

Silk, a 100% renewable natural resource

E.031722.v1

The legend of silk goes back to the year 2640 BC. The Chinese Empress Hsi Ling Shi was the first to reel a silk yarn from a cocoon which had fallen in her cup of tea.

Silk was first reserved for Chinese royalty and for nearly 3.000 years the Chinese had global monopoly on the silk production and kept its secret safe from the rest of the world. The demand for this exotic luxury fabric created the lucrative trade route, known as the Silk Road, bringing silk westwards and gold, silver and wool to the East.

Certain is that the Chinese managed to domesticate the silk worm **Bombyx Mori**. That particular moth feeds only on **Mulberry** trees and makes a **cocoon** with threads, fibroin, surrounded by a gummy substance, sericin. The end result is a peanut shaped white cocoon of a 3 cm. Then, the cocoons are brushed to pick up the continuous filament forming the cocoon. When the end is found, it is joined to the threads of a number of other cocoons (4 - 12 depending on the yarn thickness needed) to form one complete silk thread with the sericin binding the filaments together. This process of unwinding the filaments, which can reach a 1.600 meters in length, is called reeling. The yarn obtained after the reeling stage is known as Raw Silk.

Silk is too precious to be wasted and every attempt is made to recover cocoons unusable for reeling. This silk waste is carded and combed in the same way as other natural fibers like linen and wool. The resulting bands of fiber, slivers, are then spun into yarn. The longer filaments are called spun silk (or schappe) and the shorter filaments become noil.

Sometimes two silkworms spin a double cocoon instead of one each. The thread from these twin cocoons is so entangled that it cannot be reeled in the normal way. A special reeling technique is used which gives a coarse uneven yarn, called dupion yarn.

In addition to the Bombyx Mori eating the Mulberry leaves and producing the white yarn known as Raw Silk, there are numerous other varieties of moths living in the wild and producing silks. You have for example wild silk known as Tussah which is produced from moths on oak leaves. Other well-known varieties are called Muga and Eri.

The natural silk yarn consists of fibroin, a protein, surrounded by sericine, a gum. Without degumming the silk yarn is a bit stiff, difficult to dye and does not have the famous rich silk lustre. This degumming is done in a boiling soap solution. Now you get the shimmering appearance which comes from the fibre's triangular prism-like structure which allows silk fabric to refract incoming light at different angles. Furthermore the degumming makes silk hygroscopic and it can take up to 30% of water without feeling damp.

The fine silk mainly used for clothing can be woven on power looms. For wallcovering you need the irregular hand-spun and hand-dyed yarn which can only be woven on handlooms. The combination of a fine vertical warp yarn together with a hand-spun more coarse horizontal weft yarn and the irregular beating of the handloom gives the wallcovering its rich horizontal looking texture.

Once you know the history and the background of silk you will understand and appreciate why there are natural irregularities in these handmade materials which, in man-made fibers, would be called defects.