# YARN CRIMP IN FABRIC

Yarn Crimp

When warp and weft interlace in fabric, they follow a curved way. Crimp in a fabric is the measure of this waviness. Crimp of yarn is measured in crimp%.

Crimp% is defined as the mean difference between the straightened thread length and curved thread length while in the cloth and is expressed as percentage.
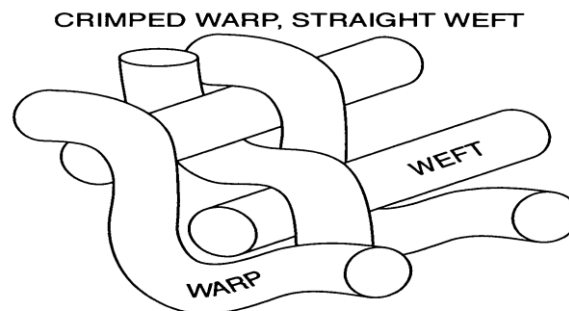
$$\text{Crimp\%} = \frac{\text{Uncrimped length-Crimped length}}{\text{Crimped length}} \times 100$$

Types of Crimp
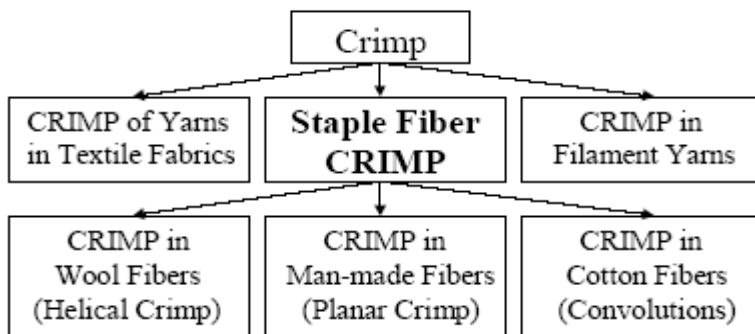
Crimp Amplitude

This refers to the extent to which the threads are deflected from the central plane of the cloth.

CRIMPED WARP, STRAIGHT WEFT

Crimp Interchange

When a fabric is subjected to uniaxial stress, the crimp in the direction of loading is gradually reduced and the crimp in the transverse threads increases. This is called crimp interchange. Actually the reduction of crimp in warp yarns is equal to the increment of crimp in weft yarns. As a result, total crimp of yarn (Both warp and weft) in fabric remains constant.

That is, $\mathbf{C_{warp}} + \mathbf{C_{weft}} = $ constant; where, $\mathbf{C_{warp}} = $ Warp crimp and $\mathbf{C_{weft}} = $ Weft crimp

Crimp Ratio

The ratio of yarn length and cloth length is termed as crimp ratio.

So, crimp ratio= yarn length/cloth length

Factors Affecting Crimp% of Yarn in the Cloth

- ❖ EPI- Higher the EPI, higher will be the weft crimp%
- ❖ PPI- Higher the PPI, higher will be the warp crimp%
- ❖ Warp linear density- Higher the coarseness of warp, higher will be the weft crimp%
- ❖ Weft linear density- Higher the coarseness of weft, higher will be the warp crimp%
- ❖ Yarn tension- Higher the warp tension, higher will be the weft crimp%
- ❖ Weave structure- Higher the interlacement no., higher will be the crimp%
- ❖ Yarn twist- Higher the twist in warp than weft, lower will be the weft crimp%
- ❖ Yarn extensibility- Higher the warp extensibility, lower will be the weft crimp%
- ❖ Calendaring finish- Higher calendaring results lower crimp% of yarn