has a crinkled appearance, is frequently used for windsuits and jackets.
Some outdoor wear fabrics are coated to make them water repellent or waterproof for use as raingear, the outer fabric on insulated garments, packs, rainfly’s for tents, and tent bottoms. Recent improvements in the breath ability of such finishes have made water-repellent and waterproof outdoor fabrics more comfortable to wear.

**Polar Fleece** is a double-napped knit fabric, sometimes called bunting. Made by a unique double-napping process to provide warmth without bulk and weight, these high-tech, high-performance fabrics are engineered to keep you warm, dry and comfortable across a broad range of climate conditions. They can be used as lining, insulators and outer layers in a variety of garments from underwear to lightweight wraps (polypropylene), or even recycled pop bottles. These fabrics have good shape retention, dry quickly and retain their insulating properties. Polar fleece is breathable, hypo-allergenic and odour resistant. It doesn’t fray and is very easy to sew. It is machine washable, quick drying, durable, resistant to pilling, comfortable to wear and easy to clean. Polartec is a trade name for polar fleece. Earlier versions of this fabric (Chinella, Polarfleece, Polartec, Polarlite and Arctic Fleece) were nonwoven and were made from polyester or polypropylene fibres, which had been shrunk and felted. Compared to today’s polar fleece fabrics, they pill more than most and many are less windproof.

**Quilted Fabrics** - use a bonded fabric with a batting or foam centre. Stitching the fabrics together or joining them chemically or thermally may achieve the quilted effect. Chemically quilted fabrics use adhesives to bond the fabrics together. Joining the fabrics by heat is a welding type process that involves the use of ultrasonics.

**Sheers** - are plain weave transparent lightweight fabrics that vary from soft to crisp in texture. Soft sheers (chiffon, georgette, voile, batiste) are drapeable and slippery which makes them difficult to handle. Crisp sheers, such as organdy, dimity, organza and dotted swiss, are easier to handle because they have more body.

**Tricot** is a knit fabric produced in the warp or vertical direction. In this knit, each yarn forms interlocking loops above, below and sideways. The ribs formed by the loops run lengthwise on the face side and crosswise on the wrong side. Tricots of 100% nylon, 100% triacetate and blends of the two are most common. Tricot is a fabric that is often used in lingerie, sleepwear and loungewear.

**Ultrasuede** – was invented in 1971, and is a crisp non-woven napped synthetic suede fabric made of 60% polyester and 40% polyurethane. It does not fray, pill, shrink, stretch or wrinkle and can be machine washed or dry-cleaned. Ultrasuede burns readily and will be damaged by high temperatures. Ultrasuede is used for furniture, wall coverings and luggage as well as clothing.
Sewing your fabrics

Some fabrics require some extra care and planning when sewing with them. As has been mentioned, there are many fabrics on the market and we cannot possibly cover them all in this guide. However this guide does include sewing suggestions for the most commonly used fabrics.

Fake Furs

Patterns

- Choose simple patterns to minimize bulk. If possible, avoid collars, set-in sleeves, buttonholes and decorative features such as flaps, tabs and epaulets.

Cutting

- Fake fur fabrics have a nap so all pieces should be cut out in the same direction. Pattern pieces should be placed on the wrong side of the fabric.
- Eliminate all unnecessary seams.
- Omit interfacing pattern pieces, as synthetic furs rarely need extra strength and support.
- Facings may be cut in one piece with the main garments piece to reduce bulk or lining may be cut out to use as facing.
- Use long pins with large plastic heads to hold the pattern on the backing; quilting pins work well.
- When cutting, cut through the knit backing only so you don’t cut the wrong side of the pile fibres.

Machine Preparation:

- Tension - Loose
- Pressure - light
- Stitch Length - about 4/cm (10/inch)
- Needle - coarse
- Thread - heavy duty

Sewing Tips

- Stitch seams in the direction of the pile whenever possible.
- Use a pin to lift pile caught in the stitches of seams.
- To eliminate bulk shear pile form seam allowances.
- Do not clip curved seams too deeply.
- To finish darts, split the darts down the centre and shear pile as on seams.
- Stitching seams with preshrunk seam binding will reinforce areas of strain.
- When sewing with pile that is very long you can camouflage the seams completely by using a knitting needle and pulling the pile out of the seam on the outside and combing it down over the seam.

Pressing

- Try finger pressing or steam, using a needle board.
Fleece Fabric

Pattern Selection

- Choose a simple pattern with uncomplicated design details to reduce the problems that may arise in sewing through layers of thick, bulky fabric.

Preparation

- Preshrinking the fabric is recommended to reduce shrinkage that might occur in laundering. To preshrink, use the same washing procedures that you will follow when the garment is completed. Most fleeces can be laundered as follows: machine wash (warm), rinse well, dryer dry, remove promptly.
- Check the bolt end of the fabric for specific care instructions when you buy.
- When pressing, press fleece lightly on the right side up to avoid flattening the nap.

Layout

- Fleece fabrics are knitted, and the formation of the knit stitch is not the same top and bottom. The fabric may have a nap that runs in one direction. It is always wise to lay the pattern on the fabric so all the pattern pieces are pointing in the same direction. Otherwise, follow the layout directions provided with the pattern.

Machine Preparation

- Needle Size: 11 or 14
- Needle Type: Universal or Ballpoint
- Tension: Light
- Pressure: Light
- Thread: Cotton or polyester or 100% polyester
- Stitch Size: 3-4 stitches/cm (8-10 stitches/inch)

Seams

There are many different ways of making seams in fleece fabric to provide strength and to provide decorative effects. These include:

- The plain seam – quick, easy and requires no seam finish because the fabric does not ravel.
- Overedge finish – is fast and easy to do, particularly on a Serger.
- 2-Thread Overedge Stitch
- Plain seam with double topstitching
- Welt seam
- Tucked seam
- Slot seam
- Piped seam – piped seams add colour and stability to side seams.
- Wrist/Ankle Finishes - any of the following techniques can be used:
  - Ribbed knit cuff
  - Elastic casing
  - Drawstring casing
  - Waistline Finishes
- Pants or shorts can be finished at the waistline in the following ways:
  - Casing with a drawstring.
  - Elastic casing with wide elastic (2 – 2.5 cm or \( \frac{3}{4} - 1" \) in width).
  - Multiple rows of 1.3 cm (1/2") elastic.

**Leather, Suede, and Synthetic Suede**

**Patterns**

- Should be simple with a few seams, darts and details and no eased seams - leather and synthetic suede will not ease. Avoid patterns for knits only because they are meant for fabrics that stretch. A pattern with gathers can be chosen for soft leather and synthetic suede but gathers will add some bulk. Short, wide angle darts are not appropriate since short darts will not lie flat. Darts should be gradual and narrow to a sharp point.

**Preparation**

- Synthetic suede should be preshrunk. It is also a good idea to preshrink zippers if not marked low shrink and linings.

**Layout**

- Since leather and synthetic suede are expensive, place pattern pieces so as to avoid as much wastage as possible.
- As suede and synthetic suede both have a nap, you'll have to be sure to place all pattern pieces in the same direction. Otherwise, because of the shading caused by the nap, the garments may appear to be more than one colour. Nap running upwards produces a richer, darker colour; nap running downwards results in a lighter, shinier look.

**Cutting**

- A rotary cutter works well for cutting out leather, suede and other heavy fabrics. A utility knife also works well. If skin is not wide enough to make a complete front or back, cut two separate pieces and seam in the centre. Don’t forget to add the seam allowance.

**Things to remember:**

- Pin marks will show so pin within the seam allowance or tape pattern to skins.
- Mark construction details with chalk.
- Facings can be cut from skins or lining fabric.
- If possible eliminate unnecessary seams, such as centre back seam.

**Machine Preparation**

- Tension - May have to be adjusted. Test it on a scrap of the skin/fabric.
- Pressure - Adjust to the weight of the skins or fabric.
- Needle - a larger needle, such as a wedge needle, will be required for sewing leather and topstitching leather and synthetic suede. Special leather needles are available.
- Thread - For leather, heavy duty mercerized cotton. Synthetic suede: #50 100% polyester or polyester core thread works well.
- Stitching - Sew at about 3-5 stitches per cm (10-12 stitches per inch). Each stitch punches a hole, so stitch carefully.

**Sewing Tips**
- Stitching Errors - They will show. Stitch with care to avoid ripping. Do not stretch as you sew.
- Darts - Leather: Stitch, slash to within 1.2cm (1/2”) of the point, press open and glue down. Synthetic suede: A small circle of fusible interfacing over the point of the dart may prevent puckering. Darts may be constructed in the same manner as for leather or a flat dart may also be used. For a flat dart, slash through the centre of the dart, overlap and topstitch.
- Seams - Do not pin. Use paper clips to hold layers together or use double-faced basting tape. Don’t back-stitch; tie the thread ends together.
- Skipping Stitches - If your machine is skipping stitches, try using a ballpoint needle.
- Seams on leather can be finished by pressing the seam opening, trimming the seam allowance to 1 cm (3/8”) and gluing or topstitching the seam down. Seams may be regular, topstitched or flat-felled. Synthetic suede fusible web may be used to fuse seams. A pounding block or small hammer for flattening seams will come in handy. Stitching seams with preshrunk tape will reinforce areas of strain.
- Topstitching on suede and synthetic suede should be stitched in the same direction because of the nap.
- Buttonholes - test method on a scrap of leather or synthetic suede. Bound buttonholes work well on synthetic suede and soft leather. A reinforced slash using small stitches (6/cm or 15/ inch) is very easy.
- Hems - Leather: Glue and hammer flat. Synthetic suede: Fuse down with fusible web. Another method may be used in which the garment is cut to the desired length and a facing is topstitched to the hem.
- Linings - Choose linings with care properties similar to that of the outer garment. Synthetic suede can be washed and tumble-dried so choose a washable lining unless you wish to dry-clean your garment.
- Interfacings - A canvas or nonwoven interfacing extending from the front section to the armhole adds shape retention in leather. Layers of interfacing may be used where extra support is needed.

**Pressing**
- To press leather and synthetic suede, use one or several layers of self-fabric (a piece of the leather itself). A piece of wool flannel also works well. Brown paper placed under the seam allowances during pressing will help to prevent seam imprints from showing on the right side. For suede and synthetic suede, use lots of steam and brush up flattened pile with a fine emery board.
Napped and Pile Fabrics

Pile fabrics have an extra set of yarns involved in their construction. This extra set of yarns forms loops which may be cut (e.g. velvet, corduroy) or left uncut (e.g. terry) to form pile. A napped fabric, such as flannelette, has just been lightly brushed to produce protruding fibres.

Patterns

- Choose a simple design that will emphasize the fabric. Look for a minimum of seams, darts and tucks. Topstitched details will mar the smoothness of the fabric.

Cutting and Marking

- The direction of nap or pile affects the fabric’s colour. Find the direction by running your hand along the grain. The nap running down has a smoother feeling and a lighter, shinier look. Nap or pile running up has a rougher touch and a richer colour. All pattern pieces will have to be placed in the same direction for the colour to appear consistent.
- Eliminate bulk as much as possible by eliminating facings, substituting a lighter weight fabric for facings or by cutting facings as one piece with the garment.
- Cut napped fabrics down, as the fabric will show less wear. However, for a richer colour, cut pile fabrics with the nap running up.

Machine Preparation:

- Tension and Pressure - light
- Stitch Length - 4-5 stitches/cm (10-12 stitches/inch)
- Needle - size would depend upon weight of fabric

Sewing Tips:

- Seams - if necessary, hand-baste before machine stitching to prevent slippage and puckered seams.
- Always sew in the direction of the nap or pile.
- Grade seams to eliminate bulk.
- Seam Finishes - Pink, overcast, zigzag or stitch 6 mm (1/2") from the seam edge. Seam tape may also be a good idea if the fabric frays badly.
- Facings - use lightweight fabrics such as organza or taffeta for dry-cleanable garments and lightweight cotton for washable garments if the fabrics are quite heavy. For lightweight fabrics, a piece of self-fabric is fine.

Pressing

- Press using a needle board with the fabric face down.
- Use plenty of steam.
- Always press very lightly in the direction of the nap.
Outdoor Wear

Sewing

- Separating and exposed zippers are used in many outdoor items. They may be corded to keep the zipper teeth from catching on the insulated overlap.
- Wind flaps are used on insulated garments to give more protections from the elements. This is a double layer of fabric, which lies behind the zipper.
- For topstitching and machine quilting, hand-baste or pin baste all layers together before machine stitching to keep layers from shifting. Tailor’s chalk can be used to draw quilting lines for straighter stitching.
- A lower gear, if your sewing machine has one, is helpful when quilting through thick layers.

Pressing

- Pressing should be done with your fingers or with the iron set on a very low temperature. Don’t attempt to press insulation or garments that have been insulated because you will flatten the loft and decrease the insulation value.

Kits

- Outdoor wear kits are very popular and are available for several outdoor equipment and apparel manufacturers. The kits contain all fabrics, insulators, notions and directions for construction. In some kits, the fabrics are pre-cut and ready to sew.

Notions

- Notions used for outdoor items include thread, fasteners such as zippers, snaps, hook and loop type closures, buttons and eyelets, and decorative trims ribbings for cuffs or neckbands. The weight of the notion should be compatible with the garment fabric.
- All notions should have the same care requirements as the fashion fabrics used.
- 100% polyester or polyester-cotton thread is strong and a good choice.
- Heavy-duty thread may be desirable for items that need extra strength, such as backpacks.
- Decorative trims are used to personalize outdoor items. Usually the trim is attached before the item is insulated.

Plaids and Stripes

A plaid is a fabric design made of stripes, which cross each other at right angles. All plaid fabrics are made of repeats, or four-sided areas of the complete plaid design and colors. The arrangement of stripes, sizes and colors within a repeat determines whether the plaid is balanced (even) or unbalanced (uneven). Stripes run in only one direction—lengthwise or crosswise, and may be even or uneven in width and design.

![Figure 17 - Even plaid](image1)
![Figure 16 - Uneven plaid](image2)
Balanced stripes are the same from one side to the other. Stripes will meet along a diagonal fold. Even plaids are the same from side to side and top to bottom. When folded diagonally through the centre of any repeat, the lines of the folded edges will meet the other lines. Unbalanced stripes are not the same from side to sides. Stripes will not meet along a diagonal fold. Uneven plaids are not the same from one slide to the other or from top to bottom. The lines of the folded edge will not meet the other lines when folded along the diagonal of any repeat.

**Patterns**

- Patterns specifically designed for stripes and plaids are best, but other patterns may also be suitable.
- Simple designs with few pieces and seams work well. Avoid may gores, circular yokes and princess lines.
- Try to visualize the effect of the plaid or striped fabric into the style you are considering.
- Plaids and stripes require extra yardage for matching. For small-scale or medium-scale plaids or stripes, add on 23-46 cm (3/4 - 1 ½ ') and for large-scale plaids or stripes, add an extra 46-91 cm (1 ½ - 3').

**Preparation**

- Preshrink all washable fabric and notions.
- Pin fabric layers together along both lengthwise and crosswise bars so design will not shift in cutting.
- Be sure to make all adjustments on your pattern before laying it out. Seams will not match if changes are made after cutting.

**Layout and Cutting**

- You may use a without nap layout for even plaids, unless the fabric is brushed or napped - then use a with nap layout (pattern pieces all placed in the same direction).
- For uneven plaids, use a with nap (one-way) layout.
- Although cutting a single layer is more accurate, a double layer may be used if you align the plaid design or pin or use basting tape to keep the fabric from shifting.
- If the plaid or striped fabric has a woven design, the design will be on grain; if the design is printed on the fabric the plaid or stripe may not be on grain, but the pattern piece should be laid on the fabric with the design, not with the grain, for a more pleasing effect. Place the most noticeable lengthwise bar or stripe at centre front and back.
- For uneven plaids and uneven lengthwise stripes with no centre front seam, place dominant stripe at centre front, then let bars or stripes follow around figure. If fabric has no right or wrong side, a seam may be made at centre front to give a balanced effect.
- Lay pattern pieces on single layer of fabric. Place the dominant crosswise bar or stripe at the hemline of the garment. Cut first half of pattern (leave seam allowance). Leaving pattern piece pinned on, place pattern and fabric on second area of plaid, matching lengthwise and crosswise bars. Be sure the two pieces are opposite - e.g. right and left fronts.
- Match stripe or bars to the centre front, centre back and sleeve front armhole. Match collar to centre back of garment; skirts at side seams if both seam lines have the same slant. Match at corresponding notches and along the stitching or seam line, not the
cutting line. If plaid or stripe is uneven, be sure to cut all pieces the same way on the fabric.

- Lay pattern pieces for matching in the following order for fitted tops of dresses or tuck-in fitted blouses/shirts:
  - Place front pattern piece first.
  - Place sleeve, matching front notch of same crosswise bar as bodice front armhole notch.
  - Place bodice back, matching armhole notches to same bar as back sleeve notch.
  - For over-blouses, shift dresses, coats and jackets:
  - Place front pattern piece.
  - Match back piece to front at side seam - below underarm dart.
  - Place sleeve last and match front notch to same bar to armhole notch. The plaid may not match at back armhole notches but will match on the underarm seam.
  - A chevron is a “V” formed when plaid bars or stripes are matched at an angle. Chevrons must be cut only along a bias seam. If a shirt is gored, it must be chevoned.
  - Where seams join, stripes must come together to form a point. Try not to place darts on prominent bars. If possible, sleeves and collar ends should match.
  - Before cutting, check each pattern piece to see that it is correctly matched to all necessary corresponding pieces. Check the direction and placement of plaid and stripes in each pattern piece to see if it is correctly placed.
  - Pockets, flaps, etc. can be matched to the plaid or left purposefully unmatched (e.g. cut on the bias).
  - Try to match plaids or two-piece outfits where they overlap (top to bottom, jacket to vest and bodice to skirt or pants at waistline seam), so plaid will be continuous for full length of the garment.

Sewing Tips

- To ensure perfect matching on a bias seam, press under one seam allowance and place over the other. Slip-baste from right side; machine stitch from wrong side on basted line.

Sheers and Laces

Patterns

- Patterns for sheers should have few darts, seams or facings as the inside construction will be visible from the outside. Appropriate design details include gathers, ruffles, pleats, tucks and bound edges such as those found full skirts, draped panels, pullover tops and kimono sleeves.
- Avoid selecting a style and a close body fit, as the fabric will not withstand the stress at the seams.
- If possible, select a style that does not use a button or zipper closure, as the closure technique may be too heavy for the fabric.
- Additional fabric is needed for sheer garments when multiple fashion fabric layers (double sleeves, skirts and bodices) are cut.
- Select a simple pattern for lace garments so the fabric design becomes the focal point of the garment.
Keep darts, seams and facing to a minimum. Use the beauty of the fabric in soft, flowing styles incorporating gathers, ruffles, flounces, full skirts and draped panels.

Purchase extra lace fabric to accommodate one-way pattern layouts, to match large design motifs and to use fabric designs for edge finishes.

**Interfacing, Underlining, and Lining**

- Carefully select fabrics to give support as the hand and body of laces and sheers are easily changed by improper choices. The use of interfacing, underlining or lining will be influenced by the pattern design, the transparency of the fashion fabric and personal preference. Lining or underlining increases the opaqueness of the garment and durability of the fashion fabric as well as the visibility of lace and design motifs. Underlinings conceal seam and dart edges and provide a place to attach hem stitches.
- A custom designed undergarment (slip or camisole) can be used instead of lining or underlining.
- Whenever possible, eliminate interfacing and facings by cutting double layers or binding edges.
- Collars, cuffs and button closures are interfaced to maintain shape and provide support.
- Self-fabric, organza, tulle, voile, organdy or nonwoven interfacing designed for sheers in beige, flesh tone or coordinating colour are good choices.

**Preparation**

- Pre-treat all fabrics according to manufacturer’s care instructions. Because of the delicate nature of laces and sheers, pre-treat a sample before completing the process on your fabric.
- Fragile, washable fabrics should be placed in a pillowcase and the top basted shut before being laundered.
- Pre-treat “dry-clean only” fabric laces by placing face down on a towel and steam pressing.
- Make a trial garment from a soft muslin fabric. Transfer fitting changes to the pattern before cutting out the garment.

**Layout and Cutting**

- Pin laces and sheers, which slide, at frequent intervals to a sheet of lightweight paper or to a cutting board. Use silk pins or fine, sharp hand needles to keep from damaging the fabric.
- Clip the selvage edge of sheers at frequent intervals to eliminate any tightness or pulling.
- Pattern pieces are placed on lace fabric by using the motifs instead of the fabric grain line to position the pattern. Place altered pattern pieces so major motifs are centered, matched at seam lines and are symmetrically placed on right and left garment sections. Use a one-way layout in either a lengthwise or crosswise direction. Placing lace fabric over a dark surface makes the motifs more visible.
- An appliqué seam technique requires you to thread trace mark all seam lines and to cut out each pattern section following the design motif on overlapping seams. Thread tracings are long and short hand basting stitches, which mark seam lines and dart stitching lines. The cutting line will be crooked.
Transfer markings to sheers and laces by using tailor’s tacks or thread tracings. Use a pastel shade of thread as darker thread can leave lint marks on light colors. If a pattern marking falls over a space in the lace, use a piece of transparent tape on the wrong side and transfer marking to tape with a pencil.

**Machine Preparation:**
- Tension - Average to loose, depending on the fabric and thread
- Pressure - Average to light
- Needle size - 9 or 11
- Thread - Fine thread suitable to fabric (cotton-polyester or 100% polyester)
- Stitch length - You may wish to use shorter than average stitches.

**Sewing Tips:**
- Tissue paper can be placed between the feed dogs and the fabric to prevent marring the surface of the fabric when stitching.
- Seam choices for sheers include the French seam, mock French seam and the double-stitched seam. The French seam is generally used for shoulder and side seams. Sleeves are set into the armhole with a double-stitched seam and the seam allowances are overcast together.
- Use an appliqué or overlap seam to hide seams in a lace garment with a large design motif. You must plan to use this technique prior to cutting. Lap vertical seam at shoulders, sleeves and sides toward the back of the garment. Align thread tracing marks for seams, working with fabric right side up. Baste together on seam lines. Whipstitch overlapping lace motifs by hand or a medium width zigzag machine stitch. Trim excess seam allowance on under layer close to appliqué stitches.
- Use a double-stitched seam technique to construct darts in sheers and most laces. Use an appliqué seam to sew darts in lace garments with prominent design motifs.
- When handling a sheer fabric alone, neckline and armhole edges of a sleeveless garment are finished with a narrow, double fold, self-bias binding. When two layers of a sheer fabric are used for the same type of armhole and neckline, the binding will produce an attractive finish.
- Facings - Eliminate facings if you can’t hide them. Use a double-fold binding of self-fabric to create the edge finish or substitute single-fold bias tape, tricot binding or piping trim for facings.
- Closures - Use nylon snaps and lightweight, plastic buttons instead of metal ones which will be too heavy for the fabric. Thread or fabric loops are used for an attractive button closure in place of buttonholes. Hand worked or machine worked buttonholes give a nice effect, but will present difficulty in construction and durability. A tear-away stabilizer will keep the fabric from stretching and buttonholes free from puckers. Lightweight nylon or polyester coil zippers are inserted by hand picking.
- Hems are either very deep or very narrow. A deep hem or double hem of 10-15 cm (4-5 inches) is good for straight edges in crisp sheers. Narrow rolled hems are used on bias hem edges and straight hems in soft sheers. For a very narrow (fake rolled) hem:
  - Fold fabric to wrong side 3 mm (1/8”) outside marked hemline and press.
  - Stitch as close to the edge as possible.
  - Trim off excess fabric close to stitching.
Turn the stitched edge to the wrong side again; press.
Stitch again close to the edge.

Pressing

- Press carefully. Some sheers and laces pucker when pressed with steam.
- Cushion seams with brown paper strips to prevent press marks on the outside of the garment.

Silk and Silk-Like Fabric
Depending on style, the silk garment is appropriate for a variety of casual and semi-casual dress occasions.

Patterns

- Showcase the best qualities of silk fabrics by choosing patterns with easy fit and flowing lines. Soft details such as pleats, gathers, ruffles are ideal.
- Consider the hang, drape, weight, hand, surface design and weave of the fabric as well as the garment use when planning the garment.

Interfacing

- Interfacing should blend with the fabric colour and texture and offer gentle support.

Preshrinking

- The decision to launder or dry-clean the garment should be made before the fabric is cut.
- If the finished garment will be laundered, wash the fabric by hand or machine to preshrink it.
- Preshrink the interfacing, linings and other components appropriately for the garment care.

Layout and Cutting

- Since pins easily damage most silks, machine stitching and ripping, adjust the pattern before cutting, and, if necessary, make a test garment.
- Use a nap layout except when you are absolutely sure the fabric has no nap or shading.
- Pin silks, which tend to slide at frequent intervals to a sheet of lightweight paper. Cut the paper layer used to stabilize the fabric at the same time as the fabric.
- Use fine, sharp pins to keep from damaging the fabric.
- Hold fabric firmly as you cut out your garment.

Marking

- Transfer markings to silk using a fabric marker or chalk pencil.

Construction Techniques

- Use a cotton-covered polyester or polyester thread labelled extra fine or for lightweight fabrics on silky fabrics to reduce seam pucker problems.
- Woolly nylon thread in the loopers of your Serger will prevent thread imprints of an overlock seam finish.
- Some silk-like fabrics, such as fabric made from polyester micro fibres are very tightly woven. In order to prevent skipped stitches, you may have to use a special needle.
- Fabric weight, garment style and equipment determine the type of seams used for silky fabrics. Narrow seams like those used on sheers are appropriate and include French, double-stitched and flat-fell seams. When a plain seam is sewn, finish the raw edges with a clean finish, tricot binding or stitched and pinked technique. Shoulder seams can be taped to stabilize the seam.

Pressing

- Press carefully with a steam iron on low temperature.
- Place strips of brown paper under the seam allowances to prevent imprints on the outside of the garment. A press cloth will protect against water spots and a too hot iron.

Stretch fabrics

The following guidelines will assist you when sewing with knits and stretch fabrics:

Patterns

- Stretch sewing patterns have been produced with several sizes on one master pattern to compensate for variations in stretch.

- If you decide to select a regular pattern for knitted fabrics, be sure to choose one that is suitable for knits only. These patterns will tell you how much your fabric should be able to stretch in order to be suitable for the pattern. Your pattern package will also tell you what weight of knit is appropriate for the style of the pattern.

Preparation

- Your fabric should be preshrunk. Launder and dry it as you normally would a garment made of that fabric.

Layout

- Knits do not have a grain line but they do possess a rib, which can be regarded as a grain line, and as such, should run lengthwise.

- Check carefully for the right side of the fabric. Lightweight knits, such as tricot, usually curl to the right side.

Cutting

- To avoid stretching the fabric as you work do not let fabric hang over edges of the cutting table. Roll or fold excess so it is on the table.

- Place pins perpendicular to the stretch direction so as not to stretch the fabric out of shape when you pin it.

Machine Preparation

There are many good publications available on the subject of sewing with knit and stretch fabrics. Your project group may want to consult some other sources for advice; however, here are a few basic hints to get you started:

- Pressure – Medium to light. The heavier the fabric, the heavier the pressure that will be required.

- Stitching – 4-5 stitches per cm (12-14 stitches per inch) using regular stitch or use a medium zigzag stitch.

- Thread – Cotton or synthetic thread are both all right. Polyester thread will be stronger.
Needle – Fine to medium. A lightweight fabric such as tricot will require a finer needle than a double knit fabric. Refer to your sewing machine manual for the size of needle you should use. Universal or ballpoint needles are required on many knit fabrics to avoid skipping stitches. A regular needle may skip, snag fabric and cut the yarns.

Sewing Tips

- Interfacing may be used in details where stretch is not important.
- Lining use only a stretch lining or tricot if lining is needed. Cut lining with the stretch running in the same direction as the outer fabric.
- Zippers should be hand basted or taped into place, easing fabric as usual, not stretching. Sew zipper in by hand or machine.
- Buttonholes should be made perpendicular to the stretch direction if possible. A strip of interfacing along the whole length of the buttonholes will also help them to maintain their shape.
- Hem finishing as well as seam finishing is not necessary on knit fabrics.
- To make sure that you have enough stretch built into your garment, tug on a seam you have constructed. If many threads break, you haven’t got enough stretch built in. Stretch your fabric more as you sew or sew using a larger zigzag stitch.

Pressing

- Use steam or setting suitable to fibre content.
- Lift and lower iron; do not stretch or pull fabric.

Attaching Ribbing

Ribbing is often used at the neckline, bottom of sleeves and the lower edge of knit fabrics because it has greater stretch than other knits and the ability to return to its original shape once it has been stretched. Follow these directions for finishing edges of garments with ribbing:

- Cut ribbing only three-fourths the length of the measurement of the edge of the garment it will be sewn on.
- Cut it twice the width needed so that it can be folded in half lengthwise when sewn in place.
- Stitch the ends of the ribbing with right sides together and finger press the seam open. Fold the ribbing in half lengthwise with the right side out.
- The total length for the ribbing and the garment is divided into four equal parts. Place a pin perpendicular to the edge at each of these points.
- Pin the ribbing to the garment with right sides together matching the pin markings. If the garment has a seam allowance greater than 4 mm (1/4”), trim it to that width before stitching the ribbing to the garment.
- Stitch ribbing to the garment edge with the ribbing side up in a 6 mm (1/4”) seam. You will need to stretch the ribbing slightly as you sew it. Stitch the seam a second time to reinforce it.
Wool
The following guidelines will assist you when sewing with wool:

Preparing Woollen Fabric
Woollen fabric should be shrunk before cutting to straighten the grain and prevent further shrinkage after the garment is made. Although you may plan to dry-clean the finished garment, a very damp atmosphere, showers, perspiration and spilled water may still cause wool to shrink. The London Shrink Method is recommended for evenness of shrinking in most woollen fabrics.

London Shrink Method:
- Pull a thread on grain and tear or cut along this thread.
- Fold fabric with right sides together lengthwise.
- Wet a sheet and wring out excess moisture.
- Place sheet on your fabric so that sheet entirely covers the fabric.
- Fold and wrap in a dampened towel or place in a plastic bag for six to eight hours.
- Repeat if grain is not perfect on removal of sheet.
- Allow to dry. Press gently if required.

Cutting and Marking Wool
Use large dressmaking or tailor’s shears for cutting. It may not be easy to cut accurate notches in woollen fabric that ravels badly or in lumpy tweeds. Test the fabric on long straight seams and if notches ravel out use tracing paper, dressmaker’s chalk or tailor’s tacks to mark the notches. Tracing paper can also be used but the colour may disappear on woolen fabric so it’s best to test before using this method.

Pressing Wool
Press using steam from a steam iron or a damp cloth. Let heat and dampness, rather than pressure, open the seam. To prevent shine, leave seam damp and flatten with a pounding block to force out steam.

In soft or tweedy woollens, the ease in the sleeve caps, the ease at the elbows in two piece sleeves, or the ease in French bodices can be shrunken out by carefully steaming and pressing.

When Pressing Seams - Hold the iron just slightly above the seam until steam forms. Remove the iron and gently pat the seam flat with a pounding block or with your hand.

When Pressing Darts - Fold darts in the wrong direction. Lay a damp cloth over top or use a steam iron. Hold the iron above the dart until steam forms then fold the darts in the correct direction and steam in place. Remove the iron and put the dart flat with the pounding block. This method makes the dart line on the outside smooth and flat. For heavier woolen fabrics, such as those used for suits and coats, it may be necessary to cut the dart down the centre line and press the dart open. (Remember not to cut right to the point.) Double pointed darts in heavier woolen fabrics should also be pressed in this manner. A metal knitting needle (do not use plastic as it may melt) stuck into each point when pressing will help achieve sharp points.

For the final pressing on the right side, use a woollen and cotton press cloth, placing the woollen side against the garment and dampening the cotton side with a sponge if necessary.

Sewing Woollen Fabric
Stay stitch and sew with the grain. Woollen fabrics may stretch more than crisp cotton. Make sure that your pressure on the presser foot is set so that two pieces, equal in length, cut on the same grain come through the machine evenly.

**Woolen-Like Fabrics (Acrylics, Modacrylics)**

These fabrics are lightweight, soft and luxurious. They can be bulky and are warm to the touch like wool. They resemble wool more closely than any other man-made fibre, and for this reason, are often chosen for clothing that would otherwise be made of woollen fabric. They are non-allergic so may be worn by people who find wool irritating to the skin. They are sometimes blended with wool, particularly in knitting yarns and knitted fabrics. Depending on the weave, some of these fabrics do not ease well so select your style lines carefully.

**Preparing Acrylic or Modacrylic Fabrics**

- Straighten grain by cutting along a pulled thread.
- These fabrics may be shrink-resistant, but, if in doubt, use the London Shrink Method but omit pressing while damp.
- When thoroughly dry, use a very low, dry setting to touch up. NEVER use the Steam Shrinking Method on acrylic or modacrylic, as these fibres are extremely heat sensitive and may shrivel.

**Cutting and Marking**

- Follow directions for woollen fabric and if this fabric ravel badly, cut seam allowances wider so that when a zigzagged finish is used inside the frayed area the seams will not be too narrow.

**Machine Preparation**

- Use a very fine needle.
- Try a mercerized cotton thread and test for seam puckering, especially on a straight lengthwise seam. If puckering occurs after tension is adjusted, a polyester thread that has some stretch should be used.

**Pressing**

- Test iron on a scrap of fabric. Press with a very low setting and a dry iron.
- Use a seam press and open seams with fingers before applying the iron. A wrinkle pressed into the fabric may be permanent, as these fabrics are extremely heat sensitive.
Care of your Fabrics

The Canadian care labelling system is a voluntary practice and when used, the information on the label must be correct. The care label consists of five main symbols in three different colours: green (meaning “go” – no special precautions are necessary), amber (indicating “caution”), and red (symbolizing “stop”). For further emphasis, the red symbol usually has an “X” drawn through it. The five main symbols found in the Canadian system are:

- Washtub – represents laundering and cleaning.
- Triangle – represents bleaching.
- Square – represents drying.
- Hand iron – represents ironing or pressing.
- Circle – represents dry-cleaning

Care labels tell you how to clean an item (i.e. washing/drying/dry-cleaning) and what things to avoid (such as chlorine bleach). The labels usually have instructions in the form of symbols in order to overcome language barriers.

Special Care Techniques

Dry-cleaning

Some fabrics, such as rough crepes, moirés, heavy draperies and certain novelty weaves, regardless of the fibre used, are constructed in a way that makes them unsuitable to washing and must be dry-cleaned.

When clothes are received for dry-cleaning, they are marked for identification and inspected. Dry-cleaners make notes of rips, tears or unusual stains, as well as fabrics that require special handling. Breakable buttons or buttons that may dissolve are removed. Pockets and cuffs with seams are brushed to remove loose soil and lint. If you leave anything in pockets of garments that are to be dry-cleaned, these items will also be removed before the process is started.

Dry-cleaning solvents are then used to clean the garment. After cleaning and rinsing, excessive solvent is removed. If any spots remain, a spotter has the problem of finding the chemical that will not only remove the stain, but also that will not damage the fabric or dye.

In the finishing department, steam and air are used to press the garments. Buttons and trimmings that had been removed are put back on, minor rips and hem lines may be repaired. The garment then has a final inspection.

Drip-drying

Fabrics that are to be drip-dried should be hung to dry without squeezing or wringing. Garments handled in this manner will be less wrinkled and will retain their original shape better.

Care for Woolens and Knits

Woolens need careful handling. Wool fibres are covered with scales. If rubbed or soaked too long in hot water during laundering, the fibres swell and scales lock. This causes permanent shrinking and felting of fibres.

How to hand wash a sweater:

- Trace the outline of the sweater on paper or an old sheet.
- Shake free from dust.
- Use warm soft water and mild soap flakes or a mild granulated detergent in water that feels lukewarm to touch.
- Prepare suds, making sure flakes or granules are all dissolved. Do not get the water too soapy because too much soap will be difficult to remove from your sweater.
- Squeeze suds through garment. Do not rub or wring-doing so may stretch the garment out of shape.
- Rinse several times in water the same temperature as the suds until the water is clear.
- Roll in a towel and squeeze out the excess moisture. Do not wring.
- To dry, lay flat on a dry towel, patting or pinning the wet garment into its original shape. Dry in a moderately warm place away from heat. If you pin, be sure to use rust-proof pins.

Mending Runs in Knits

Runs in knits should be mended as soon as possible to prevent further running. Run-stop fluid, nail polish or water will all stop runs temporarily.

Storage of Knits

Knits should be folded and never hung because the weight will tend to stretch the garment out of shape.

Storage of Woolens

Carefully wash or dry-clean all garments before storing. Spray thoroughly with a moth repellent or sprinkle generously with moth balls or crystals, or line container with a newspaper – the ink will act as a deterrent for moths. Seal the clothing in a paper garment bag or package. Make sure the container is air-tight.

Care of Silks

Pure silk fabrics are usually by dry-cleaned or washed by hand. Washable silks can be machine washed. Follow fabric care instructions on the garment or fabric label.

If you plan to wash a silk garment, test a fabric sample to determine colourfastness. Hand wash pure silk in warm water and a mild detergent, rinse in cool water, towel dry and press fabric while slightly damp.

Leather and Suede

Never launder leather and suede, as they must always be dry-cleaned. Leather can be wiped with a damp cloth and brushing with a bristle brush can clean suede. Leather creams can be used to restore leather’s natural oils and special leather protector sprays and creams are available to help maintain and protect leather. Shiny spots on suede may be brushed up using a fine emery board.

Synthetic Suede

Most synthetic suede can be machine washed and dried but always check the label first. Use lots of steam when pressing synthetic suede and be careful not to flatten the nap. A thick press cloth or several press cloths will prevent your iron from leaving imprints on the fabric’s surface. Steaming and brushing the fabric with a soft bristled toothbrush can restore the nap. Always use a low temperature on your iron when pressing suede or the thermoplastic fibres may melt.
Sheers and Laces
Clean fabrics according to label instructions. Press carefully as some sheers and laces pucker when pressed with steam. Cushion seams with brown paper strips to prevent press marks on the outside of the garment.

Fake Furs
When pressing fake furs, use plenty of steam and if possible, steam lightly without touching the fabric so as to flatten the nap as little as possible. You may also wish to use a needle board. Fake furs may be washable or dry-cleanable depending on the fibre content.

Pile Fabrics
Because of their nap, pile fabrics should be lightly steam-pressed using a needle board. Fibre content will determine wash ability. Always check the care label before washing.

Outdoor Wear
The fibre content of the fabrics used in the item will determine the method of cleaning. Insulated garments require a little extra attention.

- Down filled items can be washed by hand or by machine on the gentle or delicate cycle. Use mild soap or detergent and rinse thoroughly to remove all soap residues. Down garments can be machine dried at a low heat. Add several bath towels and a pair of clean running shoes to the dryer - the towels help absorb the moisture and the shoes beat and separate the down clumps. Be sure the down is completely dry because it will mildew if left damp. Down can also be dry-cleaned.

- Clean items insulated with polyester batting by machine washing on a gentle cycle and drying at a low heat.

For off-season storage, store insulated items loosely folded or hung over a hanger in a clean, dry place. Don’t compress tightly. Don’t use plastic bags because they prevent the item from breathing and allow moisture to build up and cause mildew.

Down items can be fluffed up in a warm dryer to restore the down to its maximum loft after storage. Special adhesive mending tape is available for use on insulated item tears. Repair all tears immediately to keep the insulation from coming out.
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<th>Disadvantages</th>
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<th>Suggested Use</th>
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<tr>
<td><strong>Cotton</strong></td>
<td>Broadcloth, gingham, calico, seersucker, corduroy, denim, flannelette, duck, chino, etc.</td>
<td>Durable, cool, dyes well, absorbent, ease of laundry and economical</td>
<td>Shrinks and wrinkles (unless treated), colour loss by “bleeding” and sunlight, damaged by mildew</td>
<td>First test for “bleeding”, machine wash, line or machine dry. Iron while damp.</td>
<td>Blouses, skirts, dresses, uncreased pants, sportswear, pajamas, children’s clothing, table linens, crafts, samples.</td>
</tr>
<tr>
<td><strong>Cotton/ Polyester</strong></td>
<td>As above. Heavy or bottom weight in gabardine, chino, sailcloth, duck, etc.</td>
<td>Fewer wrinkles, resistant to abrasion and tearing. Good crease retention. Laundry ease, economical.</td>
<td>If high percentage of polyester, oily stains a problem. Less cool and absorbent than cotton.</td>
<td>Machine/hand wash, medium cool temperature, line machine dry, mod. Iron, pre-treat oily stains.</td>
<td>As above. Pants (creased), bottomwear weight suitable for jackets, suits, pants, sportswear, jumpsuits, etc.</td>
</tr>
<tr>
<td><strong>Linen</strong></td>
<td>Damask, handkerchief, lawn, suiting, dress weight, slub fabrics, etc.</td>
<td>Cool, strong, absorbent, crisp.</td>
<td>Wrinkles, shrinks, damaged by mildew</td>
<td>Dry clean to retain crispness (suits, jackets, skirts).</td>
<td>Pants, jackets, suits, dresses, skirts, table linens, needlework, samples.</td>
</tr>
<tr>
<td><strong>Wool</strong></td>
<td>Worsted, woolens, felt, crepe, tweed, gabardine, flannel, melton, challis, jersey.</td>
<td>Absorbent, warm, durable, wrinkle and abrasion resistant, molds well and keeps creases, good insulation.</td>
<td>Shrinks, attracts moths.</td>
<td>Dry-clean, some hand washable. Don’t rub or agitate. Press with cloth and steam iron. Press, don’t iron.</td>
<td>Coats, suits, skirts, pants, blazers, dresses, felt-decorations and crafts.</td>
</tr>
</tbody>
</table>
# Fabric Properties

<table>
<thead>
<tr>
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<tr>
<td>Silk</td>
<td>Raw silk, broad cloth, shantung, crepe de chine, organza, linen, chiffon.</td>
<td>Absorbent, warm, strong, lustrous, drapes well.</td>
<td>Weakened by perspiration and sunlight</td>
<td>Dry clean unless labeled, hand washed (some colours may bleed). Press on wrong side at low temperature.</td>
<td>Blouses, dresses, suits, jackets.</td>
</tr>
<tr>
<td>Rayon</td>
<td>Linen, challis, suitting, matte jersey</td>
<td>Static resistant, absorbent, dyes well, can be bleached.</td>
<td>Wrinkles, shrinks, poor, abrasion resistant, looses strength when wet, holds body heat.</td>
<td>Dry clean or gently machine wash.</td>
<td>Dresses, pants, suits, jackets, skirts.</td>
</tr>
<tr>
<td>Acetate</td>
<td>Taffeta, satin, silk like fabrics, tricot.</td>
<td>Drapes, dyes well, silk like luster dries quickly</td>
<td>Weaker fibers, wrinkles, weakened by perspiration, fades, “static cling”.</td>
<td>Dry clean or gently machine wash, tumble dry (low), iron at low temperature.</td>
<td>Lingerie, sportswear, swimwear, rainwear, formal wear.</td>
</tr>
<tr>
<td>Nylon</td>
<td>Knits – sheers to heavy weights, cire, waterproof fabrics, and velvet.</td>
<td>Strong, elastic, durable, resilient, warm, abrasion resistant, wrinkle resistant, holds shape well, resists moths and mold.</td>
<td>Pills or snags easily, static clings, non-absorbent, holds body heat</td>
<td>Machine wash, line or tumble dry, iron.</td>
<td>Blouses, dresses, suits, jackets, sportswear, knits.</td>
</tr>
<tr>
<td>Polyester</td>
<td>Single or double knits, fake fur, pile, corduroy, taffeta, crepes, sheers, linings, trims, laces.</td>
<td>Strong, durable, resilient, warm abrasion resistant, wrinkle free, holds shape well, and resists moisture and mold.</td>
<td>Stains are hard to remove, pills, static cling, holds body heat</td>
<td>Machine wash, tumble dry, needs little or no ironing.</td>
<td>Sports wear Gagging suits etc.), pile, jackets and coats, suits and skirts.</td>
</tr>
</tbody>
</table>