Preparation of testing materials

- Sampling of testing materials
- Number of measurement
- Climate conditions in labs

Textile Material - Delivery

Fibers sampling

Package

Sliver, Tow, Roving

Threads (yarns, multifils etc.)

Fabrics (2D, 3D)

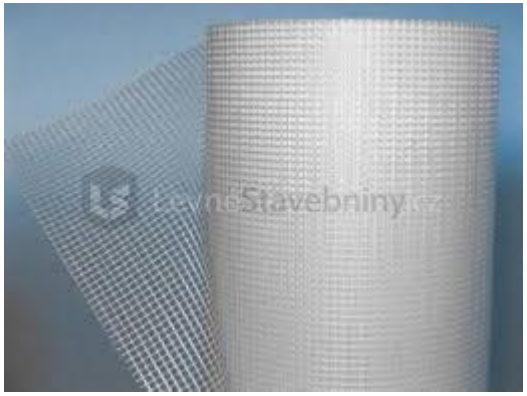
Threads sampling

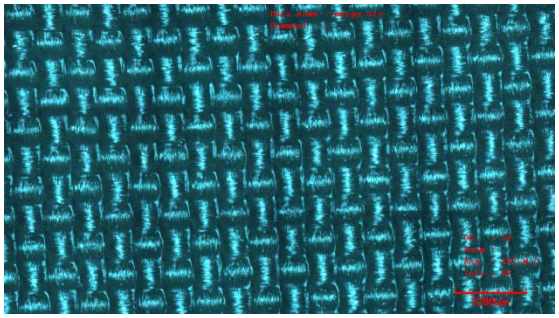
Bobbins

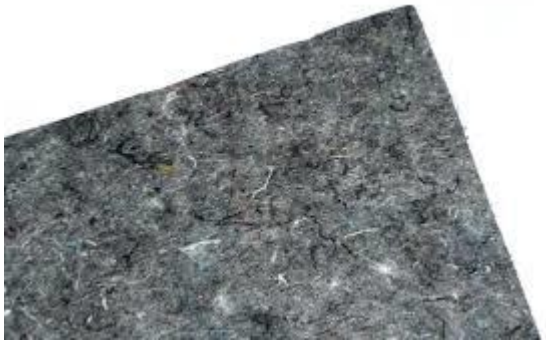
Warp beams

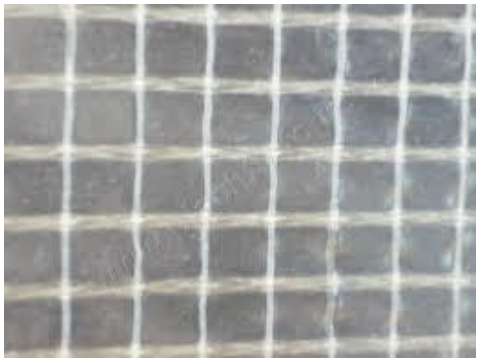
Fabrics

Fabrics Sampling









Sampling of testing specimen

We cannot test all amount of textile material!!!

It is necessary to select reprezentative sample

Sampling must be **random!**

Number of specimen
⇒ **Range of sample**

„Each bobbin from delivery of 100 000 bobbins has same probability it will be selected for testing of yarn properties “

Sampling of textile specimen is governed by standard (ISO, ASTM etc.), e.g.:

ISO 5089:1977(en)

Textiles — Preparation of laboratory test samples and test specimens for chemical testing

ISO 1130:1975(en)

Textile fibres — Some methods of sampling for testing

It is impossible prescribe one sampling method for all textile specimen

In general, specimen are selected from units, which belong to one delivery:

Fiber packages

Boxes with bobbins

Fabric packages, etc.

Fiber sampling from package I.

Zoning

Samples of cotton or wool

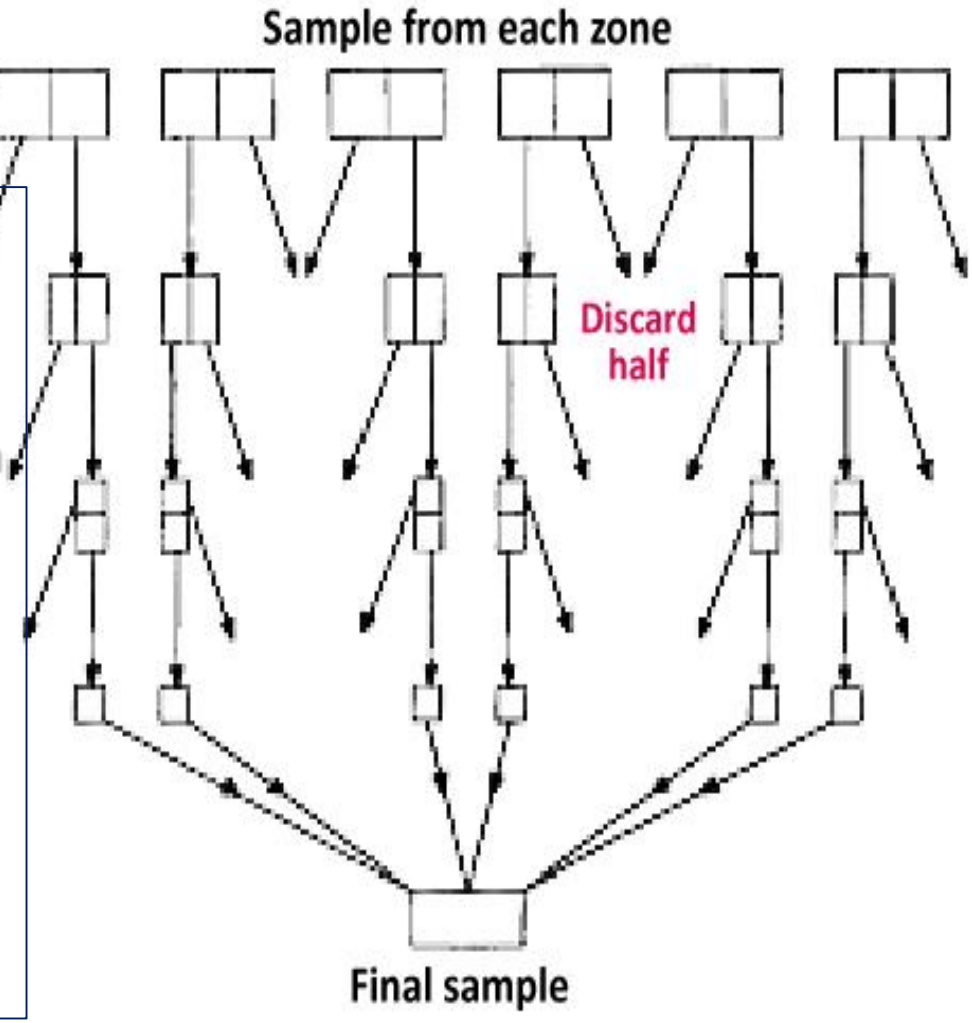
min. 40 equally distributed zones over all delivery, the selection is repeated until each handful contain approximately

n/x fibers

n required number of fiber

x initial number of zones

Final handfuls are assemblied to make specimen with ***n fibers***



Fiber sampling from package II.

Core sampling

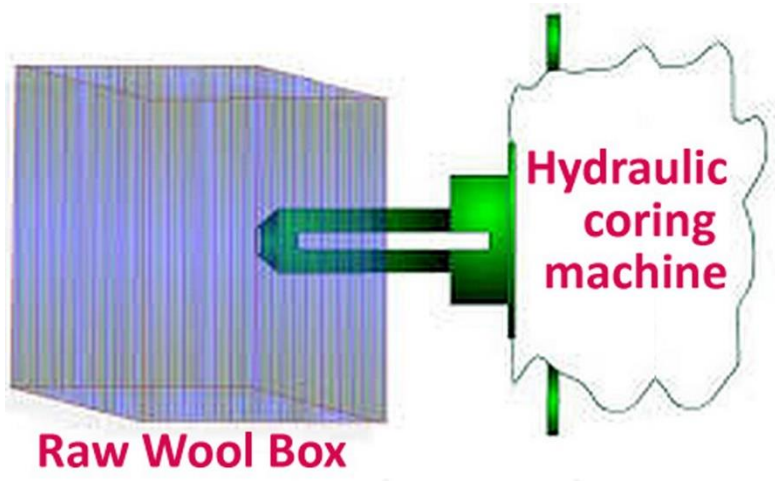
The package must not be open!!!

Estimation of fat ratio, plant residues or moisture in fibers

Tubes for manual sampling – length of approx. 600 mm

Nominal diamters are 14, 15, and 18 mm

Samples are placed into air-proof case



Sampling from slivers, tows, rovings or yarns

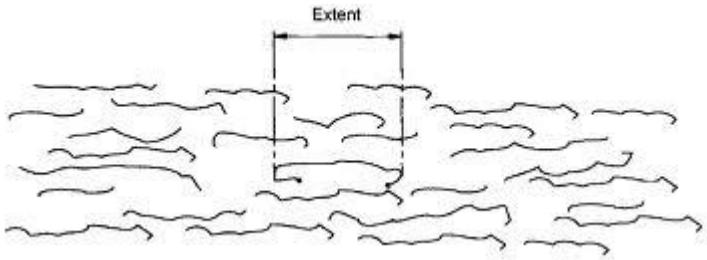
Comlicated if we want really random selection!!!

eg. longer fibers have higher probability to be selected, which decrease the objectivity of selection

Two standardized methods

Random draw method

Cut square method



Sampling of fibers from fabrics

Wovens

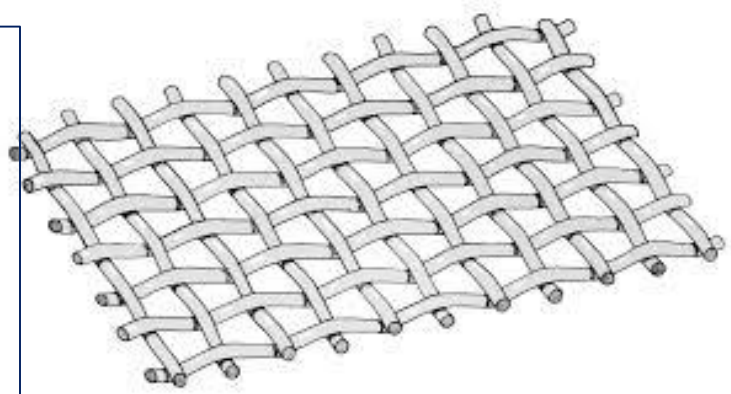
Untwisting of minimum
4 warp threads, and 4 weft threads

Warp

Equal distance in full width of fabric

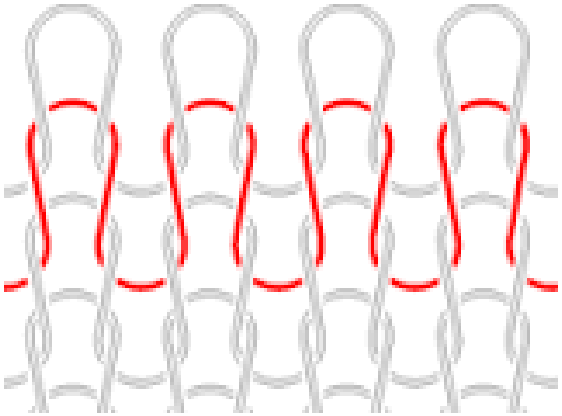
Weft

Yarns from various windings



Knitted fabric

Untwisting of minimum 4 threads from different raws and different bobbins



Sampling of yarns

- **Standards specify yarn selection for:**
  - single yarns
  - spun yarns
  - multifilaments (rovings)
  - folded yarns
  - cable and cord yarns
- **Applicable also for sampling of yarns from fabrics**
- It is described for sapling from:
  - one delivery
  - parts from manufacturing
  - number of packages
  - number of bobbins, etc.

Sampling from warp beams

Specimen are wound in form of belts

Yarns are wound under angle lower than 20° in minimum speed and strength

Sample contains at least 1 m of warp threads length

If the threads are not long enough it is neccesary to sample more wind-ups

Sampling of yarns from fabric

Sufficient size of fabric

Sufficient amount of threads

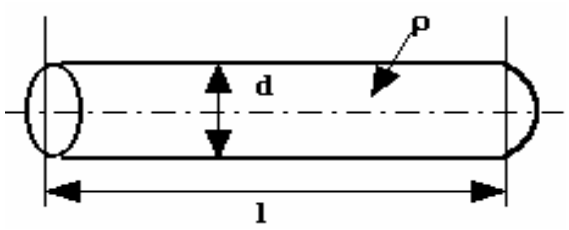
Threads from high number of wind-ups

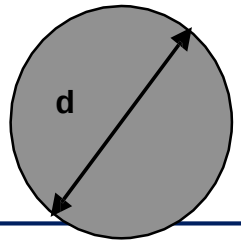
Sampling must not change properties of threads

Number of measurement

Specified by measurement standards

Minimum number of measurement is specified e.g. for:



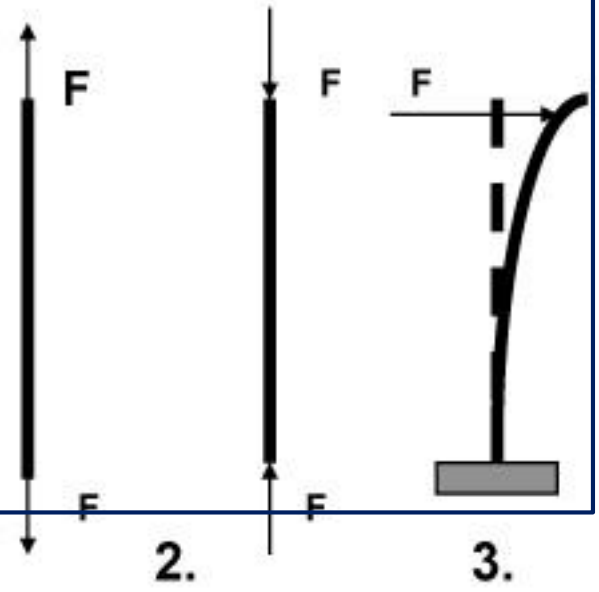


Fiber length

Strength

Diameter

Finneness



Climatic conditions for textile testing

Atmosphere for textile testing is standardized due to sensitivity of textile materials to surrounding environment:

ISO 139:2005(en) - Textiles — Standard atmospheres for conditioning and testing

Standard atmosphere

Air temperature: 20 ± 2 ºC

Humidity: 65 ± 4 %

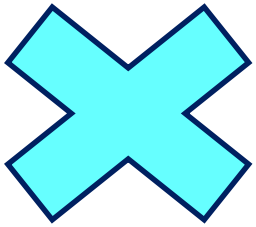
Alternate standard climate:

Air temperature: 23 ± 2 ºC

Humidity: 50 ± 4 %

Ensuring laboratory conditions

Air conditioning of whole room
(laboratory)



Climatic boc

Measurement of climatic conditions

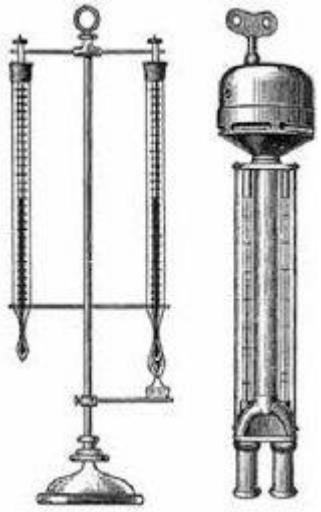
Standardized measuring devices:

For temperature

device deviation ± 0,5 °C, scale 0,1 °C

For moisture

device deviation ± 2,0 %, scale 0,1



Temperature measurement

Parameters of thermometer:

Range 0 – 30 °C

Precision 0,5 °C

Moisture measurement

psychrometers or *hygrometers*