PRE-TREATMENT OF DIFFERENT FIBERS – PART VIII

REF: TT/ JANUARY 2021/ WK 2

D) Pre-treatment of Cotton fiber (Continued……)

The added impurities in the cotton are:

- **Seed** – It is the largest type of impurity present in raw cotton and it includes seeds with fibres attached to it.
- **Chaff** - The chaff is the vegetable fragments consisting of leaf particles, bract, shale and stalk of the cotton plant.
- **Dirt** - Dirt includes soil and sand particles that may get added from the cotton fields or during transportation.
- **Micro-Dust** -These particles are extremely and generally get embedded around the natural wax of the cotton fibre.
- **Abnormal Impurities** - The abnormal impurities cause serious problems to the cotton fiber. These impurities are called trash. This includes pieces of stones, pieces of iron, foreign fibers, grease, oil etc. The total trash content of cotton fibres ranges from 1 % to 10 % of the total weight of the cotton fibres.

Few word descriptions

- **Bract – A small type of a leaf that grows beneath the cotton boll.**
- **Shale – The silvery interior lining of the cotton boll.**

Removal of impurities from cotton - Cotton has different types of impurities. Hence, pretreatment of cotton is carried out in stages to remove different impurities by different processes.

The removal of added impurities is mainly done by dry process. This is carried out during the spinning process by opening the fibers. First the impurities are removed in the blow room by opening the larger tufts of fibres into smaller tufts. Then, at the carding machine, fibre separation is done and more impurities are removed. The blow room mostly removes the seed and chaff and micro dust are removed while carding.

The natural impurities and some of the added ones are removed by series of pretreatment processes. These are Singeing, Desizing, Scouring, Bleaching, Bio-polishing, and Mercerization.

- **Singeing –** Singeing is the dry process of pre-treatment. This is carried out on both yarns and fabrics to produce an even surface by burning off projecting fibres and yarn ends. The risk of pilling, especially with

synthetics and their blends, is reduced by this process. The risk of uneven dyeing is also reduced by singeing, as protruding fibres are removed in singeing which could cause diffused reflection of light.

- **Desizing -** Desizing is the first wet processing step in cotton fibre pre-treatment. This is the method to remove size materials from the warp yarns in the woven fabric. The warp yarns are coated with size ingredients before the weaving process in order to reduce their frictional properties and decrease yarn breakages on loom. The size ingredients present on the warp yarns in a fabric reduces the absorbency of the fabric. After desizing, the absorbency of the fabric increases.
  The main agent in the ingredient is an adhesive agent. It is very important ingredient, which penetrates inside the yarn and increases the yarn strength. The different types of adhesive agents are a) Simple starch - this is untreated starch powder e.g. maize starch, wheat starch, potato starch b) Thin boiling starch - it is chemically treated starch and c) Modified starch - it is chemically modified starch.

  Chemically starch is a poly-alpha-glucopyranose in which straight chain (Amylose) and branched chain (Amylopectin) polymers are present.

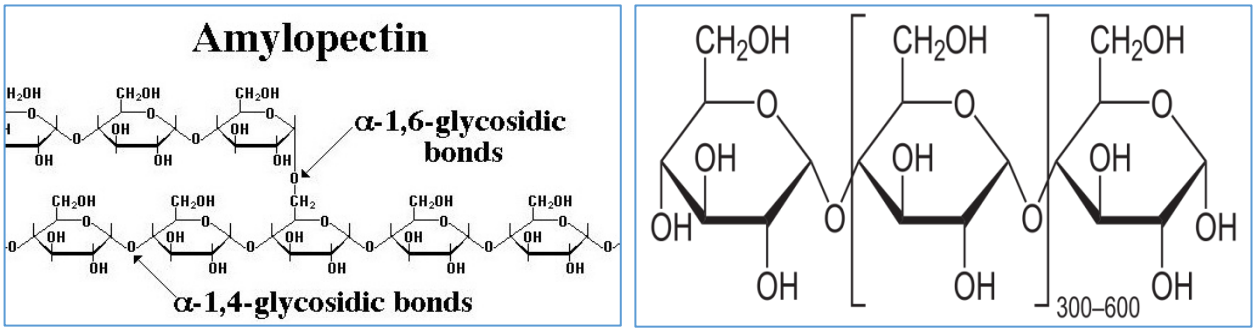

Fig 1.1 Chemical structure of starch

Ref: onlinetextilestudy.com

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……. To be continued……

UNSCRAMBLE THE JUMBLE WORDS
FFCHA
INGSINGE
SIZDEING
ARCHST

Last week`s Answers: 1) CUTICLE 2) LUMEN 3) PIGMENT 4) FLAVONE

Wishing you a great week ahead!

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