

Unit - 4

Double Cloth

Double Cloth or fabric which consist of two layers. Thread they are woven what one above the other & stitched together they are also known as two ply cloth. The upper layer is formed by interlacing the face warp thread with the face weft thread. The lower layer is formed by interlacing the back warp thread with back weft thread.

OBJECTIVE - To enhance the thermal resistance of this weave.

CLASSIFICATION -

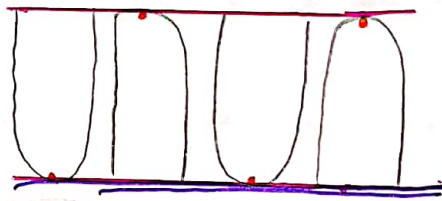
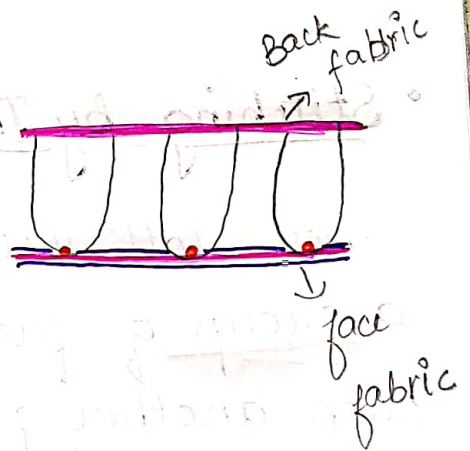
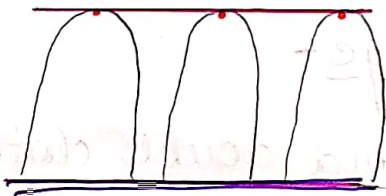
- * Self thread stitching
- * Centre thread stitching
- * Stitching by thread Interchange
- * cloth Interchange.

• Self-Thread Stitching -

The face fabric is formed by interlacement of face warp & weft thread.

The Backed fabric is formed by backed warp & weft thread.

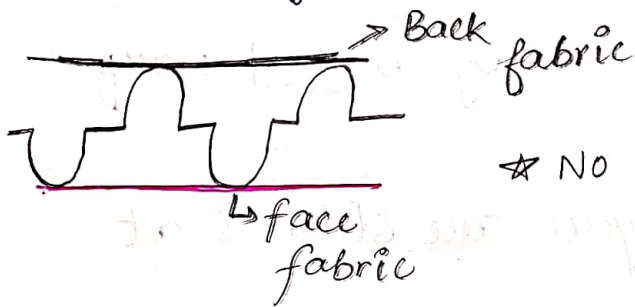
The two fabric layers are stitched at intermediate point.



• Center Thread Stitching -

In this type of cloth, beside the face & back series of thread, a third series of thread are introduced as stitching point at equal intervals. ~~Both warp~~ The stitching point can be

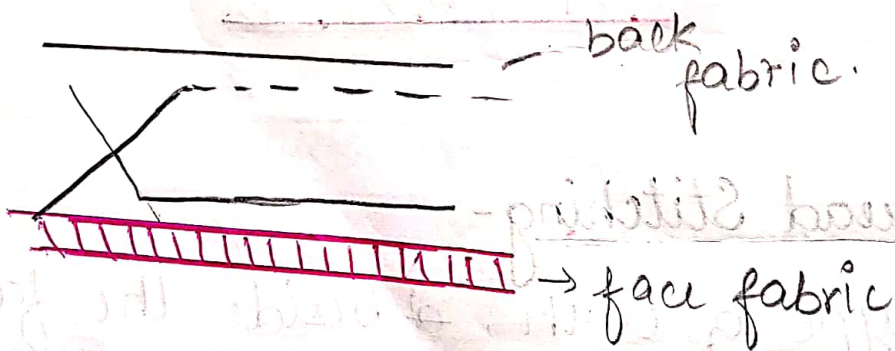
weave or weft or both weave or weft.
The stitching thread between the face & back layers of cloth are invisible.



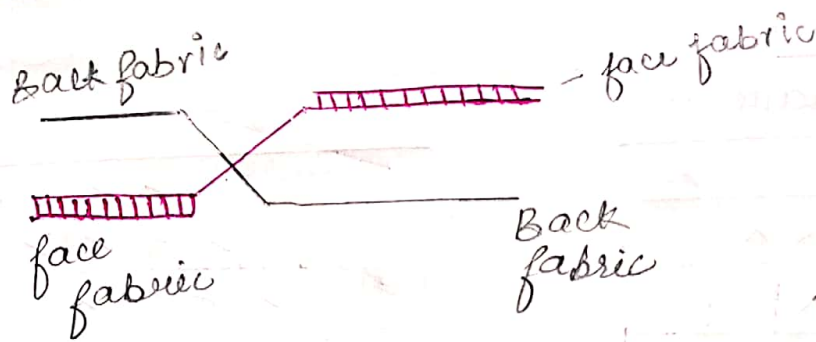
★ No stitching points visible.

• Stitching by Thread Interchange -

These cloth resembles self-stitched double cloth, a group of face threads interlace or stitch with another group of back threads at regular intervals.



- Cloth Interchange - In this type of cloth, the cloth layers change place at intervals.



• Self-Stitched Double cloth

In self-stitched double cloth one series of warp and weft interlace to form the face fabric & other series of warp & weft interlace to form the back fabric. The face and back threads have to be arranged in suitable order depending upon the fabric to be woven.

Separate weaves are chosen for the face & back fabrics. Sometimes the weaves may be similar.

(1) Stitching face to Back



Face thread is lower below the back thread

(2) Stitching Back to Face

Back thread is raised above the face warp thread

⇒ FACE TO BACK

5/3 Face Weave

			X	X	X	X	X
		X	X	X	X	X	
	X	X	X	X	X		
X	X	X	X	X			
X	X	X	X				X
X	X	X				X	X
X	X				X	X	X
X				X	X	X	X
F	F	F	F	F	F	F	F

				X	X	X	X
			X	X	X	X	
		X	X	X	X		
	X	X	X	X			
X	X	X	X				
X	X	X					X
X	X						X
X						X	X
X						X	X
B	B	B	B	B	B	B	B

B	X		X		X		X		⊗	X	X	X	X	X	X	X
F							X		X		X		X		X	
B	X				X		⊗	X	X	X	X	X	X	X	X	
F					X		X		X		X		X			
B	X		X		⊗	X	X	X	X	X	X	X	X	X		X
F			X		X		X		X		X					
B	X		⊗	X	X	X	X	X	X	X	X	X	X		X	
F	X		X		X		X		X							
B	⊗	X	X	X	X	X	X	X	X		X		X		X	
F	X		X		X		X								X	
B	X	X	X	X	X	X	X	X	X	X	X	X	X		⊗	X
F	X		X		X										X	
B	X	X	X	X	X		X		X		X		⊗	X	X	X
F	X		X		X		X		X		X		X	X	X	X
B	X	X	X		X		X		X		⊗	X	X	X	X	X
F	X						X		X		X		X		X	
F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	

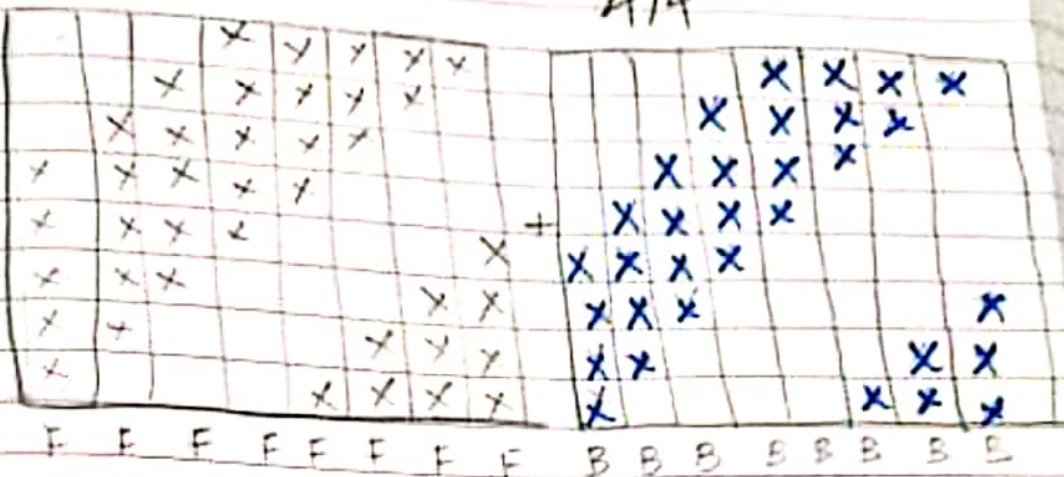
Back to Face

DATE

5/3

Twill

A/A

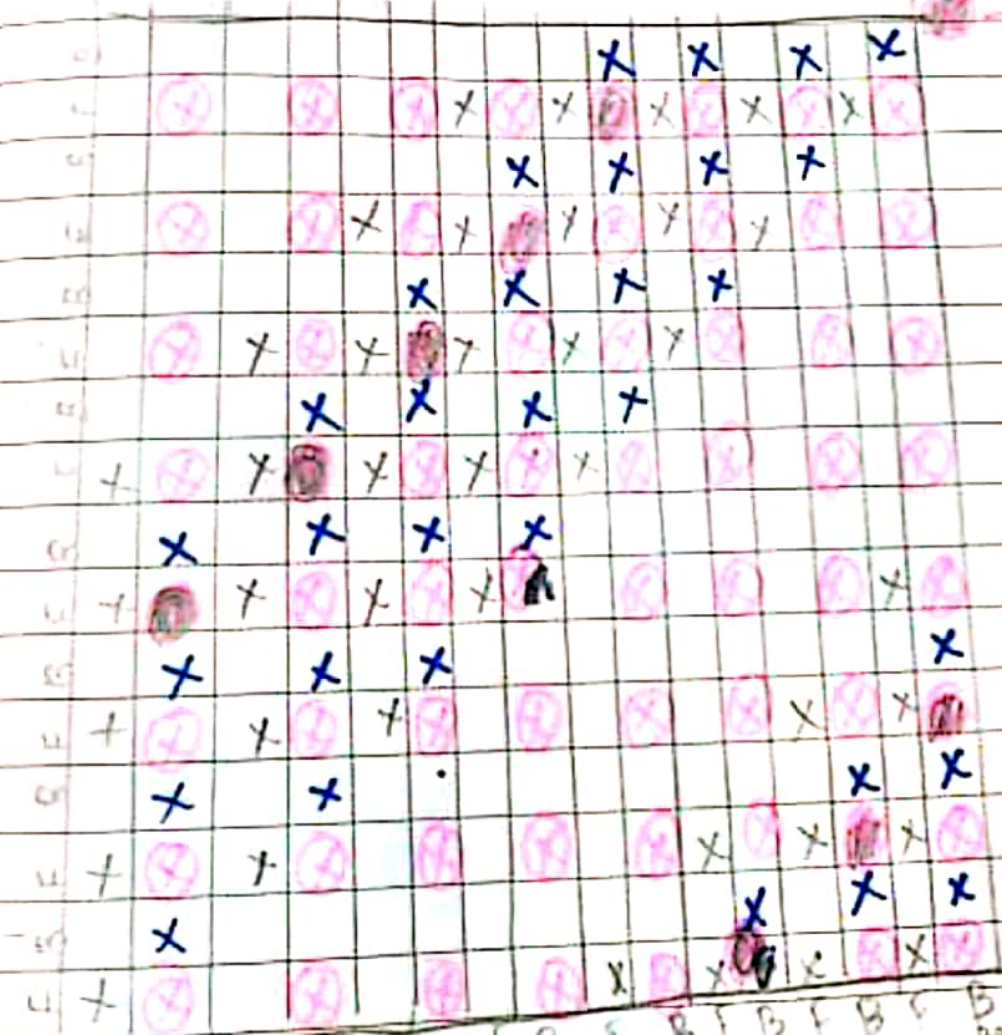


X - 5/3 Twill

X - 4/4 Twill

Back to face

Stitch point



classmate B F B F B F B F B F B

PAGE

◦ Centre Stitched Double Cloth

In center stitch Double C the face and back cloth are stitched together by means of a third group of thread known as center thread.

These threads neither belong to face or back cloth. They are introduced in between the face & back fabric separately.

The center thread is normally finer than faced & backed threads.

They are two methods of Center Stitch Double cloth:-

* Center Warp Stitching

* Center Weft Stitching

CENTER WARP STITCHING

8/8 4x4

Face name

1/4 twill 8x8

B						X
B						X
B					X	
B			X			
B		X				
B	X					
B	X					

Back
Weave

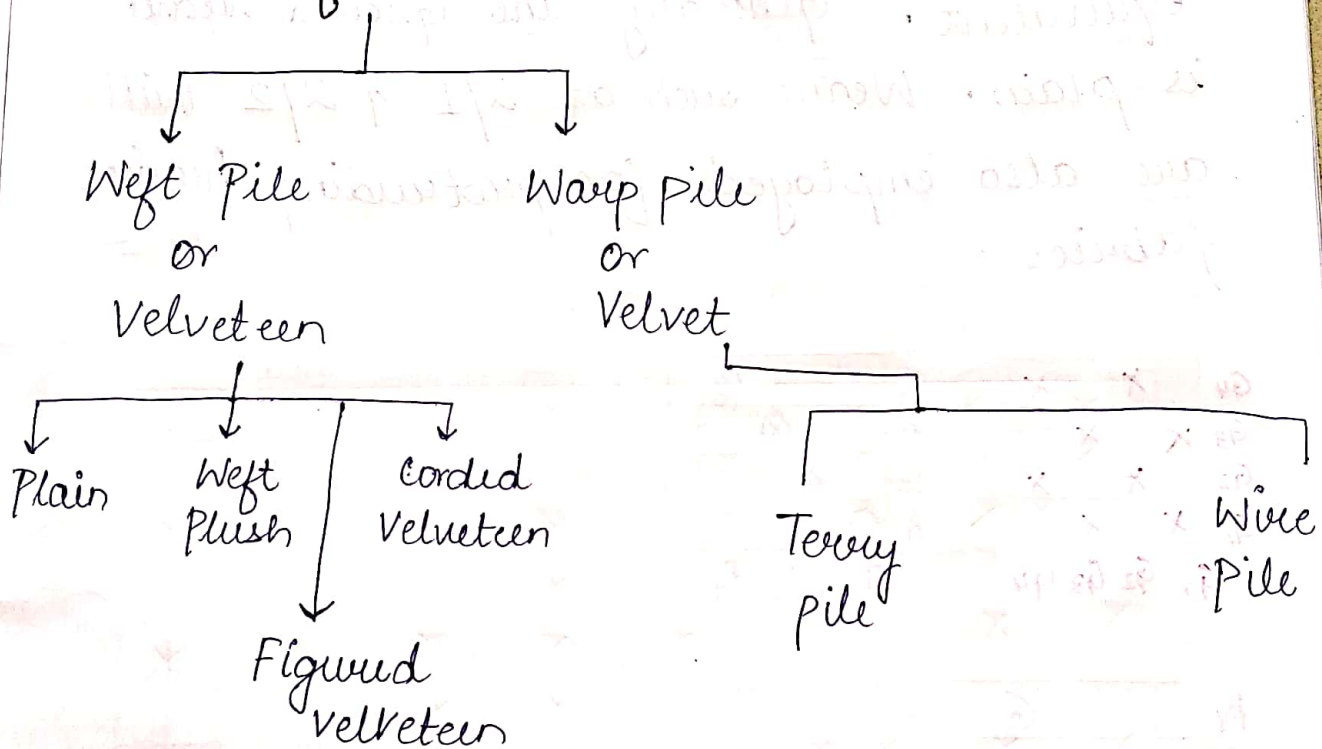
A hand-drawn graph on a grid. The vertical axis is labeled with 'F' and 'B' alternating from bottom to top. The horizontal axis is also labeled with 'F' and 'B' alternating from left to right. Two curves are plotted: one labeled 'F' at its top end and 'B' at its bottom end, and another labeled 'B' at its top end and 'F' at its bottom end. The curves intersect at a point marked with a circle containing the number 5. The grid is filled with 'X' marks, some of which are red and some are black. The curves are drawn in black ink.

B	X	X	X	X	X	X	X	X	X	X	X	X
F							X	X	X	X	X	X
B	X	X	X	X	5	X	X	X	X	X	X	X
F				X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F			X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F		X	X	X	5	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X	X	X	X
	F	B	F	B	F	B	F	B	F	B	F	B

Pile Fabric

Pile fabric are characterised by brush line surface formed by the tufts of warp & weft cut threads.

• Classification



• Weft Pile - These fabrics are formed with 2 systems of weft thread & one system warp thread.

These weft pile fabric are also known as

Velveteen.

a) Plain Velveteen - This fabric is also known as "All over velveteen". They are characterised by a uniform surface consisting of protruding fibers that are equivalent. Generally the Ground weave is plain. Weave such as 2/1 & 2/2 twill are also employed for protruding heavier fabrics.

G ₄		X		X
G ₃	X		X	
G ₂		X		X
G ₁	X		X	

G₁ G₂ G₃ G₄

P ₄				⊗
P ₃			⊗	
P ₂		⊗		
P ₁	⊗			

P₁ P₂ P₃ P₄

P ₄				⊗
P ₃			⊗	
P ₂		⊗		
P ₁	⊗			
G ₂		X		X
P ₄				⊗
P ₃			⊗	
P ₂		⊗		
P ₁	⊗			
G ₁	X		X	

2 Plain Weave

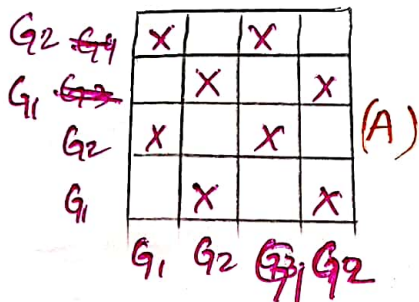
[After 1 Twill 1 plain weave]

No drafts & Peg Plans

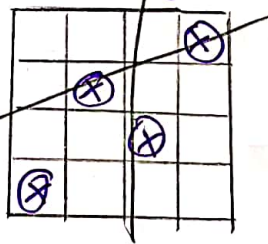
- Weft Plushes: These fabrics are characterised by longer pile floats and heavier weight.

The type of material used for pile yarn are woolen, mohair fibre, acrylic fibre. They are mainly used as "upholstery cloth".

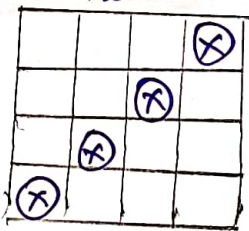
Plain weave



Irregular Sateen



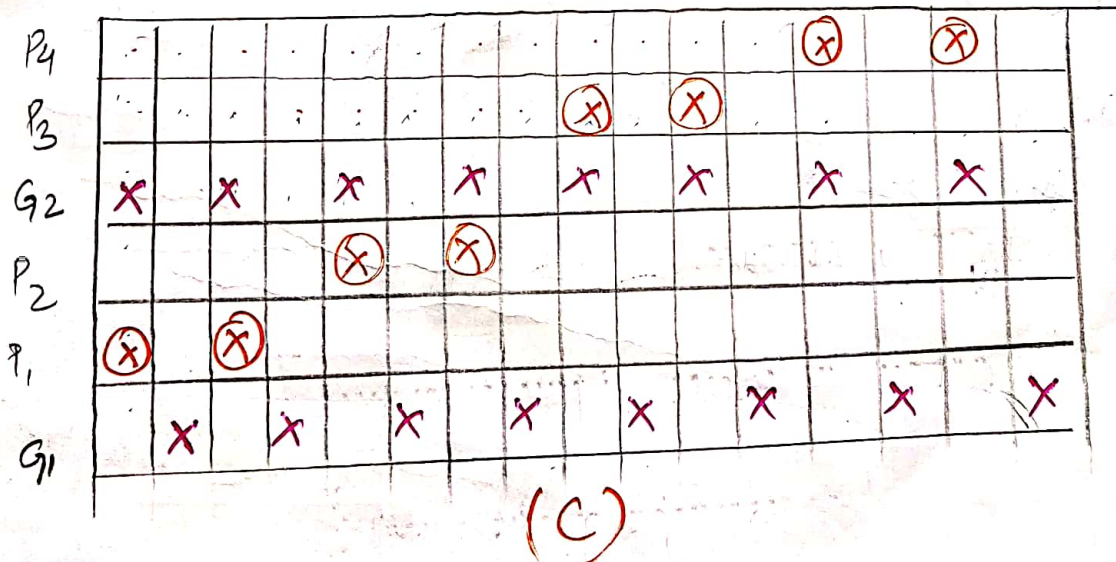
1/3 Twill



8x4 (B)



[Twill 2 times]



(C)

Corded Velveteen

These structures are also known as "Cordurey's or Fustians". The tufts of fibres forms cords or ribs that run in warp direction. The ground weave may be plain or twill.

(A)
Plain weave

G ₂		x		x
G ₁	x		x	
G ₂		x		x
G ₁	x		x	
	G ₁	G ₂	G ₁	G ₂

(B)

P ₄		(x)		(x)
P ₃		(x)		(x)
P ₂	(x)	(x)	(x)	
P ₁	(x)		(x)	

Rib structure

P ₄		(x)				(x)
P ₃		(x)				(x)
G ₂		x		x		x
P ₂	(x)					
P ₁	(x)					
G ₁	x		x		x	x

Figured Velveteen

In this structure pile forms an ornamental design. Any velveteen weave is suitable for figures but the ground structure is varied according to the design.

Plain weave

	x		x
x		x	
	x		x
x		x	

G₁ G₂ G₁ G₂

(A)

		⊗	⊗
		⊗	⊗
⊗	⊗		
⊗	⊗		

(B)

Any
(Figure)
or
(structure)

P ₄			⊗	⊗			⊗	⊗
P ₃			⊗	⊗			⊗	⊗
G ₂		x		x		x		x
P ₂	⊗	⊗			⊗	⊗		
P ₁	⊗	⊗			⊗	⊗		
G ₁	x		x		x		x	

(C)

WEFT PILE

- Enduse: Dress material for children, lining cloth, artificial fur cloth, home textiles.

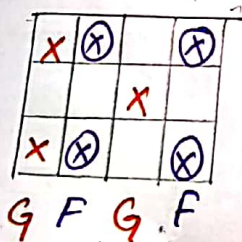
WARP PILE

These fabrics consist of loop or piles of warp yarn running lengthwise along the fabric. 2 system of warp thread & 1 system of weft thread is necessary to construct warp pile structure.

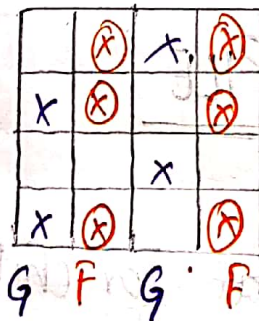
I) Terry Pile ^(Loop cutting) (No draft / Peg Plan)

Terry fabrics are produced by using 2 or 3 warp beam & single weft system. The pile is not cut but it is left as it is.

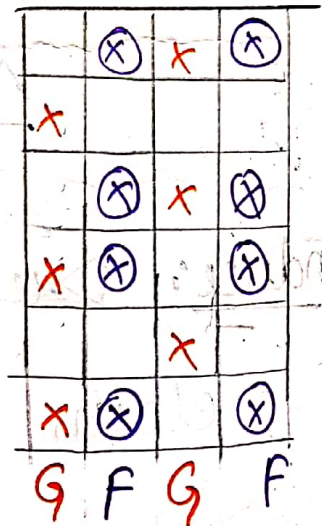
• 3 pick Terry



4 pick Terry



6 pick Terry



[plain weave + Float]
↓
Motive

5 Pick Tenney

x	⊗		⊗
	⊗	x	⊗
x	⊗		⊗
		x	
x	⊗		⊗
9		9	

II Wire Pile (Instead

In this method ordinary picks are inserted by means of a shuttle.
Wires are inserted by a special position.

LENGTH & DENSITY OF PILE IN VELVETEEN

* Length of Pile:

• Length of Pile depends on 2 factors

1] Warp Thread density

2] Number of Warp ends over which the pile weft floats

Thus the pile length increases with reduce warp ^{thread} density per centimeter, or with increase in the no. of warp threads over which the pile weft passes

* Density of Pile

The density pile float depends on the following factors.

① Count of weft yarn

② The pile length

③ The pile density per cm.

By using a coarser web, & maintaining the
pile becomes coarser & its density is increased

Non-Wovens

Non-woven fabrics are made
from staple fibres & long fibres
together by chemical, mechanical or
solvent treatment.

APPLICATIONS

Used for:-

* Medical

* Geotextiles