Satin Blocks

Emery Classification

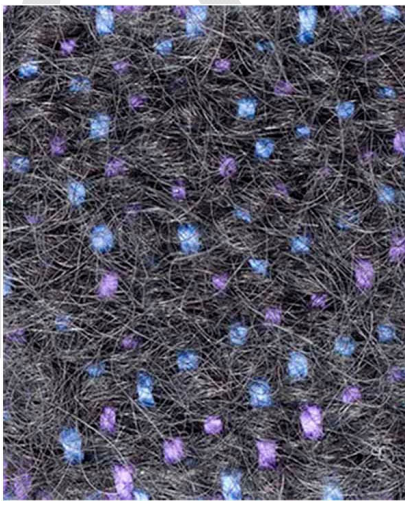
Satin is a simple weave that has intermittent progressions of floats with a suppression of the appearance of diagonals. A simple weave has two elements, a warp and a weft.

Weaving Category

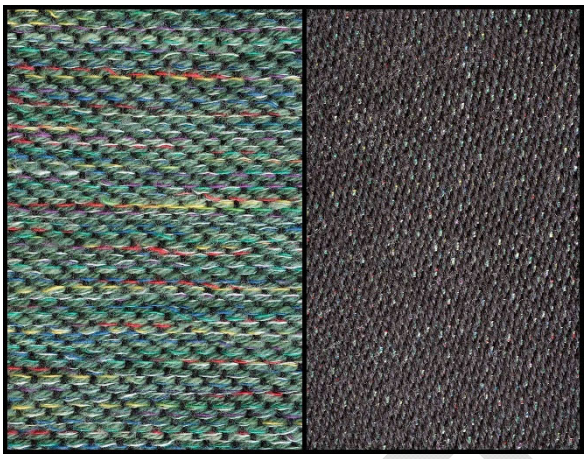
A satin has its own category as described by Emery. It is an unbalanced weave, one side weft-dominant, referred to as “sateen”, the other side warp-dominant, called satin. The word satin is generally used to name the structure.

Fabric Characteristics

In order to achieve the suppression of diagonals, discussed later, a satin needs at least five shafts. Even when it appears that there is a twill line as in the photo of a satin below, the progression line is not continuous.



The next fabric sample shows the two side of the fabric, weft-dominant sateen on the left, warp-dominant satin on the right.



In order to weave satin blocks, ten shafts are needed. Below is a sample with two weft dominant blocks; when one block weaves sateen, the other weaves satin. However, the two blocks can be combined in the treadling, as shown in the satin band in the middle of the sample.

Blocks of satin are called damask, but we generally think of damask as having many satin blocks forming figurative motifs.

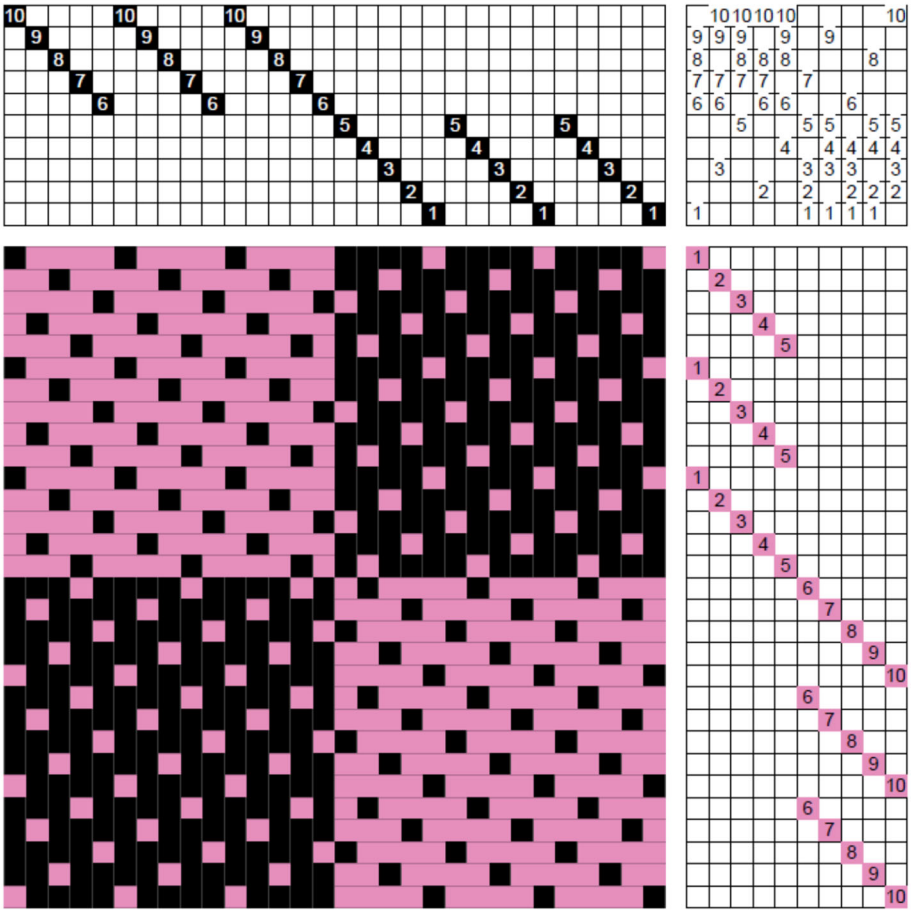
2 Satin Blocks

Drawdown

There are two ways of weaving satin blocks. One is to thread a straight twill and arrange the tie-up for discontinuous diagonal lines. The other is to thread a satin and use a straight twill tie-up.

In both cases, the floats in one block should not continue in the adjacent block.

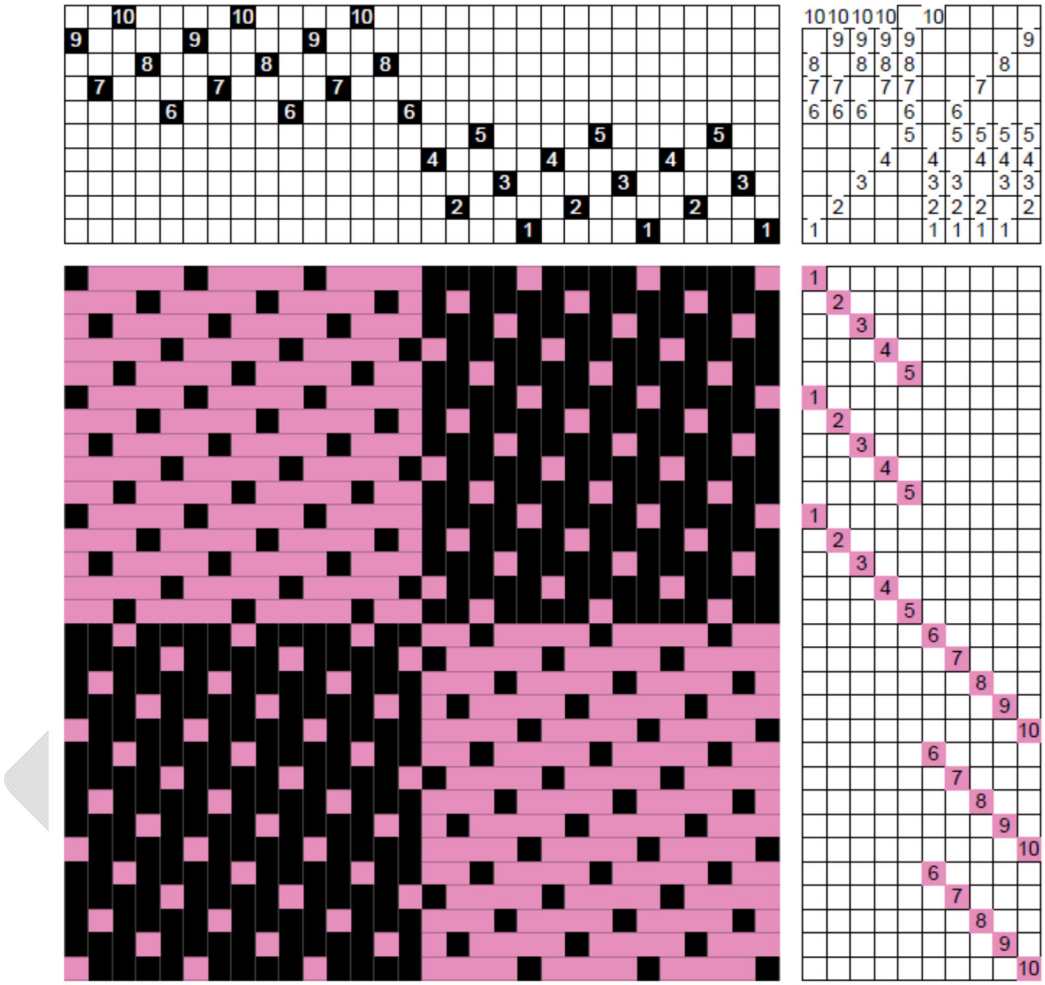
Below is the ***sinking shed*** drawdown with straight twill threading, showing this point. For example, at the edge the satin block formed with the straight draw on shafts 1 to 5 where there is a weft float, a warp thread shows next to it in the sateen block formed with the straight draw on shafts 6 to 10. The tie-up shown here to avoid floats spilling into the adjacent block is not unique. Others can be obtained.



3 Satin Blocks

The drawdown shows that the float is one thread less than the width of the threading or the length of the treadling. For a five-shaft satin the float is over four threads and four treadling steps.

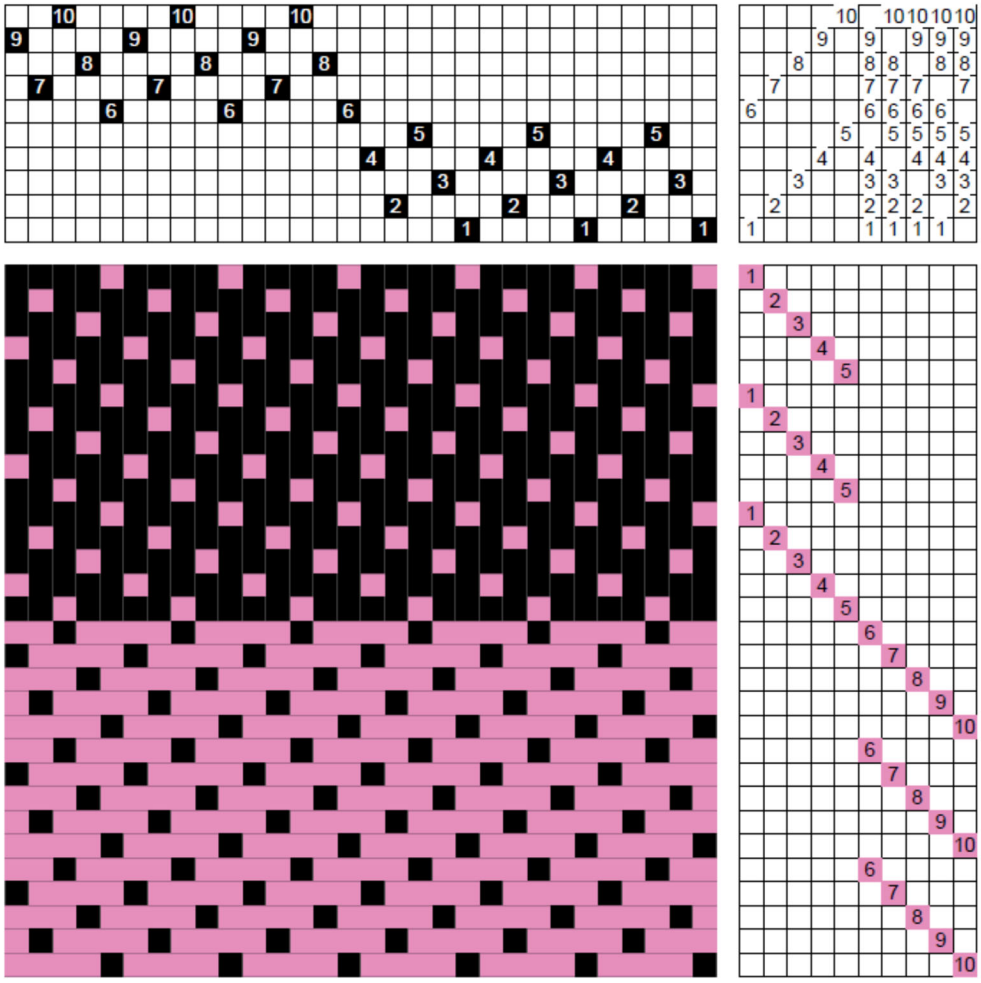
The next drawdown, also ***sinking shed***, starts with a satin threading.



The bottom fabric on page 2 shows a warp-dominant area where the two blocks were treadled together. It is also possible to treadle the blocks together to produce a weft-dominant area.

The next ***sinking shed*** drawdown shows the treadling for the both blocks woven weft-dominant and warp-dominant when threaded as satins. It is also possible to combine the treadling starting with a straight draw threading.

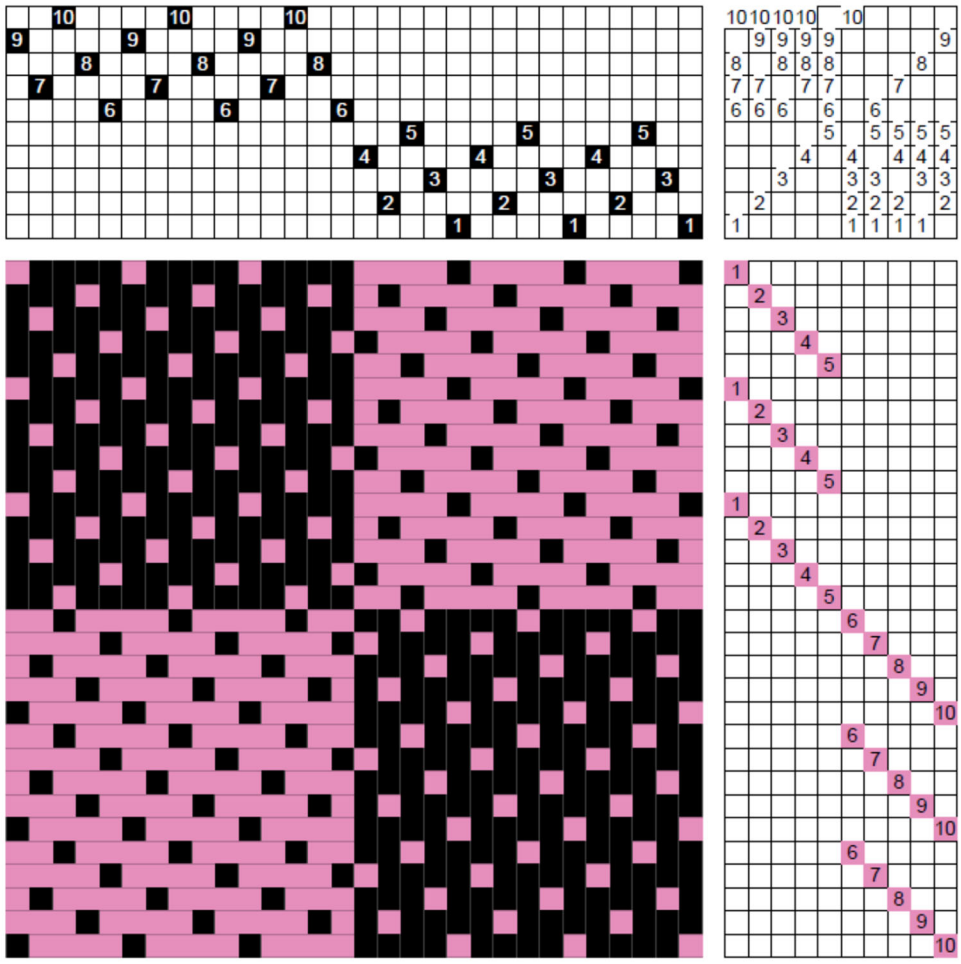
4 Satin Blocks



However, each option requires five additional treadles; thus, to weave the two blocks in all possible configuration would require twenty treadles. Therefore, this option needs a table loom or a computer driven dobby.

The second fiber sample shows how when one side is warp dominant, the other is weft dominant. Thus, if we use the same draft and apply it to a rising shed loom, our blocks will be reversed, but the fabric is the same.

Next is the ***rising shed*** drawdown using two blocks threaded as satin. Using a straight draw threading would work equally well



.

The type of blocks have been exchanged, as we would expect from the back of the fabric.

Function

From upholstery to tablecloths, blocks of satin are ubiquitous and luxurious when woven in silk. The fabric, however, tends to be heavy because more weft is packed in the fabric. Very thin threads work best.

Sett

Satins can have long floats, thus the sett is usually that of a twill with long floats or closer.

Width of the blocks

The width of the block is variable and is increased by repeating the satin unit, but the repeat must

be complete, not partial. Similarly, the height of the block is variable, but a complete treadling for the block must be used.

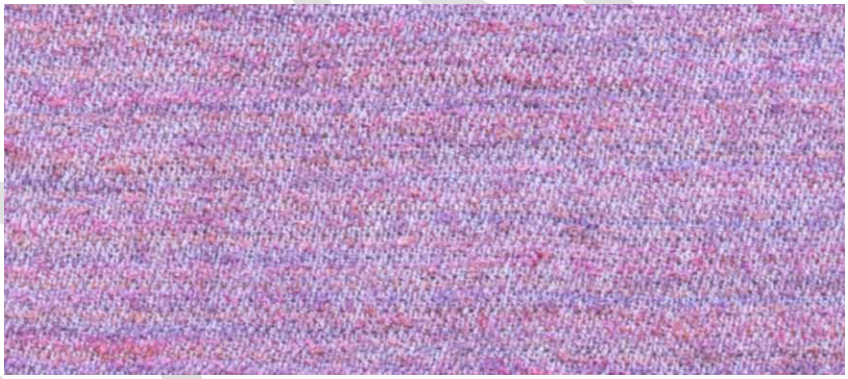
No matter how wide the block, the width of the weft float is always one less than the number of threads in the unit. Similarly, the length of the warp block is one pick less than the number of treadling steps.

Number of Blocks Available

Each block requires at least five shafts; at least five additional shafts are needed for each additional block.

Satin Blocks

If ten shafts aren't available for satin blocks, false satin blocks are a good alternative (see satin blocks entry). Below is the warp dominant and weft dominant side of a four shaft 1/3 broken twill, also called false satin. The fabric is difficult to distinguish from a true satin.



There are rules for developing a satin block; these account for the fact that there is no four-shaft or six-shaft satin. The fabric follows Emery's definition of the intermittent progression of floats. We use a step to cause a straight draw to be intermittent.

Here is how a satin block threading can be developed and to check whether a satin of a certain number of threads is possible:

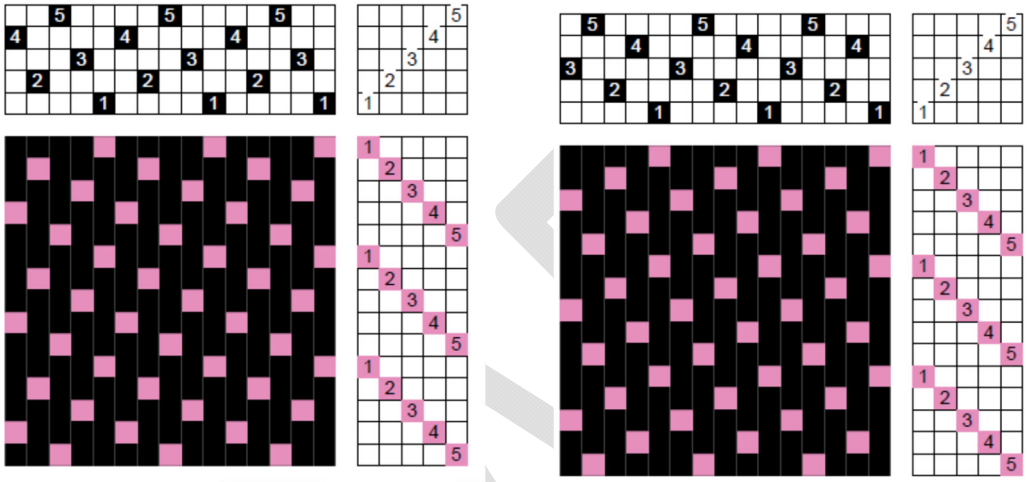
1. Start with a straight draw for **n** number of shafts
2. a step number of **n** wouldn't allow any threading
3. a step number of **1** or (**n** - 1) wouldn't change the straight draw
4. the step number cannot have a common factor (mathematically) with **n**
5. The remaining numbers, if any, can be used for steps

We can apply the rules to 4 , and 6 shaft straight draws:

Applied to 4 shaft straight draw	**Applied to 5 shaft straight draw**	**Applied to 6 shaft straight draw**
Start with a straight draw: **1, 2, 3, 4**	Start with a straight draw: **1, 2, 3, 4, 5**	Start with a straight draw: **1, 2, 3, 4, 5, 6**
No steps of 4	**No step of 5**	**No step of 6**
No step of 1 or 3	**No step of 1 or 4**	**No step of 1 or 5**
Remaining step: 2; cannot be used as 4 is a multiple of 2	**Remaining steps: 2, 3 both can be used**	**Remaining steps: 2, 3 cannot be used since 2 times 3 = 6**
No satin possible	**Step of 2: 1, 3, 5, 2, 4 Step of 3: 1, 4, 2, 5, 3**	**No satin possible**

The drawdown we used so far has a step of two for the threading of the satin blocks. Using a step of three results in a slightly steeper staggering of floats as shown below in the ***sinking shed*** drawdowns for a warp-dominant single block.

On the left is the block found in the second drawdown, using a step of two. On the right the threading uses a step of three.



Satins are not widely used because of shaft limitations. But should you have ten shafts, two blocks are worth exploring.

References

Emery, Irene. *The Primary Structure of Fabrics*. Washington, D.C.: The Textile Museum, 1980.

Laughlin, Mary Elizabeth. *More Than Four. A Book for Multiple Harness Weavers….* Newcastle, CA: Laughlin Enterprises LTD., 1976.

Petrini, Marcy. https://www.marcypetrini.com/marcy-s-blogs/91-%C2%A0blog-042-satins-and-sateens-i

Petrini, Marcy. https://www.marcypetrini.com/marcy-s-blogs/92-%C2%A0blog-043-satins-and-sateens-ii