

# SWATCH PAGE

## SATIN WEAVE AND DAMASK

*"The barres were of gold ful fyne, Upon a tissu of satyne." —Chaucer 1366.*

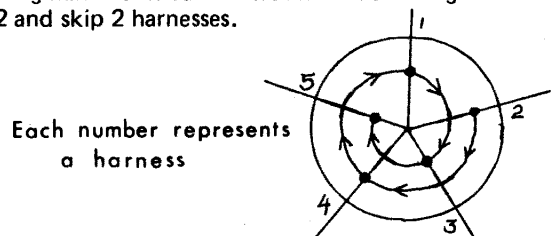
Satin weave has a smooth surface which is caused by a long float which reflects the light to yield a wonderful luster. The word satin, itself, brings to mind splendid fabrics of silk from the Far East and magnificent textiles of the medieval period in Europe. Can all of us not conjure up an imaginary treasure box filled with jewels and satins?

The satin weave is well within the domain of the handweaver especially since owning a multiple harness loom is becoming less uncommon even for beginning handweavers.

**THEORY:** The satin weave is actually a rearranged twill for 5 or a multiple of 5 harnesses. The threading and the treadling are both twill, but the tie-up is not twill, because to have a twill line in the weave would form a definite pattern which would not permit a smooth surface which is characteristic of the lustrous satin. Thus, in satin, a single harness is raised for each shed so that the weft floats over a group of four warps and is caught under one. So to avoid a twill line one must skip harnesses on successive sheds.

Harriet Tidball in her monograph on the Satin Weave discusses various ways to draft the proper tie-up which will result in the smooth surface of satin, but I find simplest, a method she discusses in her Shuttlecraft Guild Handweavers Bulletin of March 1956.

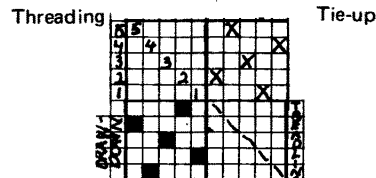
She shows that we cannot have a true satin on a 4 harness loom, because, if harnesses, are skipped, the result either has a definite twill pattern or goes back and forth between harnesses 1 & 3 or 2 & 4 leaving half the threads unwoven. But if we go to 5 harnesses, we can obtain a satin weave. Use a circle diagram and start with harness 2 and skip 2 harnesses.



This produces the order 2,4,1,3,5 (see the dots) which yields, using all 5 harnesses in 5 sheds, no twill pattern.

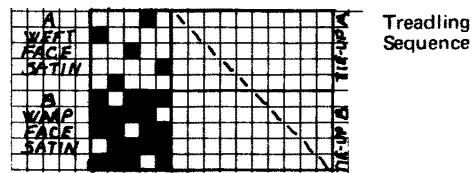
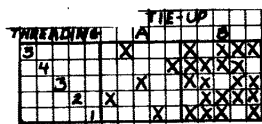
The succession was started on 2 and not on 1 as is seen in many texts because, if it starts with the warps on harness 1, the edge thread will slip out of place if one is working with the blocks in damask which I will soon talk about. If we go to a 6 harness diagram, there is a similar result as with 4—a true satin can not be produced. But, with 7 or more harnesses, satins can be produced. However, in these situations, the satin has a much longer float and therefore much finer threads must be used.

**DRAFT:** For the 5 harness satin, we have the following draft:

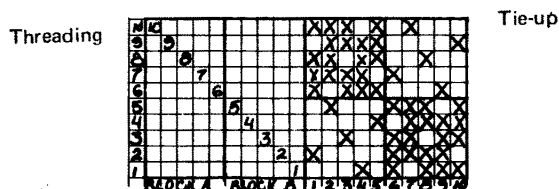


Note that we have over 4 warps and under 1 warp (the darkened squares in the weave diagram or draw-down represent warps up). Thus, we have a weft-faced satin!

If you peek underneath your fabric, you will see a warp-faced satin. How do we get this on the topside? Here's where the 8 harness folks are in business. Only 5 treadles were used for the weft-faced satin, but there are 10 beautiful treadles on your loom. We can take treadles 6-10 and tie them up in such a way, that where treadles 1-5 were attached to harnesses so certain threads were up—now these threads will be down and all the other threads will be up. But do it in reverse order (see diagram below). We will call the weft-face satin tie-up, A, and the warp-face satin tie-up, B.



**DAMASK:** Damask is the satin weave in which patterns are produced by opposing weft-face satin to warp-face satin in the treadling. Thus, we get the same effect gained by the additional tie-up of treadles 6-10 as mentioned in the last section in the horizontal direction (selvage to selvage) as well as vertically (as shown above). This is achieved by using a threading on 10 harnesses (as on a Macomber loom) as shown below.



1. The block A is made by repeats of 1, 2, 3, 4, 5 threading and Block B by repeats of 6, 7, 8, 9, 10. The 2 units may be repeated as desired.
2. One must not thread only part of a unit, but in a multiple of 5.
3. The tie-up is made by using the tie-up of the 5 harness satin in combination. A block is made by placing the single-tie sequence for the weft-face fabric, on the first five harnesses of the first five treadles. The other harnesses on these first five treadles are tied to yield the warp-face surface as seen on diagram 2. Block B is simply those reversed.
4. To weave Block A for either the 5 harness satin or the 10 harness Damask, treadle 1, 2, 3, 4, 5 repeated as many times as desired. Block B is achieved by treadling 6, 7, 8, 9, 10 as many times as desired.

### Yarns and Sett and Uses

A closer sett is used for satin weave than for tabby or twill as there are fewer interlacements of warp and weft (remember we had one warp up and 4 down).

Linen. Traditional damask is woven of fine wet-spun mercerized linen closely sett, but one may use:

- 10/2 @ 24 epi to 32 epi
- 20/2 @ 26 epi to 28 epi
- 30/2 @ 32 epi to 36 epi
- 40/2 @ 40 epi to 45 epi

Use the closer sett when a heavier weight is needed as for table mats, and a further apart sett for napkins and tablecloths.

F. Fawcett has fine mercerized wet-spun linens which are stronger, more lustrous and smoother than unmercerized linen, and thus more suitable to satin weave. To obtain a great difference in light reflection of your blocks, you might try unmercerized linen as a weft and mercerized linen as a warp.

Silk. I immediately think of silk when I think of satin weave, but silk is so hard to obtain. If you can find some, I suggest 10/3 silk @ 45 epi used for dress fabric.

Because there is less interlacement of threads in satin weave, less strain is put on the silk fibers (Tidball Monograph No. 7). I'd like to mention here an interesting article on weaving in the Far East which delineates the great care utilized in silk weaving (Shuttle, Spindle, and Dyepot – Spring 1976). The only dealer of silk I know of is Robin and Russ who always carry 4 ply silk which runs 12,800 yards/lb. (used about 48 epi). They also have odd lots of silk now and then.

Cotton. 20/2 perle @ 30 epi used for upholstery and table linens.

Wool. 2/32 @ 45 epi used for dress goods.

### Variations in Design

Harriet Tidball in Shuttle Craft Guild Handweavers Bulletin suggests various ways to weave the satinweave:

1. Classically one weaves satin weave with the same warp and weft in a balanced weave in which there are the same number of weft shots per inch and warp ends per inch (EPI).
2. Change the weft color to yield weft stripes.
3. Change the warp colors to yield warp stripes.
4. Use a different size yarn in the weft.
5. Change the weft color totally.

I suggest that you look in the references, especially the Tidball articles, Regensteiner book and Celsner and Dale for examples of use of satin weave.

### Glossary

1. Damask – a reversible patterned fabric created from a combination of a warp-faced satin and a weft-faced satin.
2. Mercerized – thread treated with an alkali under pressure to give a silky finish.
3. Satin Weave – a weave which is woven in a twill threading with a single harness raised for each shed so that the weft floats over a group of warp ends and is caught under one. This thread must skip harnesses in successive sheds in a regular sequence so that there is no pattern of warp threads on the surface. This yields a smooth, highly light-reflecting surface.
4. Wet-spun linen – flax when spun wet yields a smoother yarn (and thus, is more suitable for warp) than when spun dry (which yields a fuzzier yarn).

### References

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- Condit, Joan. "Weaving with Linen." Handweaver and Craftsman. Summer 1955.
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- Oelsner and Dale. A Handbook of Weaves. Dover.
- Regensteiner, E. A Weavers Study Course. Van Nostrand Reinhold. 1975.
- Tidball, H. Shuttle Craft Guild Handweaver's Bulletin. March 1956. Vol. 33, No. 3.
- Tidball, H. Contemporary Satins. Shuttle Craft Monograph No. 7.

### Comments and Thanks

Although many readers are 4 harness weavers, I felt that Satin Weave was an important part of our weaving culture and it should not be neglected and should be understood.

Thanks to Irene Wood for valuable discussions on linens and linen weaving. Irene will present a swatch of Damask Satin weave in her summer's Advanced Multiple Harness Class. This is a most valuable and provocative course. I know—I just had the privilege of taking it—from this marvelous lady who is so generous with her vast experience and knowledge.

Happy Swatching and Experimenting,

Joy Rosner