

## 4. Satin/Sateen Weave

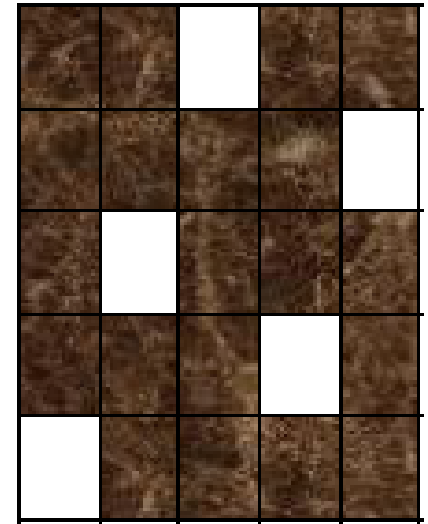
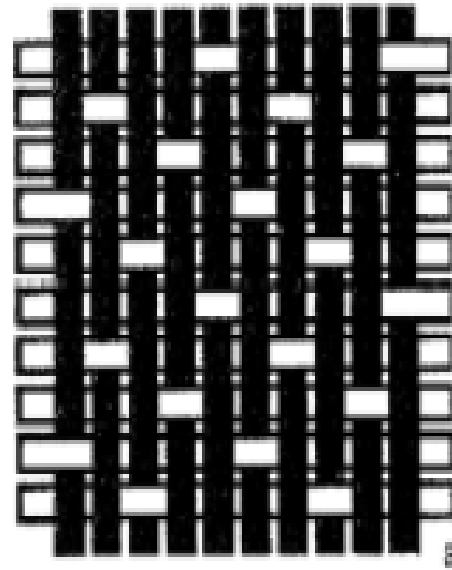
- ✓ Similar to twill weave but the **diagonal line** of the satin weave is **not visible**.
- ✓ It is purposely interrupted in order to contribute to the flat, smooth, lustrous surface desired.
- ✓ Interlacing points are arranged so as to allow the floating threads to slip and cover the binding point of one thread by the float of the other which results in the maximum degree of smoothness and luster.
- ✓ A smooth **lustrous surface** created by extensive **floating** (length of yarn with out interlacement) of the warp (satin) or weft (sateen) on the face side of the fabric.

- ✓ There is no visible design on the face of the fabric.
- ✓ In a true satin weave, each warp and weft yarn only interlace once in each repeat of weave.
- ✓ Satin weave fabrics have relatively long floats.
- ✓ Express in fraction wherein the numerator signifies the Repeat of the weave [R] and the Denominator indicates the vertical shift [So]

# Satin Weave

Shift Rules/ steps

- i. Shift  $[s] > 1$
- ii. 'S' should not be  $[R-1]$
- iii. 'S' should not be equal to the Repeat  $[R]$
- iv. 'S' must not be a factor of weave repeat  $[R]$
- v. The smallest number of possible threads is 5  $[R \geq 5]$



5 shaft warp face satin

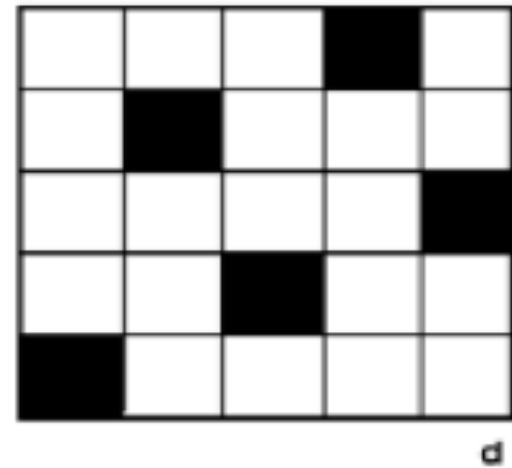
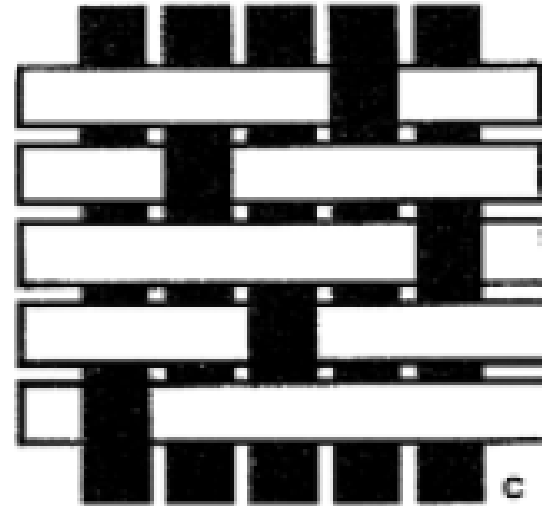
- ⊕ In a warp face satin, the face is predominantly warp yarn
- ⊕ In a weft face satin, the weft yarns are predominant on the face.
- ⊕ Satin weave may be designated by the number of harnesses they require in weaving, such as five-harness satin.

# Satin-weave Fabric

- ✓ Satin fabric is made from filament yarns, with the warp yarns predominant on the face.
- ✓ Satin fabrics are smooth and lustrous because lustrous filament yarns are used; there are few interlacing points, that gives long floats; and the face yarns are fine and closely packed.
- ✓ Since the greatest lustre is in the lengthwise (warp) direction, garments using this fabric in warp direction show lustre effect.
- ✓ Generally wove face down on the loom.

# Sateen Weave

- ✓ Sateen fabric is a durable cotton fabric, usually with **weft face** satin weave.
- ✓ It is **not lustrous** as satin fabric as spun yarns are used.
- ✓ Since it is also heavier, with thicker yarns, it is not as drapable as satin fabric.



**Weft face Satin**

# Irregular Satin/Sateen weave

Satin/Sateen weave can be classified:

- ✚ Regular satin/sateen weave which fulfills the shift rule. E.g. 5 & 7 end
- ✚ Irregular satin/sateen weave which doesn't fulfill the shift rule. E.g. 4 & 6 end

**Case 1: Construct a sateen weave having Repeat [R]= 4 & shift [s]= 1,2,3,2**

1	2	3	
		1	2
	1		

**Case 2: Construct a sateen weave having Repeat [R]= 6 & shift [s]= 2,3,4,4,3,2**

		1	2	3	
3	4			1	2
1	2	3	4		
			1	2	3
	1	2			

## Variable shift Rules

Suppose given shift  $[s]=a$  the irregular satin/sateen which has repeat  $[R]$ , the shift will be:

- Up to  $R/2$  take shift  $[s] = a$
  - At  $R/2+1$  take shift  $[s]=R/2$
  - Finally, the rest take shift  $[s] = - a$
- N.B.  $a \neq R/2$

**Case 1 Construct a sateen weave having Repeat  $[R]= 6$  using the rules of variable shift.**

Let us assume the shift  $[s]=2$ , the shift will be:

- Up to  $R/2$  take shift  $[s] = 2$
- At  $R/2+1$  take shift  $[s]=R/2=3$
- Finally, the rest take shift  $[s] = - 2$

			-2	-1	
-1					-2
2	3				1
			1	2	
	1	2			

# Sateen Derivatives

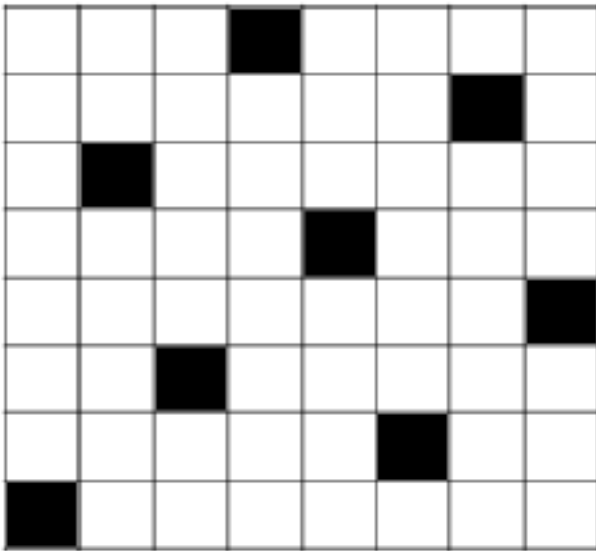
## (1) Reinforced sateen

- It is similar to that of reinforced twill wherein one more overlap should be added for every overlaps of the basic sateen. Additional overlaps in the repeat make the fabric structure stronger.

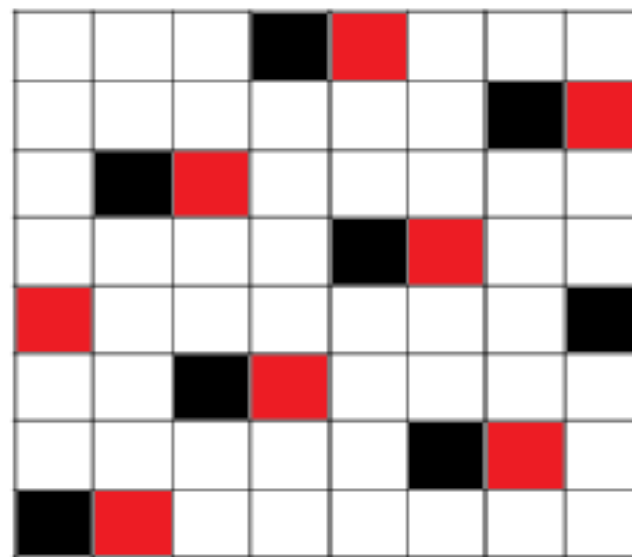
■ Ex. 1. Construct a Reinforced sateen on the base of sateen

8/5

A



B



■ Ex. 2. Construct a Reinforced sateen on the base of sateen 5/2

## (2) Shaded sateen

- ✓ Shaded sateen represents a gradual transition from the sateen with weft effect to, the sateen with warp effect, and vice versa.
- ✓ The repeat  $R_y$  and  $R_o$  of the shaded sateen is determined by the formula:

$$R_y = R_{yb}$$

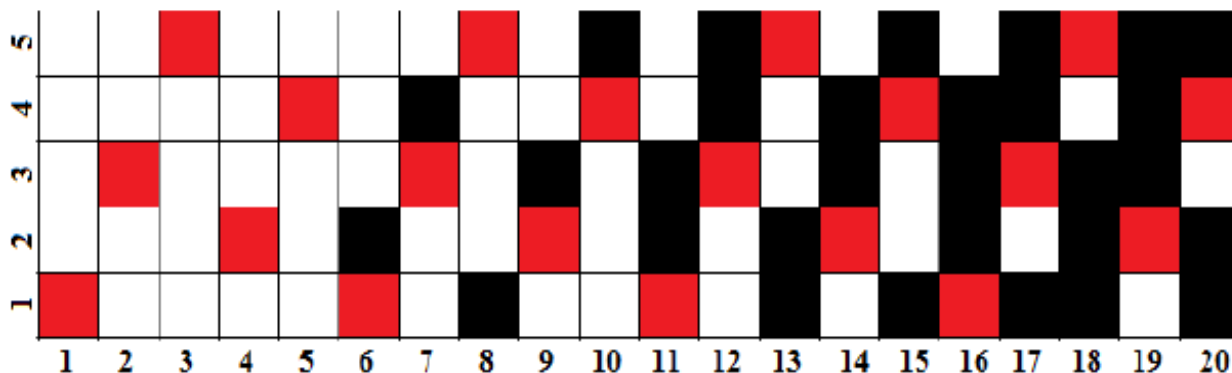
$$R_o = R_{ob}(R_{ob}-1)$$

■ Ex. 1. Construct a Shaded sateen on the base of sateen 5/2

- ✓ The repeat  $R_y$  and  $R_o$  of the shaded sateen is determined by the formula:

$$R_y = R_{yb} = 5$$

$$R_o = R_{ob}(R_{ob}-1) = 5(5-1) = 20$$



■ Ex. 2. Construct a Shaded sateen on the base of sateen 8/3