

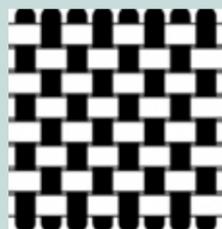
- ◆ **Weaving** and **knitting** are the two main methods of fabric construction. Both have subtypes.
- ◆ Woven fabrics have more structure and are more stable.
- ◆ Knitted fabrics have the ability to stretch.
- ◆ The properties of woven or knitted fabric change depending on the tightness of the construction.

Woven construction

- ◆ Weaving is the interlacing of two sets of yarns at right angles.
- ◆ **Warp** yarns run the length of the fabric.
- ◆ **Weft** yarns run across the fabric.
- ◆ Made on a loom.

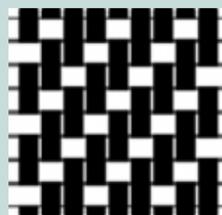
Plain weave:

Most common type; strong and stable.



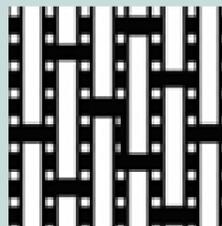
Twill weave:

A strong weave identified by diagonal lines. Herringbone is a version of this weave with zig-zag lines.



Satin weave:

Has a very shiny side caused by the warp yarns floating over the weft yarns; drapes well but snags easily.



Pile weave:

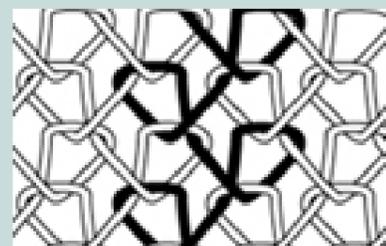
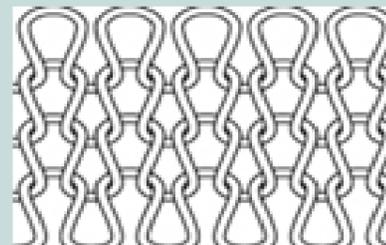
Has a raised surface caused by loops or tufts of yarn that stand up. These can be cut to create plush fabrics.

Pile weave has a 'nap'.



Knitted construction

- ◆ **Weft** knitting is formed by continuous rows of loops interlocking *horizontally* across the fabric.
- ◆ Made from one continuous yarn.
- ◆ It unravels easily.
- ◆ Ladders or runs if cut.
- ◆ It stretches easily but can lose shape.
- ◆ Made by hand or machine.
- ◆ **Warp** knitting is formed by yarns interlocking vertically along the length of fabric.
- ◆ Difficult to unravel.
- ◆ Does not ladder if cut.
- ◆ Has stretch or elasticity but holds its shape well.
- ◆ Lies flat when it has been cut.
- ◆ Can only be made on a machine.



Non-woven fabrics

Non-woven fabrics are made directly from fibres. They are:

- ◆ Cheap to manufacture
- ◆ Cheaper to use as there is no grain
- ◆ Do not fray when cut
- ◆ Weaker than knitted or woven fabric

Felted fabric

Felted fabrics are made from wool.

The scales on wool fibre matt together when exposed to heat, moisture and mechanical action.

- ◆ Needle felts consist of synthetic fibres matted together mechanically using barbed needles.

Technical textiles

Bonded Fabrics

- ◆ Bonded fabrics have a top fabric that is laminated to a thin layer of lightweight woven fabric.
- ◆ Adhesive is used to hold the layers together.
- ◆ *Faux* leather is an example of a bonded fabric.

Laminated fabrics

- ◆ Laminated fabrics consist of two or more layers of fabric.
- ◆ The layers are held together either by adhesives or a thin layer of thermoplastic film that is heat set to fix the layers.
- ◆ Gore-Tex is a laminated fabric that includes a breathable hydrophilic membrane.
- ◆ Gore-Tex is used for high performance clothing as it lets moisture out but repels rain and wind.

Geo-textiles

- ◆ Geo-textiles are permeable woven or bonded, natural or synthetic textiles.
- ◆ Used with soil to support drainage and protection against erosion.
- ◆ Also used in agriculture and civil engineering.

Aramids

- ◆ **Kevlar** has excellent resistance to heat, corrosion and high tensile strength.
- ◆ Can withstand extreme conditions, is bullet proof and resistant to knife attack.
- ◆ **Nomex** will withstand extreme conditions.
- ◆ It is resistant to heat and flames.