Knowledge of Textile Goods

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Lesson No. 1:   Basic sorting of fabrics

Typology

Typology – is a scientific method that tries to classify a system of objects according to certain characteristics and then group them into individual types.

Type – is a set of such objects with the same or with the similar characteristics.

In the case of fabrics, such characteristics can be for example:

- Fibres used
- Threads used
- Weave used
- Pattern used
- Finish used
- Planar weight
- Set of yarns
- …

Resulting in many different variations

Textile typology

Textile typology represents a sorting of textile materials according to their:

- ◦ characteristic appearance
- ◦ characteristic properties
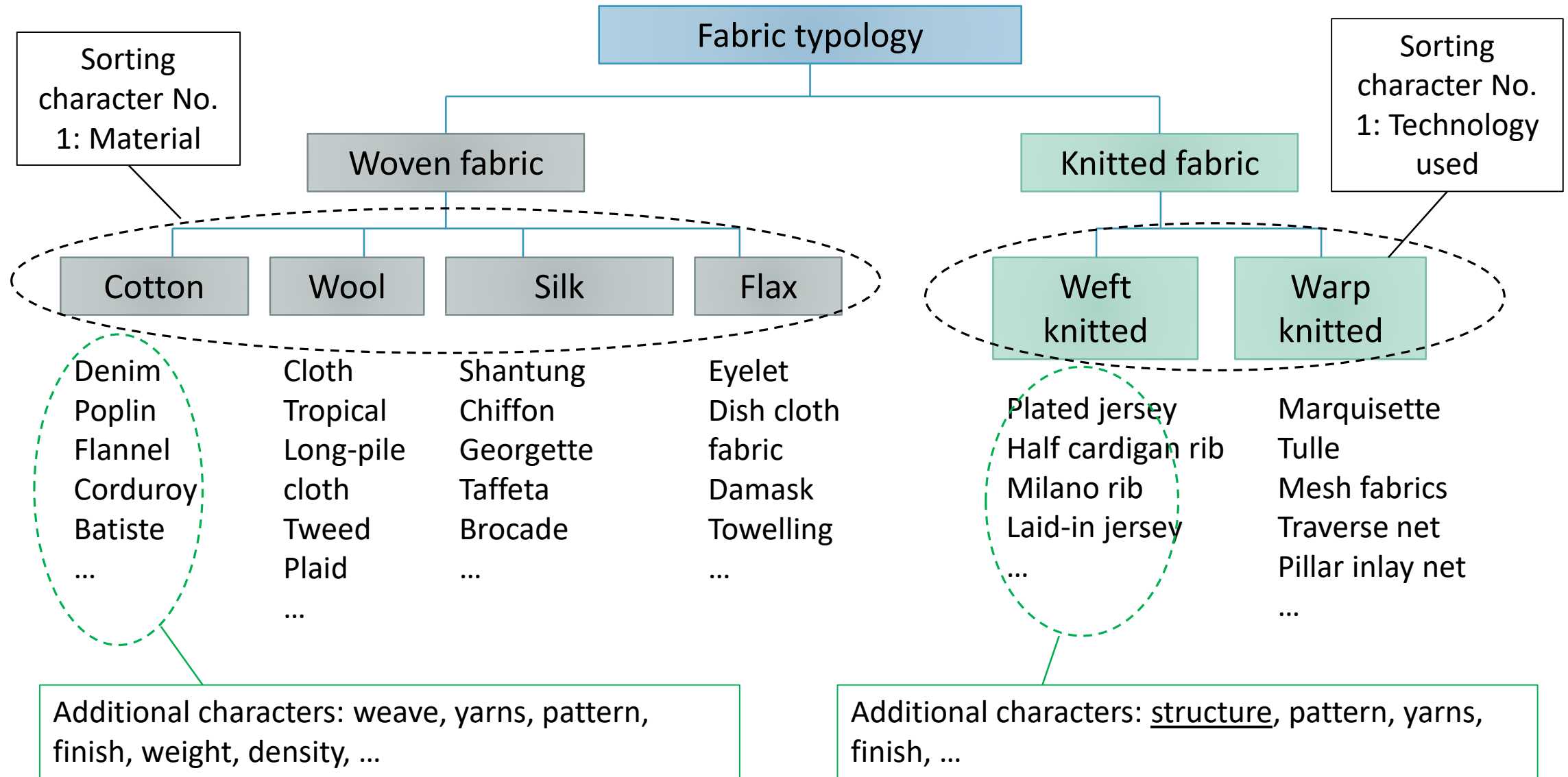
Resulting from their construction

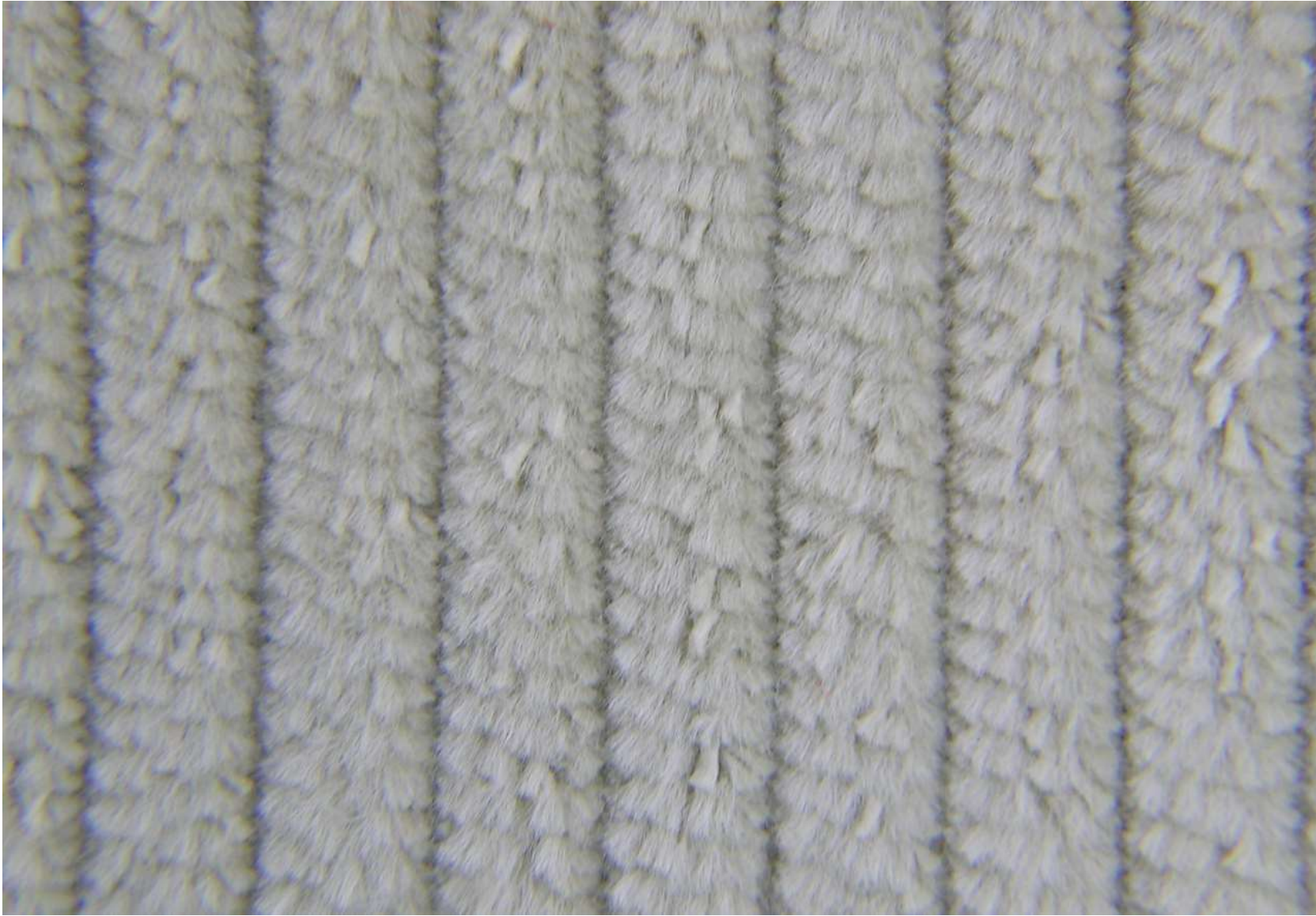It includes an extensive professional terminology that is used to precise identification of the fabric.

This terminology is used for professional communication in the manufacture and trade of textile goods.

For example terms: CORDUROY, DOUPPIONI, HERRINGBONE, …

For correct naming of the fabric must be performed its analysis – usually is sufficient characteristic appearance and touch (handle) of the fabric, sometimes is necessary used an microscope.
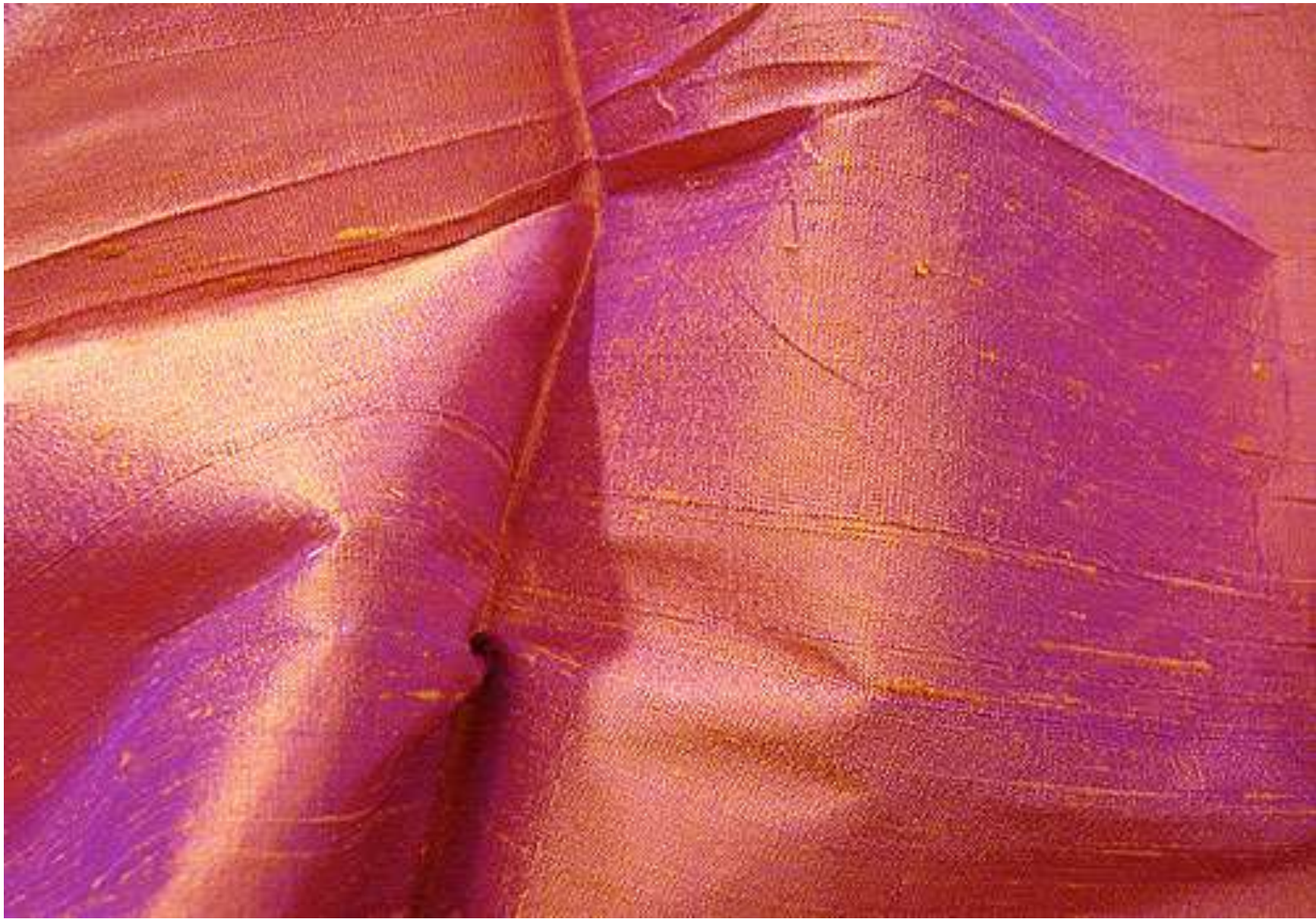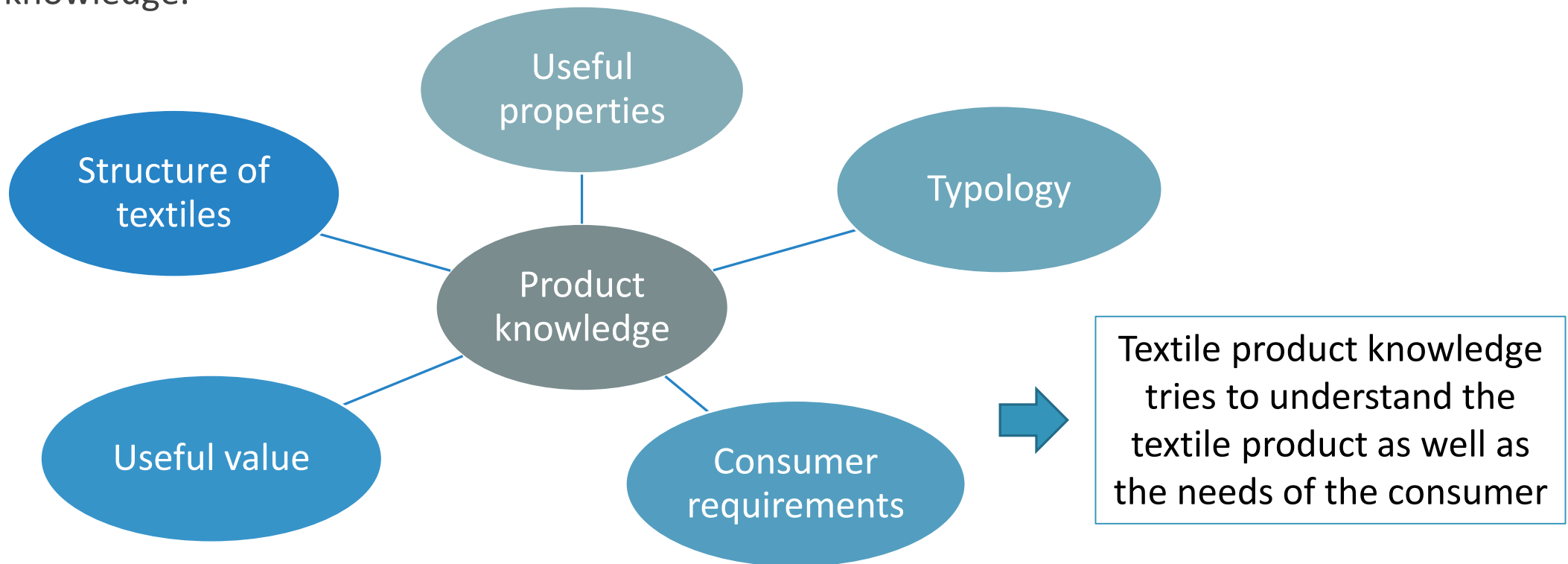
Hierarchical concept map

CORDUROY

HERRINGBONE

DOUPPIONI

Knowledge of Textile Goods

Product knowledge is a wider concept than typology. Typology is only part of product knowledge.

Useful properties

Structure of textiles

Typology

Product knowledge

Useful value

Consumer requirements

Textile product knowledge tries to understand the textile product as well as the needs of the consumer

Teaching program

WOVEN FABRICS

- Weave identification

- Pattern identification

- The group of cotton fabrics

- The group of wool fabrics

- The group of silk fabrics
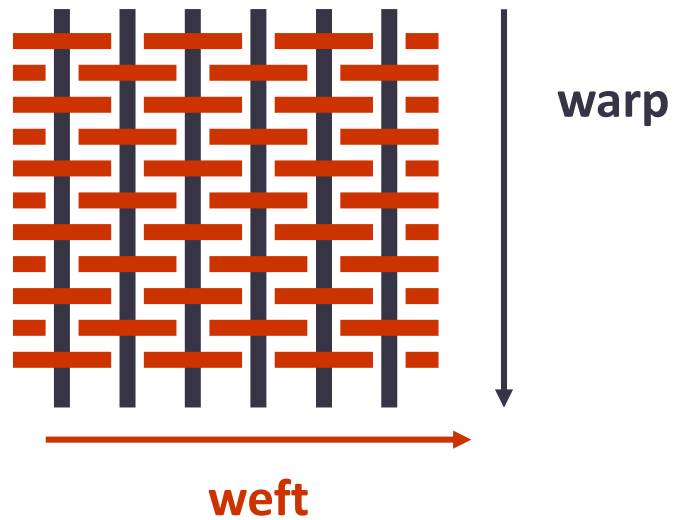
KNITTED FABRICS

- Structure identification

- Structural pattern identification

- Color pattern identification

- The group of weft knits

- The group of warp knits

The aim of these lessons is not to study production technology.
The main aim is focused on correct identification, correct naming
and understanding of useful value of fabrics.
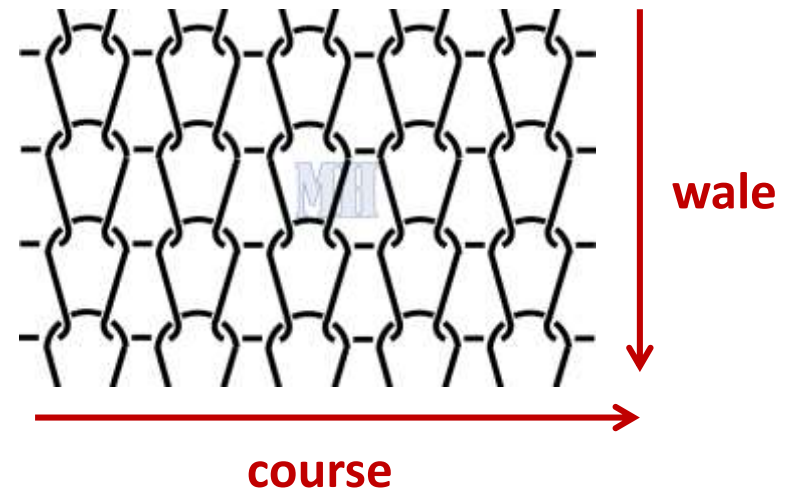
Woven fabric or knitted fabric?

WOVEN FABRIC

- It is created by interlacing two sets of threads perpendicular to each other.

warp

weft

KNITTED FABRIC

- It is created by interlacing one or more threads in the form of loops and stitches.

wale

course

First of all: It is necessary to identify how the fabric is constructed

The task for you:

The samples of fabrics sort into two groups:

1. Woven fabrics – the first group of samples
2. Knitted fabrics – the second group of samples

Material classification – cotton-type fabrics

There is a difference:
◦ When we say: „cotton fabric" or
◦ When we say: „cotton-type fabric"

Cotton fabric – is made of cotton fibres only.

Cotton-type fabric – it can be made of cotton fibres, but can be made of chemical or synthetic fibres or various fibre blends.

Always: the fabric appearance resembles the cotton fabric. I.e.:
◦ The length and fineness of the fibres are similar to those of cotton.
◦ The yarns are made using cotton spinning technology.

Material classification – wool-type fabrics

There is a difference:
◦ When we say: „wool fabric" or
◦ When we say: „wool-type fabric"

„Wool fabric" – it is made of wool fibres only.

„Wool-type fabric" – it can be made of wool fibres, but can be made of chemical or synthetic fibres or various fibre blends.

Always: the fabric appearance resembles the wool fabric. I.e.:
◦ The length and fineness of the fibres are similar to those of wool.
◦ The yarns are made using wool spinning technology.

Material classification – silk-fabrics

„endless" fibres

There is a difference:

- When we say: „silk fabric" or
- When we say: „silk-type fabric"

„Silk fabric" – it is made completely of silk fibres.

„Silk-type fabric" – can be made of silk fibres, but can be made of chemical or synthetic fibres.

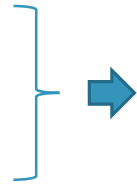Always: the fabric appearance resembles the silk fabric. I.e.:

- The length and fineness of the fibres are similar to those of silk – the chemical or synthetic fibres are in the form of monofilament or multifilament.

The typical touch of the fabrics

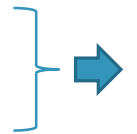It is necessary to have some experience!

The „cotton touch" is usually:
◦ Soft
◦ Warm
◦ Fine

For most people is very friendly (pleasant).
Cotton fabrics are suitable for underwear – direct contact with human skin.

The „wool touch" is usually:
◦ Harsh
◦ Very warm

For many people it is not friendly (unpleasant). Then wool fabrics are not suitable for direct contact with the skin (they are often used in clothing with lining).
But on the contrary: the fine Merino wool is used for the production of thermal underwear.

The „silk touch" is usually:
◦ Smooth
◦ Cool
◦ Very fine

The fabrics of silk type have often (but not always) a shiny appearance. Fabrics made of synthetic fibres have worse comfort properties than those made of silk.

The task for you:

Divide the samples of woven fabrics into three groups:

1. Fabrics of cotton type – the first group of samples
2. Fabrics of wool type – the second group of samples
3. Fabrics of silk type – the third group of samples

Now only based on the characteristic appearance and characteristic touch.

The procedure for woven fabric analysis
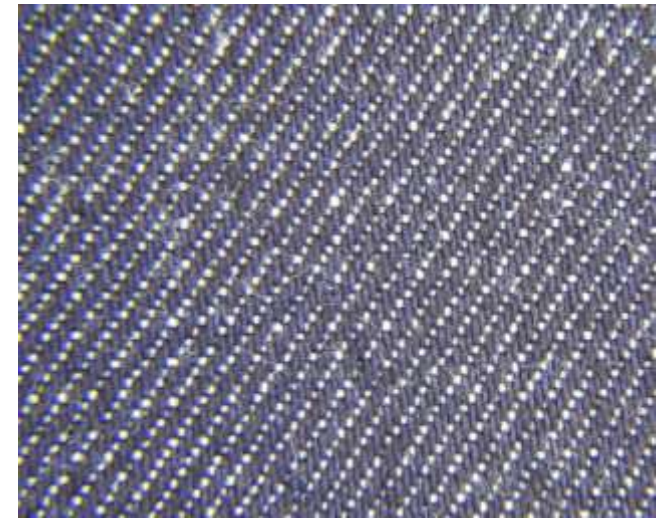
There are a several sub-steps. We must check:

- Material classification
- Threads used (staple yarn, multifilament, fancy yarn)
- Weave used (plain, twill, satin, …)
- Pattern used (stripes, checks, paisley, …)
- Finish used (brushing, callendering, printing, …)

⬇

- The name of the woven fabric

For a description of the fabric is also often used:

- „Density" of the fabric (this is mainly due to the set of warp and weft yarns in [1/cm] or [1/10 cm] or [1/m] – it is the number of yarns per unit of length)
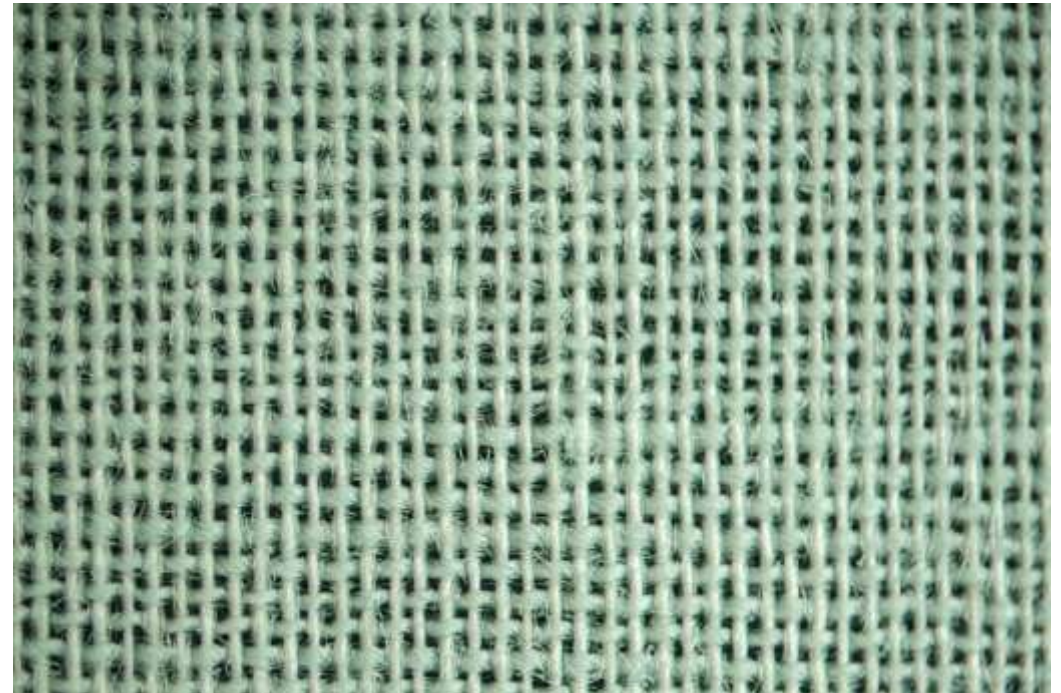- Planar weight in [g/m^2] – it is the weight of fabric per unit area

Tightly woven & loosely woven fabric
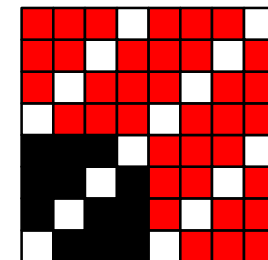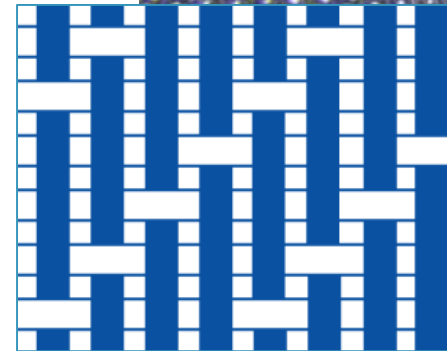
POPLIN

VOILE

For example: Denim

Denim – is a cotton-type fabric with some typical characteristics:

- Typical weave: warp twill

- Typical colours of the yarns: dark indigo blue in the warp and white in the weft

- Very fine diagonal stripes (ribs)

- Densely woven fabric

- Various planar weight (usually from medium to heavy)

- Stiffer and durable fabric

Warp twill

Narrow dress

Loose silhouette

Planar weight of fabric

Planar weight is the weight of fabric per unit area, usually in units [g/m²]:
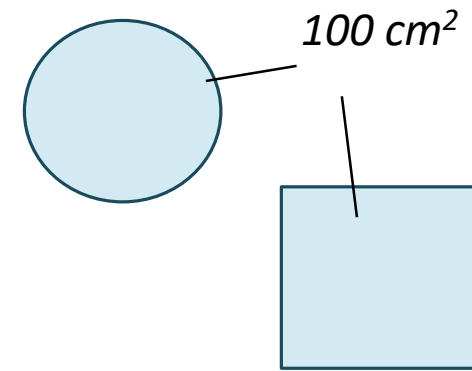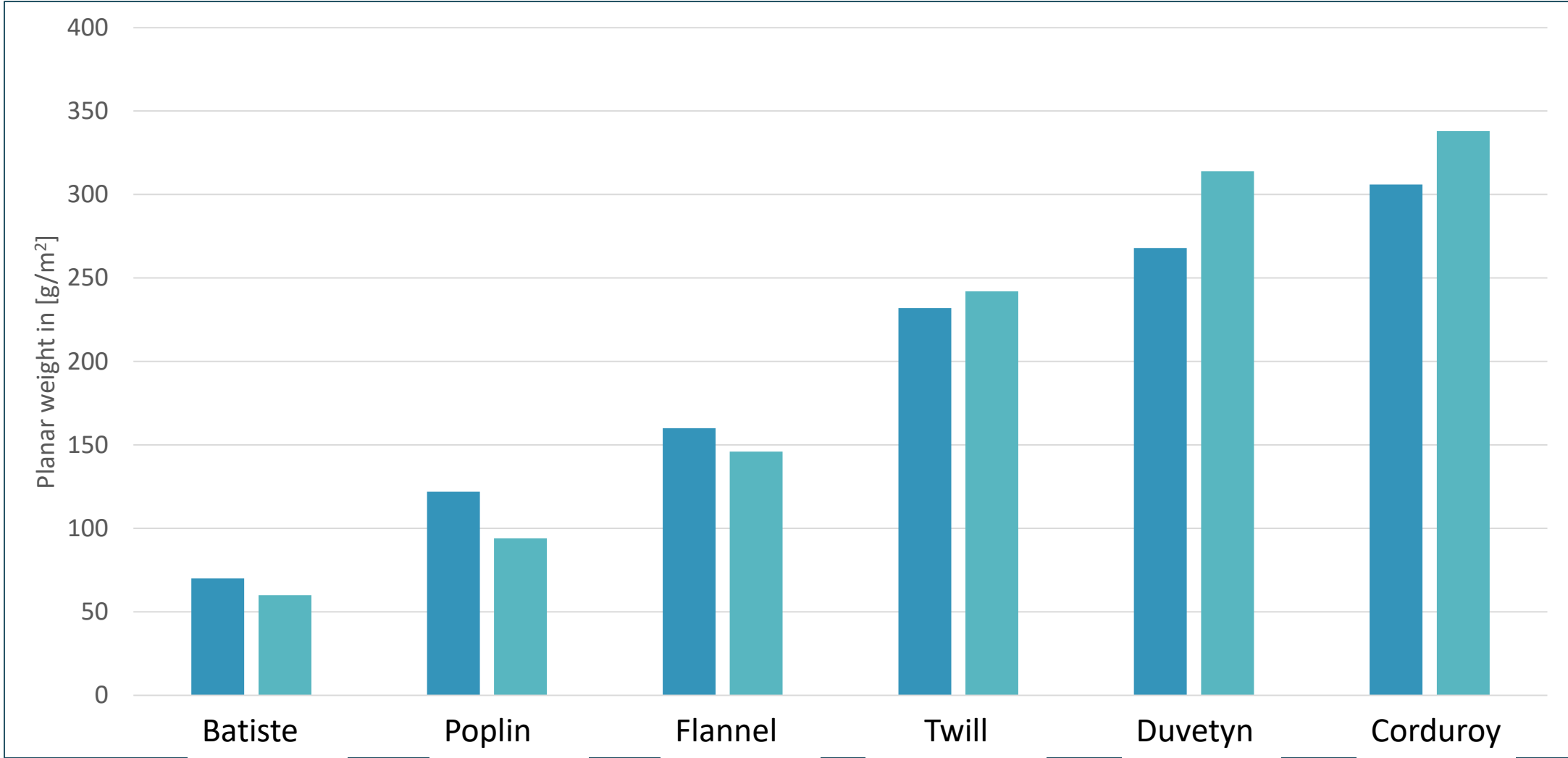
$$\rho_S = \frac{m[g]}{S[m^2]}$$

Is determined by weighing of samples – usually about the area 100 cm² and then it is calculated, for example: the sample of fabric with the size *10 x 10 cm has weight 1,45 g):*

$$1,45\,\frac{g}{100cm^2} = 1,45\,\frac{g}{100 * 10^{-4}m^2} = 1,45 * 10^2\,\frac{g}{m^2} = 145\,\frac{g}{m^2}$$
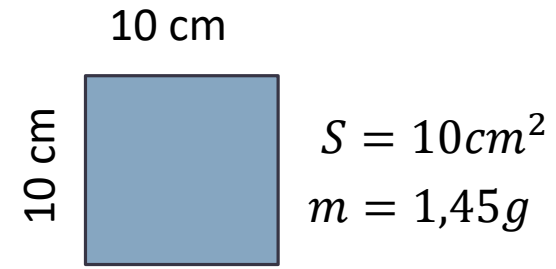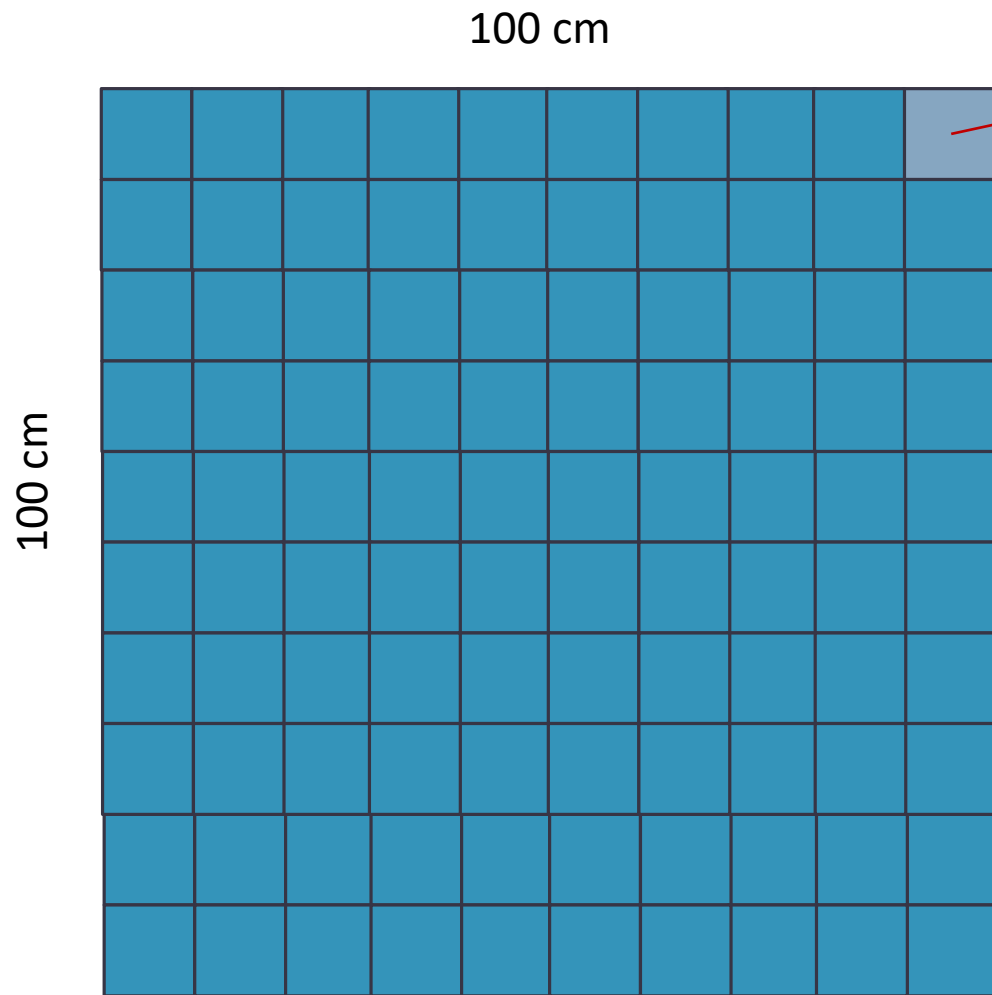
For example:
- Chiffon   50 – 90 [g/m²]
- Poplin   100 – 140 [g/m²]
- Corduroy   300 – 500 [g/m²]

100 cm²

Some examples of planar weight of cotton fabrics

Or a simple concept:

10 cm

100 cm

100 cm

10 cm

$$S = 10cm^2$$
$$m = 1,45g$$

$$S = 1m^2$$
$$m = 1,45 * 100 = 145g$$

In textile typology the terms are used:
- Light weight fabric
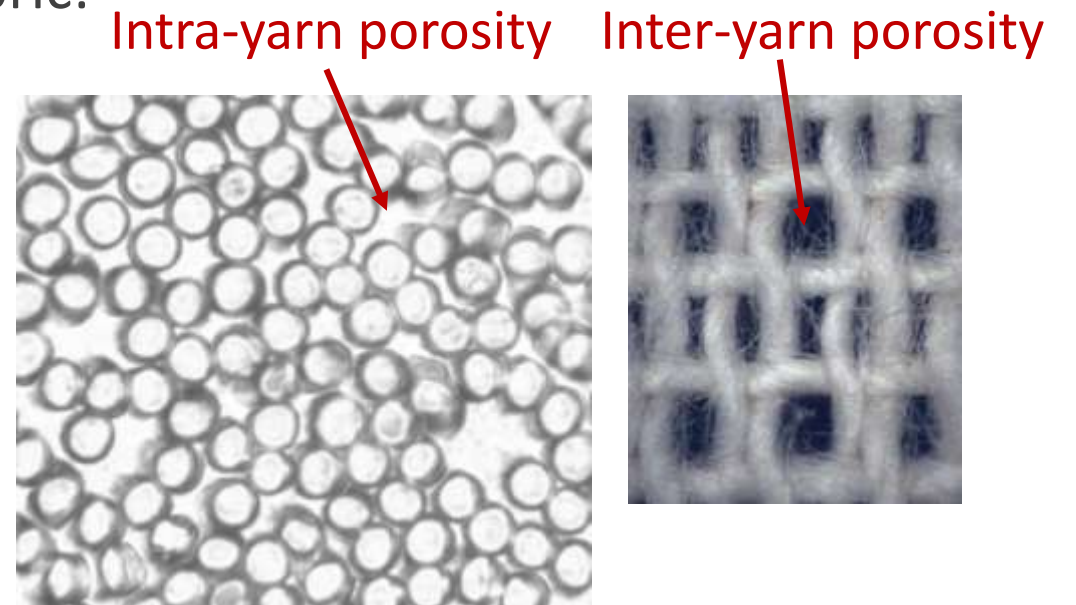- Medium weight fabric
- Heavy fabric

Porosity of fabric

Porosity expresses the proportion of air gaps contained in the fabric:

◦ Intra-yarn – i.e. air contained inside the yarns between fibres

◦ Inter-yarn – i.e. air contained in fabric between the yarns

Porosity affects all the properties of the fabric:

◦ Sorption properties

◦ Air permeability

◦ Thermal-insulation properties

◦ Abrasion resistance

◦ …

Intra-yarn porosity   Inter-yarn porosity

High porosity & Low porosity fabric

TERRY FABRIC

BOHEMIAN TICKING

Loosely twisted yarns

Tightly twisted yarns