

Knowledge of Textile Goods

Teacher: Ing. Marie Havlová, Ph.D.

Lesson No. 2: [Woven fabric weave identification](#)

Woven fabric weave identification

The **weave** is the way of mutual interlacing of warp and weft yarns.

The **pattern repeat** is the interlacing of a certain number of warp and weft yarns, which is still repeated in the fabric.

Classification of weave:

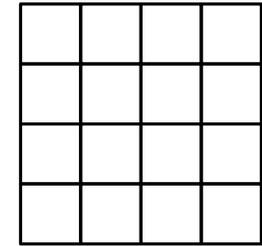
- **Basic weaves** – plain weave, twill weave, satin weave
- **Derived weaves** – weaves derived from basic weaves
- **Combined weaves and freely composed weaves** (e. g. twill backed, crape, cellular, canvas weave, ...)
- **Special binding techniques** (e. g. leno weave, terry weave, ...)

Terminology and schematic plotting

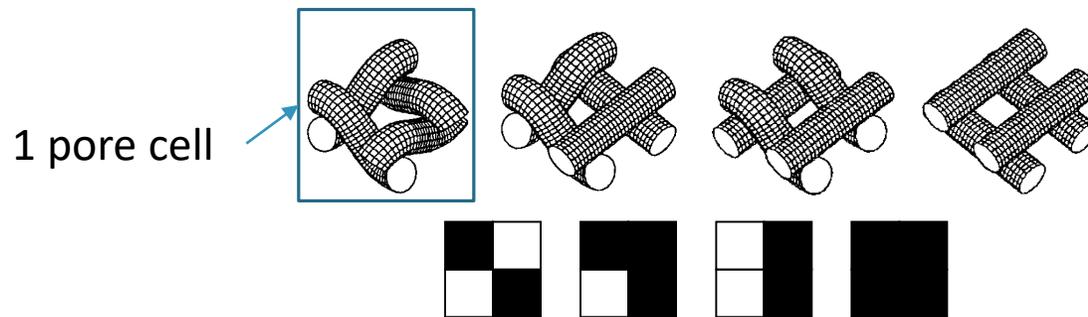
Warp binding point – the warp yarn is above the weft.



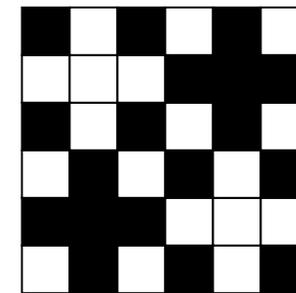
Weft binding point – the warp yarn is under weft.

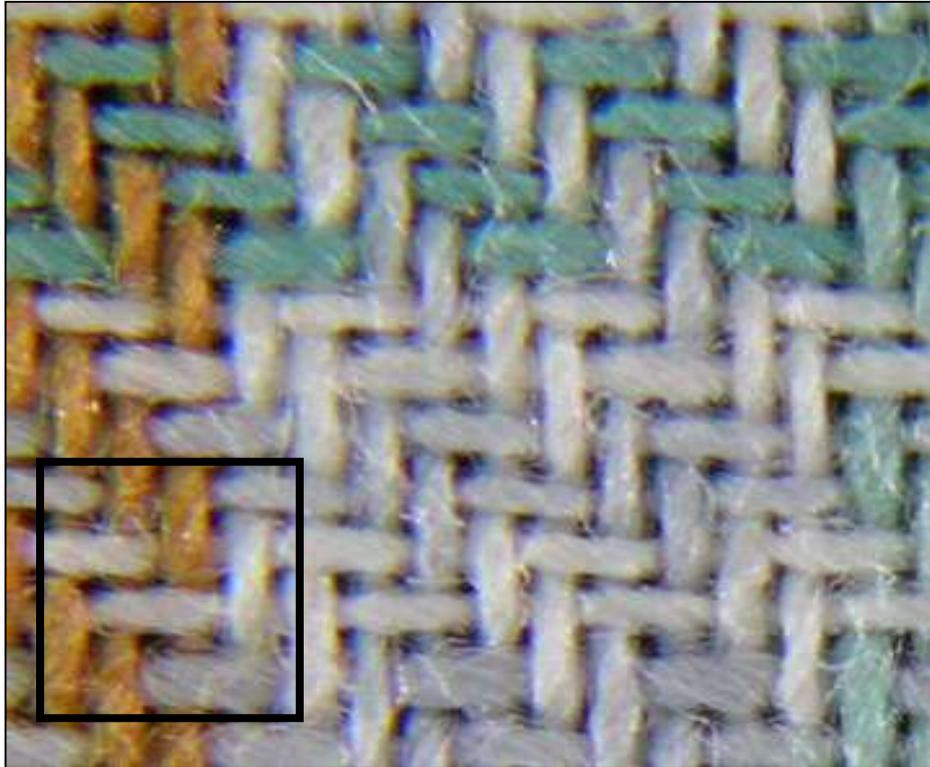
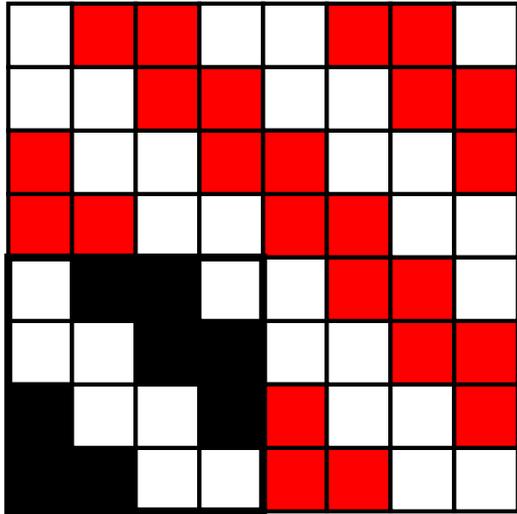


Due to the various distributions of binding points in the fabric there are different types of weaves:



For example:



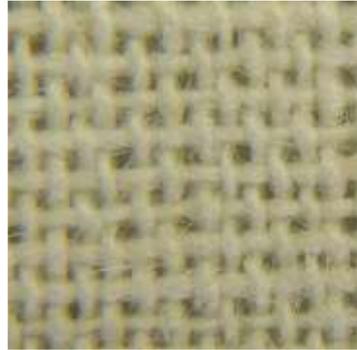
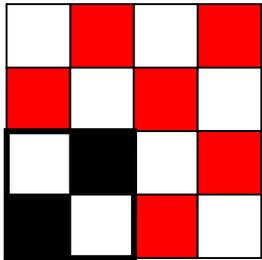


Try it at home.

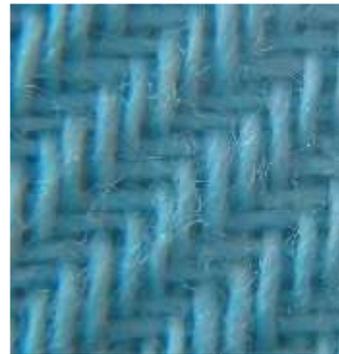
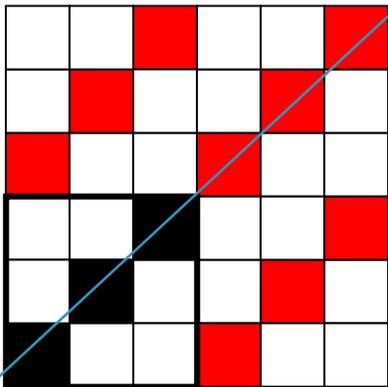
-   Symbol for warp binding point (in pattern repeat)
-   Symbol for weft binding point
-    Warp binding point in the next rendering

Basic Weaves of woven fabrics

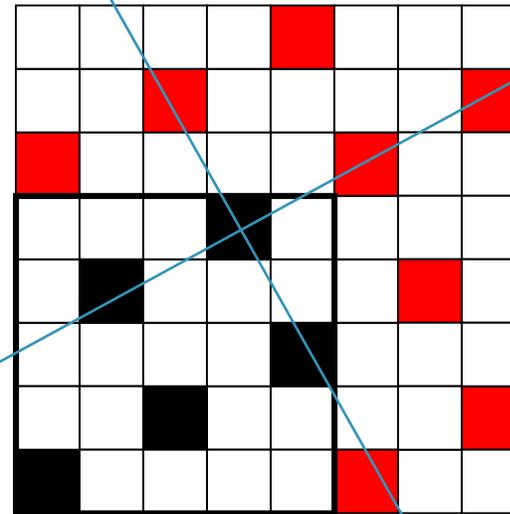
Plain weave:



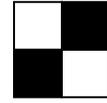
Twill weave:



Satin weave:



Plain weave



Pattern
repeat



Schema of cross-section

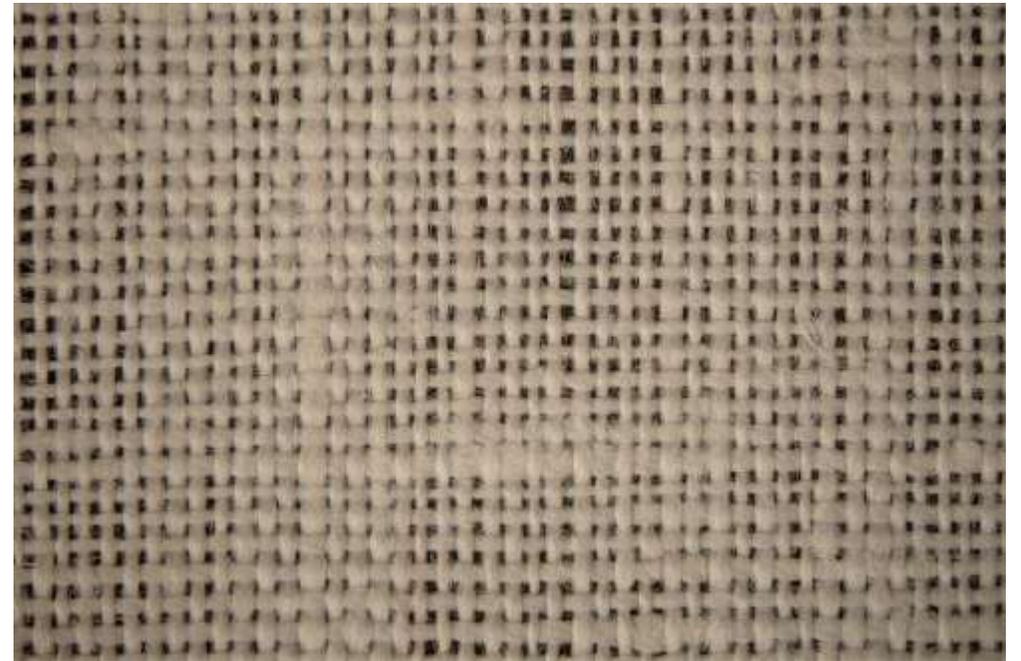
It is the simplest and most widely used weave.

For a number of woven fabrics is the plain weave typical (e. g. PONGEE, TAFFETA, DONEGAL, CHAMBRAY, BATISTE, ...).

It has a smallest pattern repeat.

The appearance of the fabric is influenced by:

- Sett of warp yarns
- Sett of weft yarns
- Fineness of yarns
- Colours of yarns

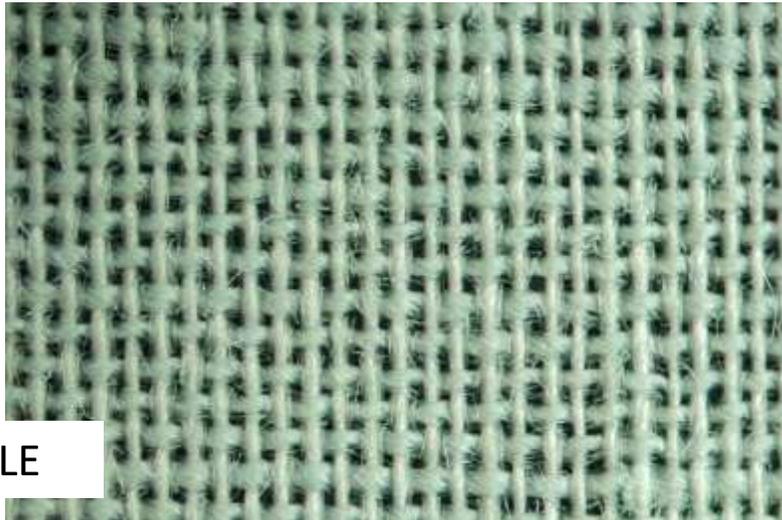




DONEGAL
- TWEED



GINGHAM



VOILE

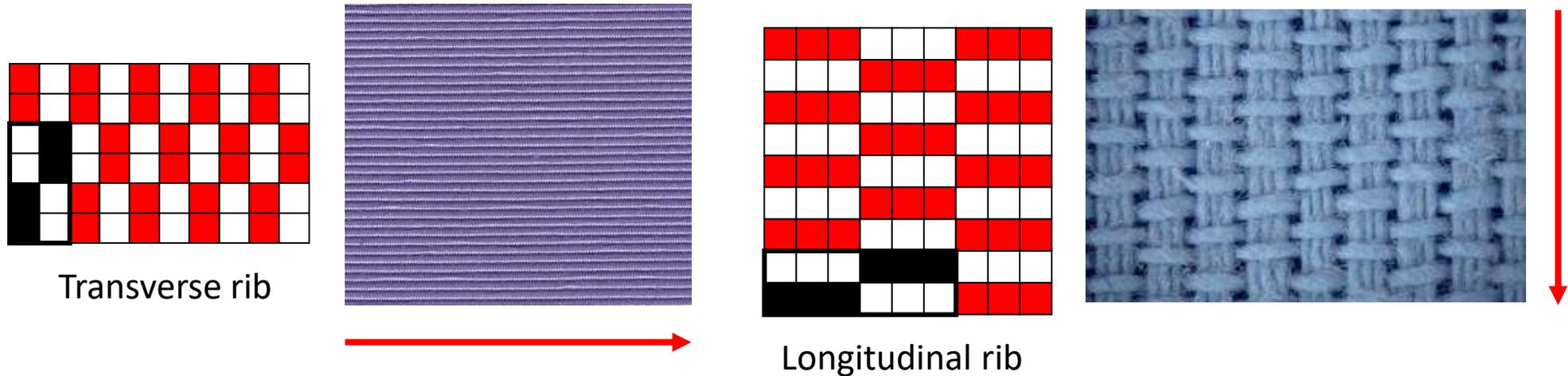


BATISTE

Rib weave

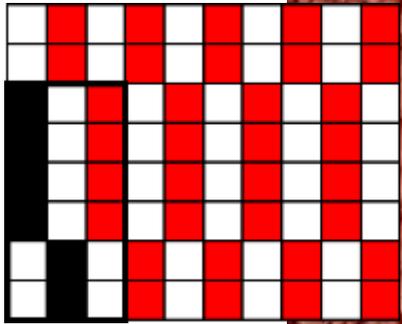
Rep weave

The rib weave is derived from the plain weave by adding the binding points in one direction:

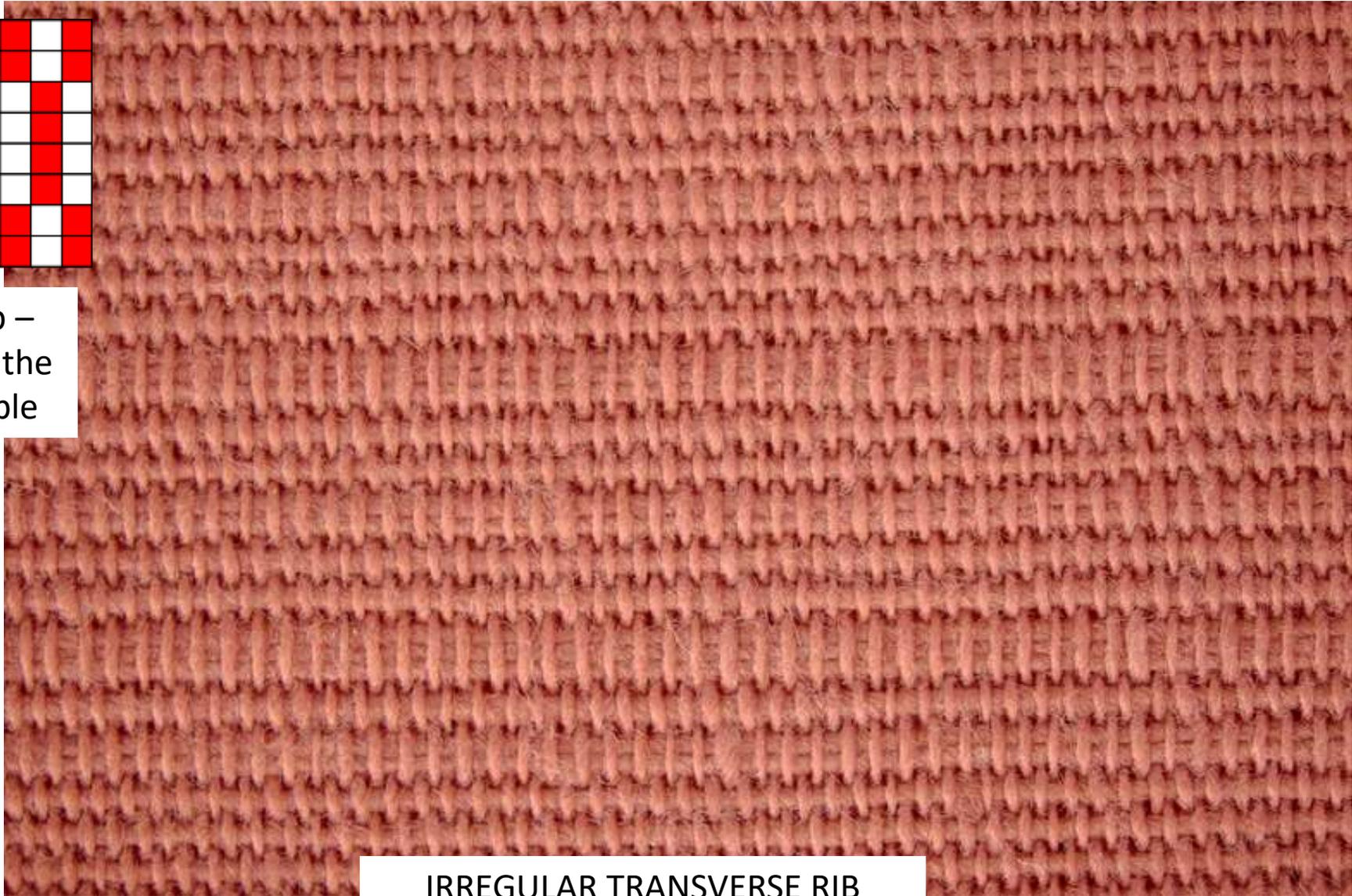


The fabric with rib weave is characterized by very fine ribbing - longitudinal or transverse.

Sometimes it is also used term [rep weave](#).



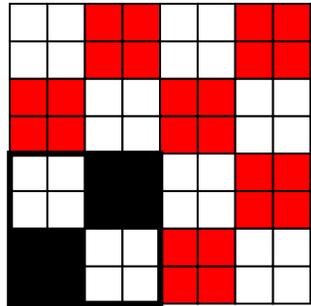
Irregular rib –
the width of the
ribs is variable



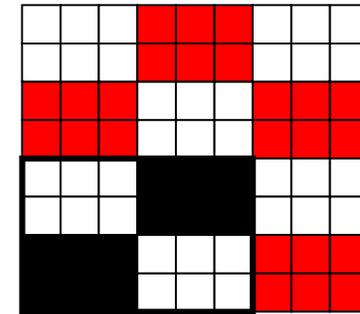
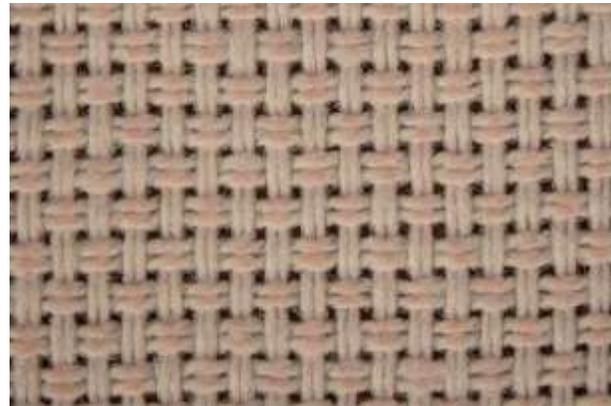
IRREGULAR TRANSVERSE RIB

Basket weave

Basket weave is derived from the plain weave by adding the binding points in both directions.



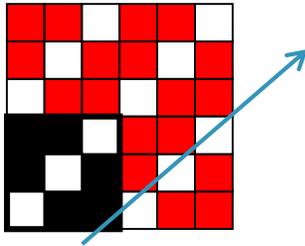
Regular basket



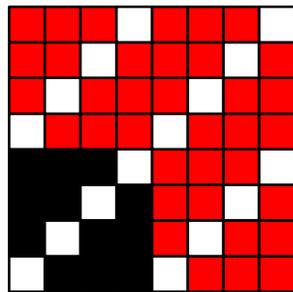
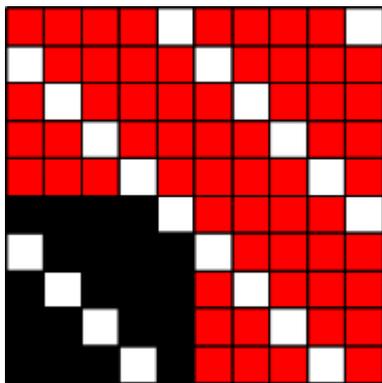
Irregular basket

Warp twills

Twill weaves are characterised by diagonal ribbing:

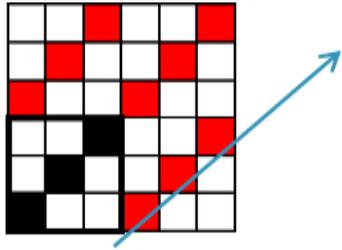


Warp twill – there are more warp binding points in the pattern repeat.

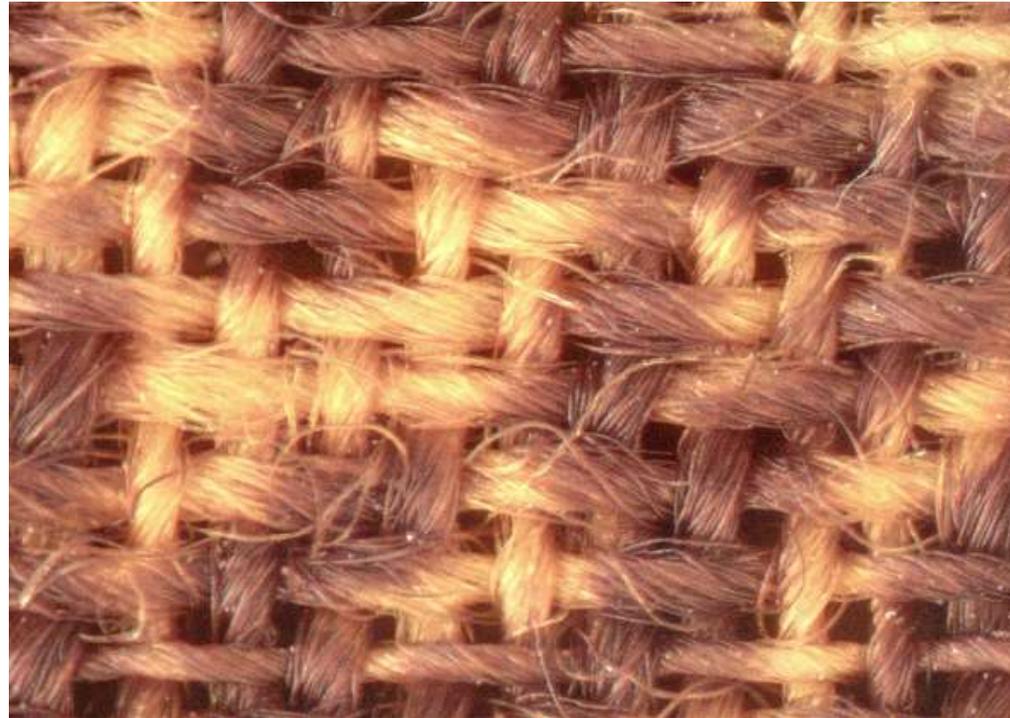


Warp twill is characteristic, for example, for DENIM or SERGE fabrics.

Weft twills



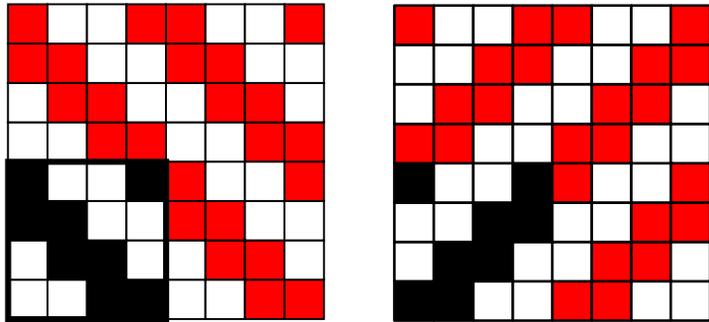
Weft twill – there are more weft binding points in the pattern repeat



Weft twill is characteristic, for example, for CASHMERE fabric.

Reinforced twill – two-and-two twill

It is a **double-face twill** (i.e. the same numbers of warp and weft binding points are in pattern repeat).



Two-and-two twill is characteristic for a number of typical **wool fabrics**, for example HOMESPUN, PLEID, HOUNDSTOOTH.

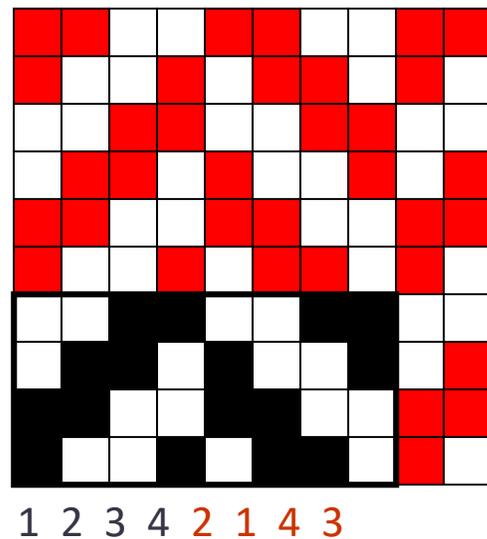
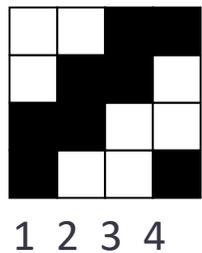


Herringbone twill

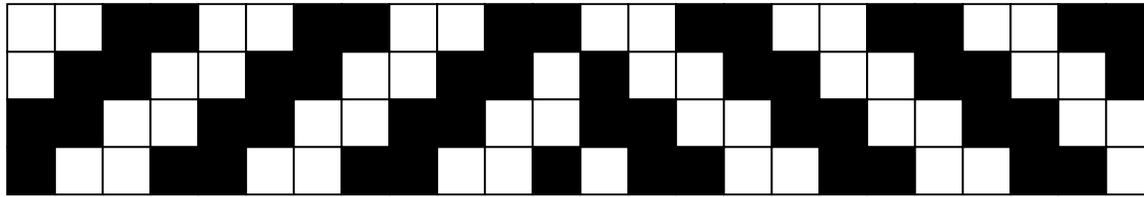
Broken twills after pattern repeat (*herringbone twills*) – are derived usually from the reinforced twills.

The direction of **diagonal ribbing is changed** after one or more pattern repeats of original weave. In the same time **the weave is shifted about half of pattern repeat** – consequently in this place the **sharp turns** in the weaving sequence is created.

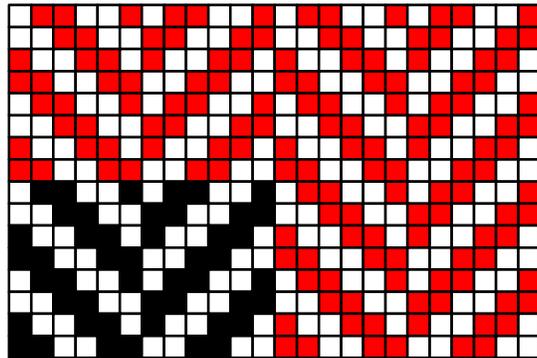
For example:



Herringbone twills:

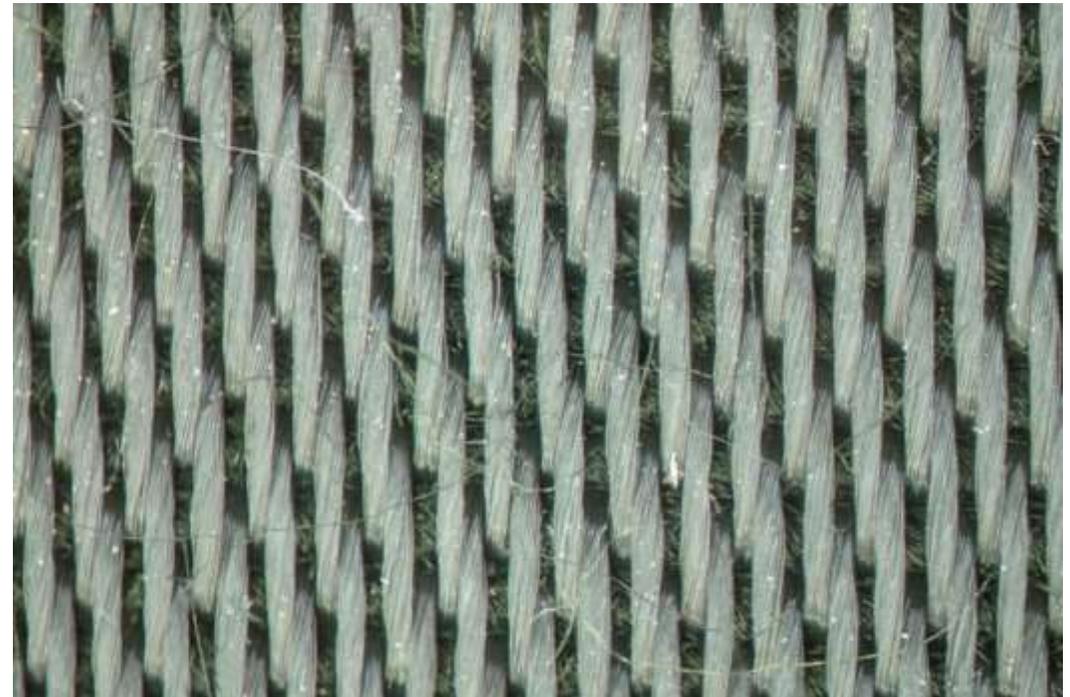
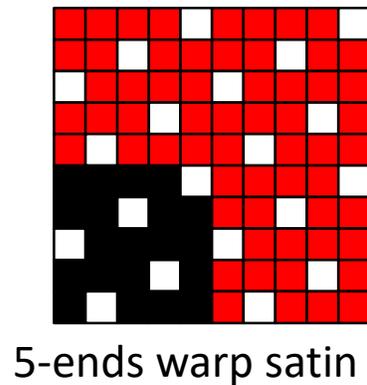
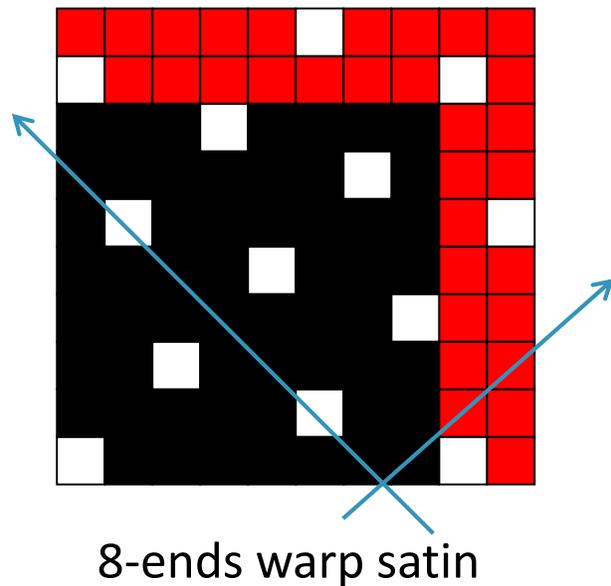


1 2 3 4 1 2 3 4 1 2 3 4 2 1 4 3 2 1 4 3 2 1 4 3



Warp satins

Satin weave also has a diagonal line spacing, but much less pronounced than twill.



Warp satin – there are more warp binding points in the pattern repeat

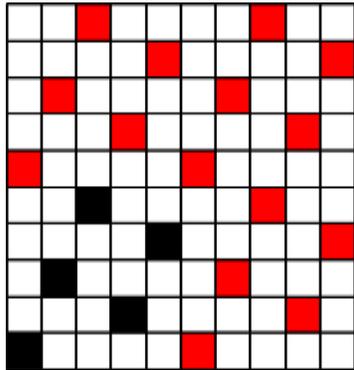
Warp satin is characteristic, for example, for cotton or silk SATEEN fabrics.



SATEEN fabric

Weft satins

Weft satin – there are more weft binding points in the pattern repeat.



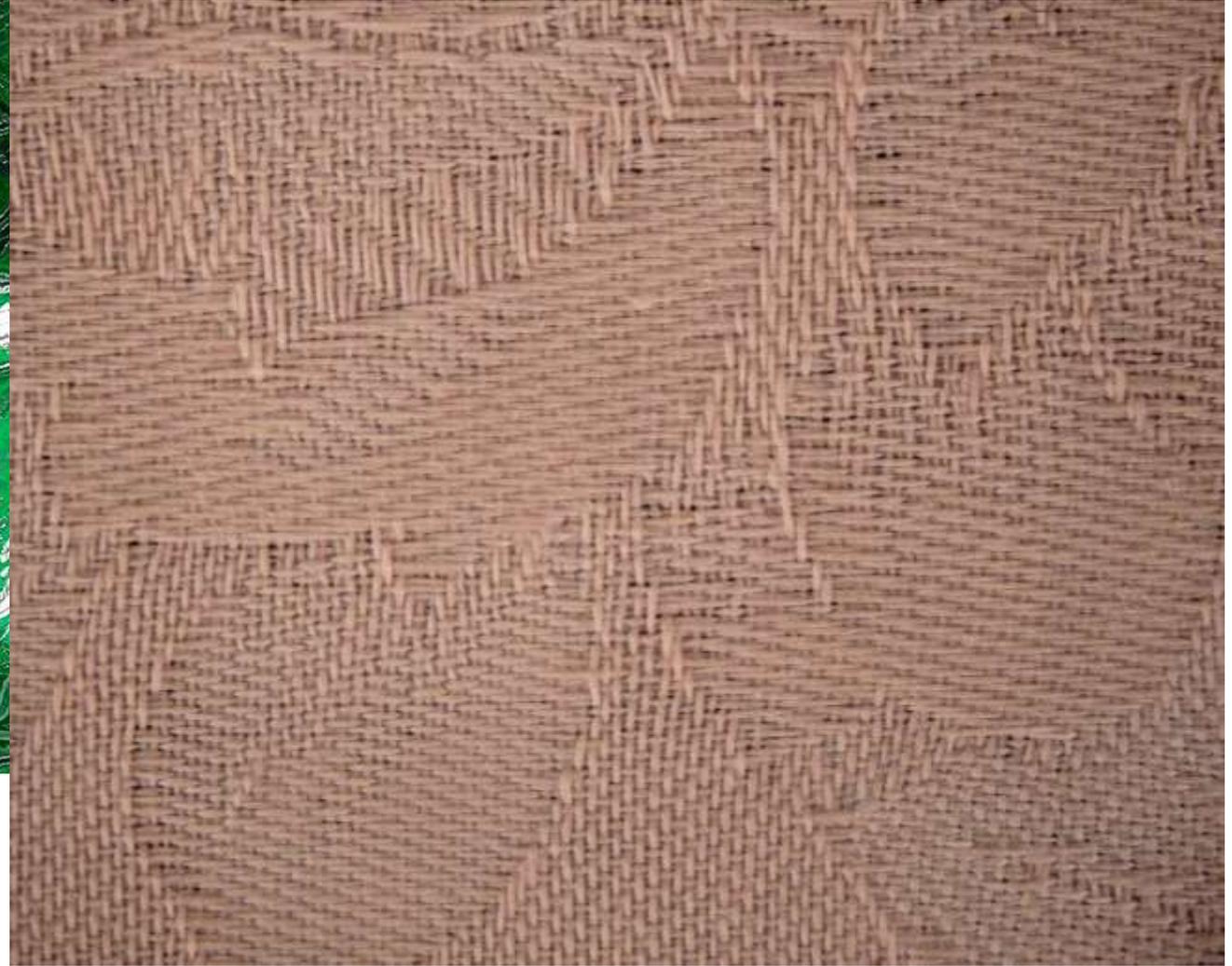
The weft satin is used as alone less often than the warp satin.

Patterning using alternation warp and weft satins is common.





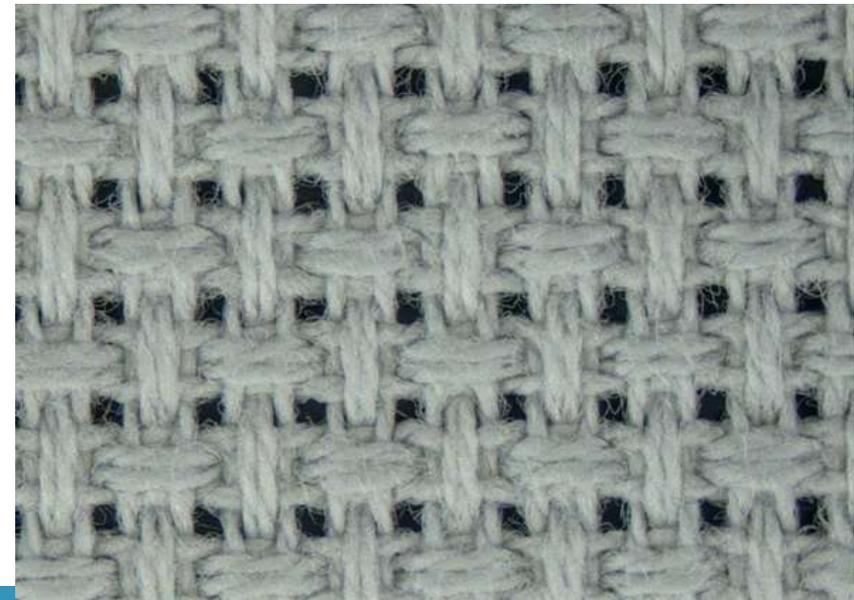
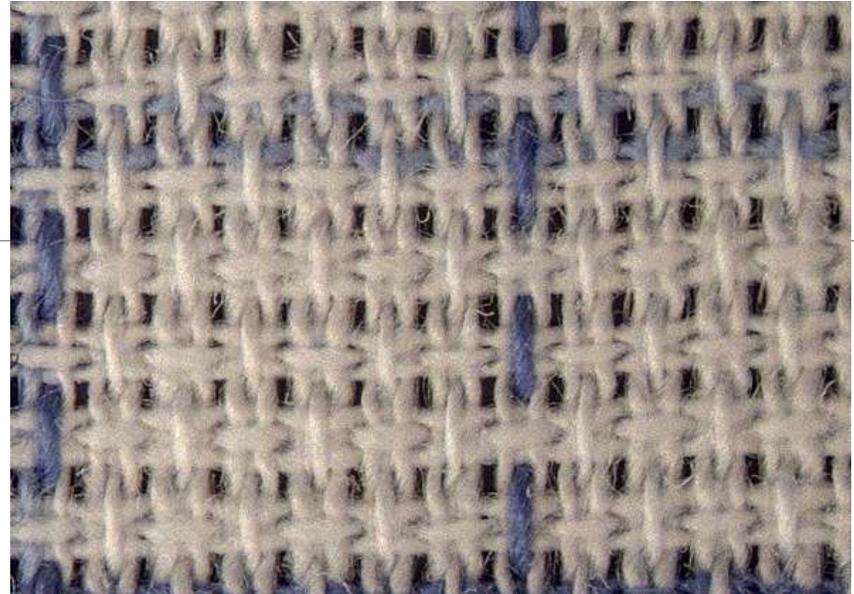
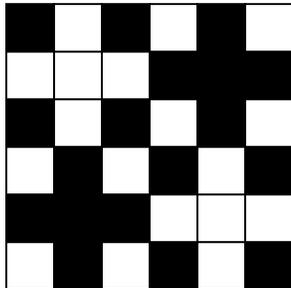
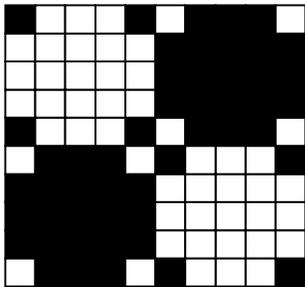
BROCADE fabric

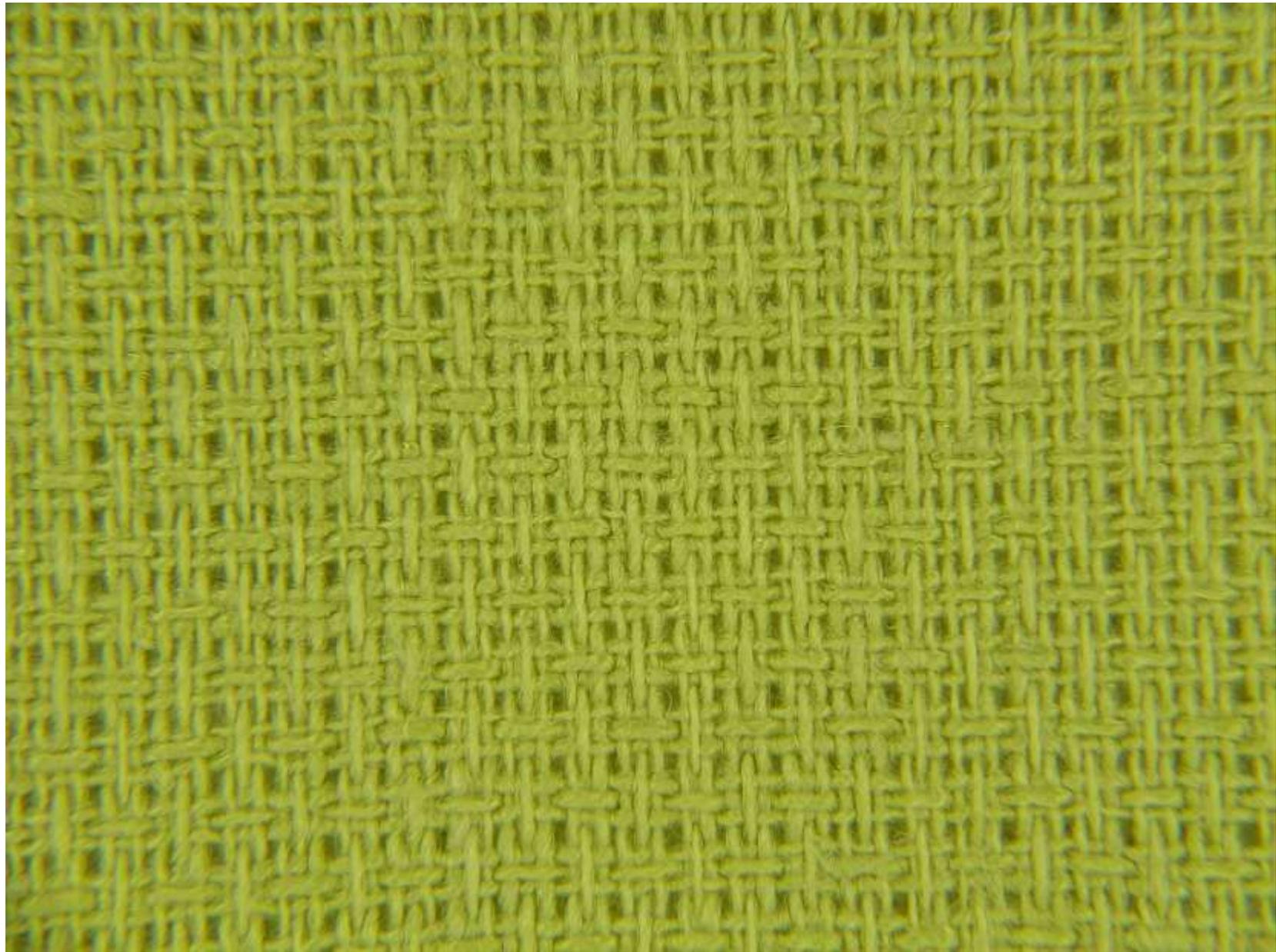


DAMASK fabric

Canvas weave

- It is composed of two derived plain weaves by inserting them into each other.
- It has usually a typically grid (*square*) structure.



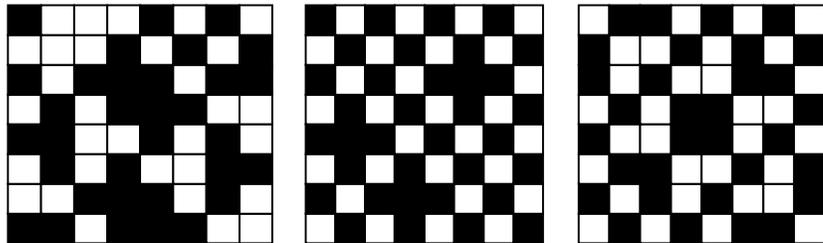


Crepe weaves

Crepe weave may be created as **combined weave** or as **freely composed weave**.

The pattern repeat generated no links or other regularities.

The fabric is characterised by grainy surface (sometimes „**granite weave**“).



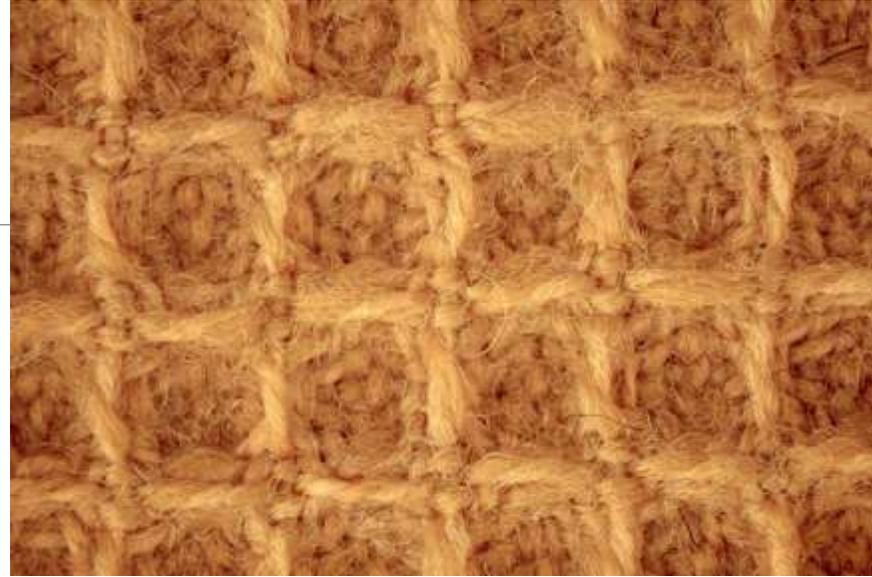
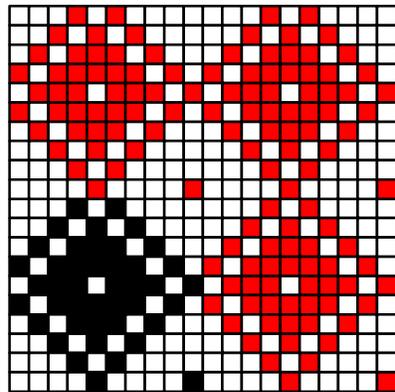
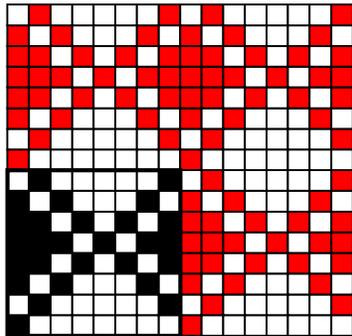
There are many variations of crepe weave



Cellular weave

This weave forms a relief surface on the fabric, usually in a design of small squares.

The contours of the squares are raised and the centres are deepened.

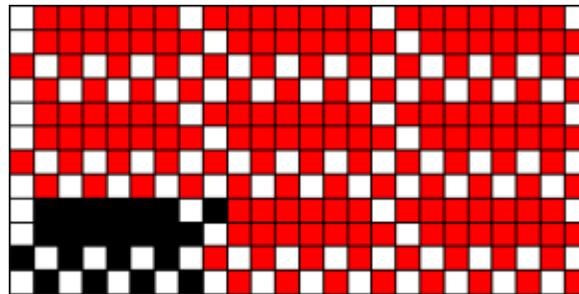
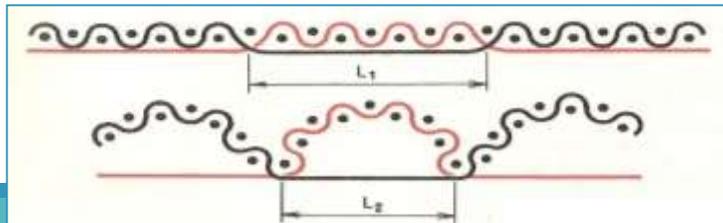
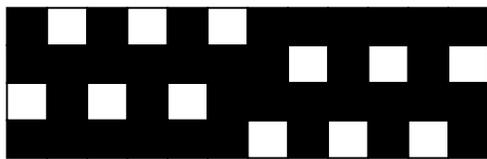


Twill backed weave

It is created from a plain weave, which is alternated with areas of free-lying warp or weft yarns.

These more freely woven places give the weave its characteristic relief ribbing.

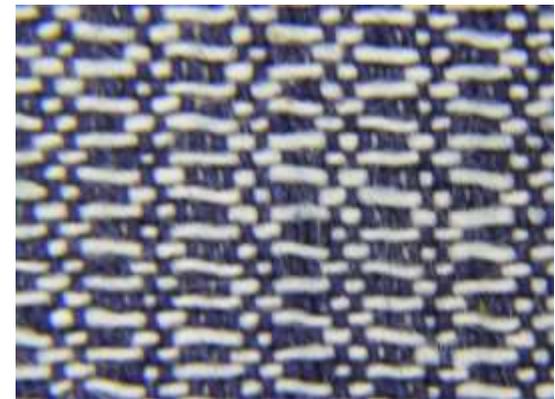
The ribs may be highlighted using wadding threads.

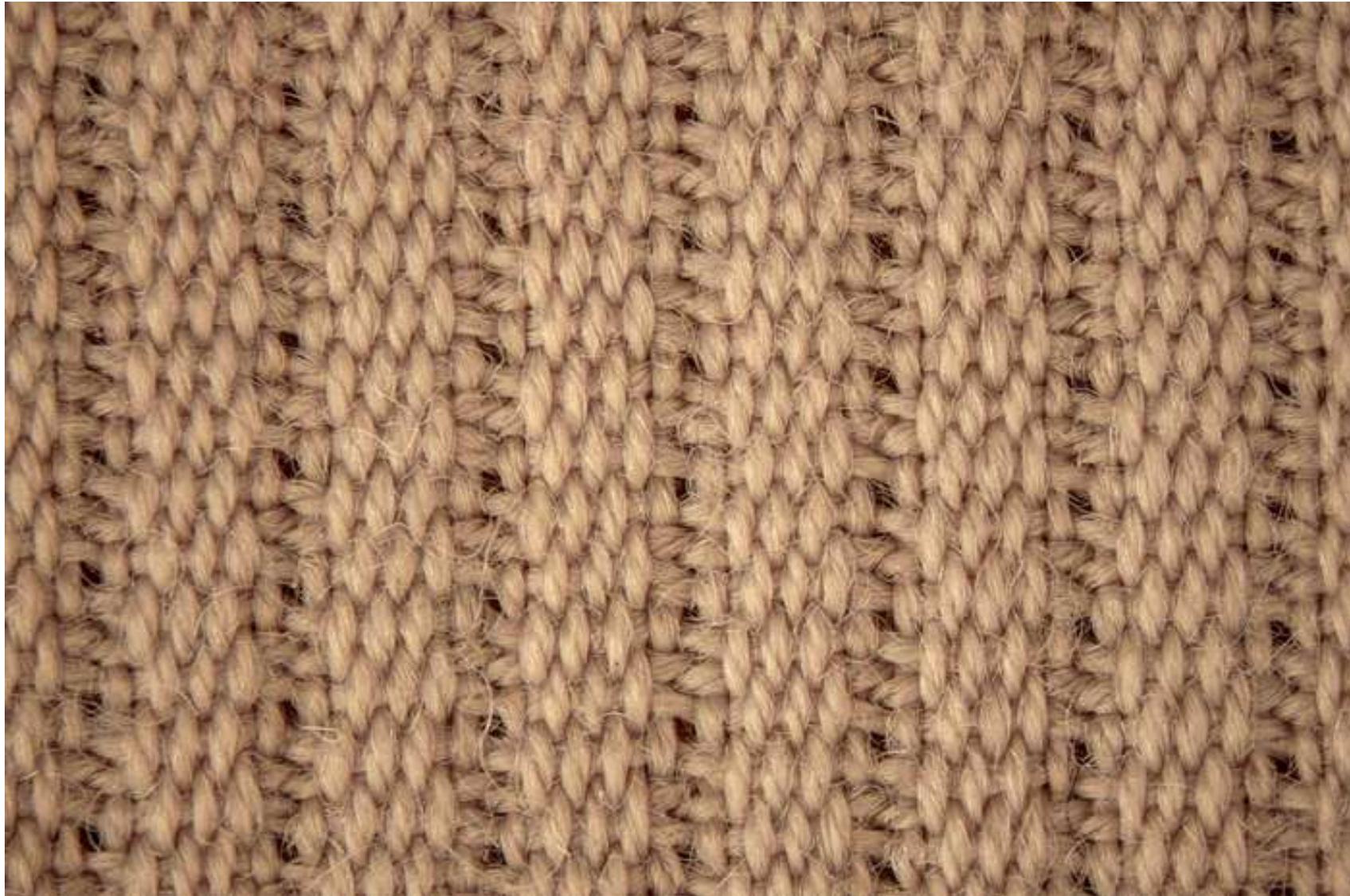


Face side



Reverse side

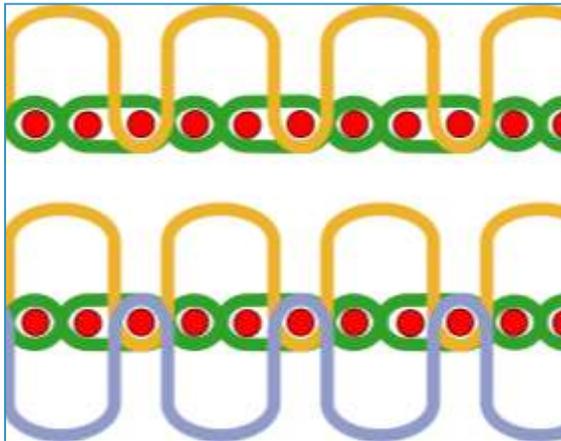




Twill backed fabric

Special binding technique – terry fabric

The loops on the fabric surface are created a special loop warp (- terry warp).



The yarns in the loops are loosely twisted so the water can easily get into them.

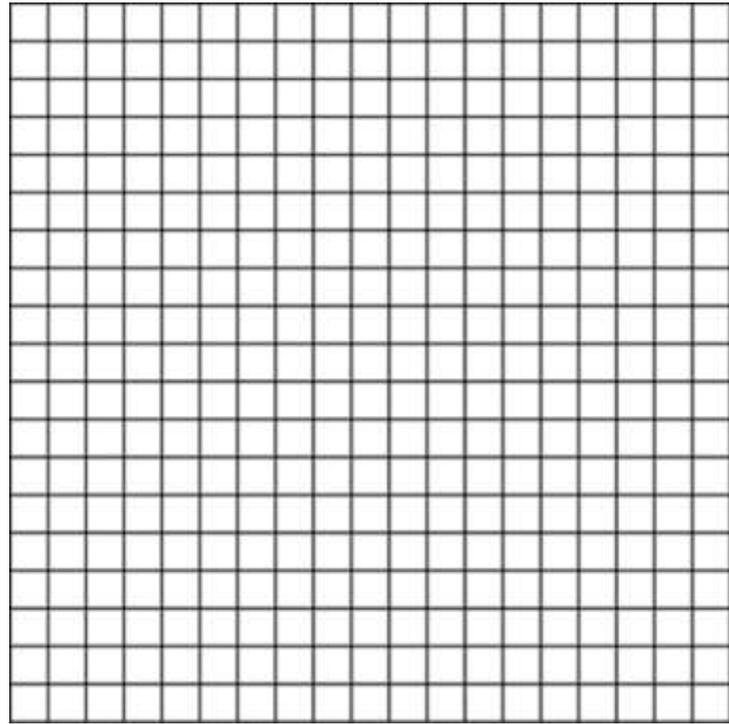
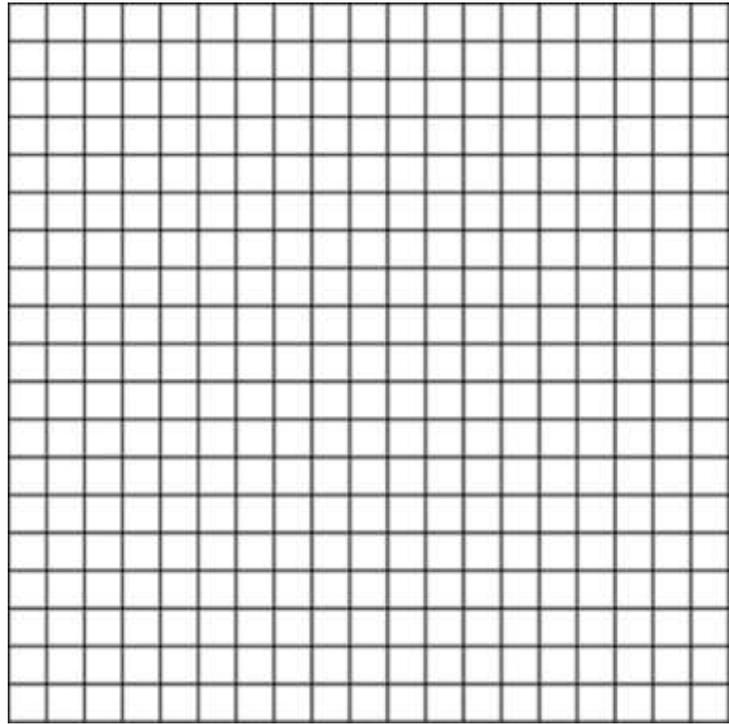
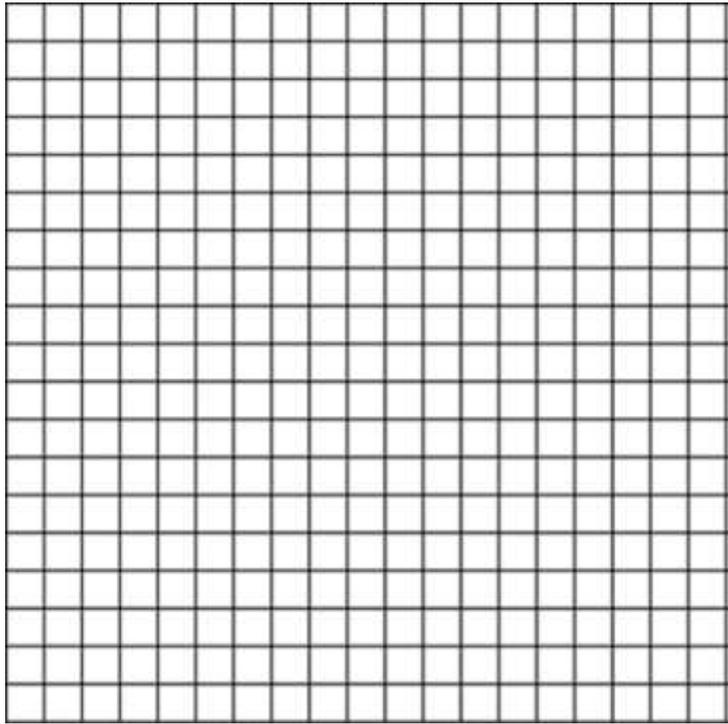
The task for you:



Draw these fabric weaves into the square grid:



For the exam you need to be able to read fabric weaves, not write them.



The task for you:



Choose from a bunch of samples:

- 3 such that are woven in a **plain** weave
- 3 such that are woven in a **basket** weave
- 3 such that are woven in a **twill** weave
- 3 such that are woven in a **satin** weave
- 3 such that are woven in a **canvas** weave
- 3 such that are woven in a **crepe** weave
- 3 such that are woven in a **cellular** weave
- 3 such that are woven in a **twill backed** weave

