



# An HJS Studio Tutorial:

## How Much Fiber to Spin?



Figuring out how much fiber to spin for a project is a subject that comes up frequently in classes, in guild meetings, and on Internet mailing lists. Spinners want to know how much fiber they should spin for a project so they neither run out of yarn nor end up with so much extra they could make a duplicate project. Fortunately, it's surprisingly easy to determine how much to spin, and there's several ways to do it. In this tutorial I will use weaving and knitting as examples, but this method will apply to just about any craft in which handspun is used.

### Sample!

First is that horrible S word, s-s-s-s-sample. Many knitters and weavers hate the idea of sampling. It sounds like it must take a long time and lots of yarn to do a sample for a project. And it's boring and you end up with something you can't use! So they jump into their spinning and then find out too late they don't have enough yarn to complete the item they want to make, and also that they don't remember enough about the preparation to be able to make more yarn similar enough that it's not really obvious they ran short. Sometimes this can lead to some wonderful creativity, but most of the time it's just a hassle, and may well result in a beautiful project never being finished. Who needs more UFOs in the closet?

Sampling really is a fast and easy way to avoid such problems. After you've given some thought to your project and figured out about what you'd like the yarn to be like, buy or prepare some of the fiber you want to use, and spin a particular amount. For example:

- ❖ You might card your own fiber on a drum carder. In that case, card one batt of fiber using the methods and colors and fiber combinations you want for your final project. Make notes about the processes you used.
- ❖ Maybe you like to handcard your fiber. You could weigh the fiber you plan to card, or count a specific number of rolags if you're pretty consistent about how much fiber goes in each. Don't forget to make notes.
- ❖ Perhaps you handcomb your own fiber. In that case, weigh a set amount and comb that much. Again, write down what you've done.
- ❖ You might use commercially prepared fiber, carded or combed. Weigh how much you use in your sample and note the amount.

Weighing your fiber is the best way to be sure of the amount used, but if you're consistent about your fiber prep, you can get away with not weighing, but guestimating the amount. Next step: Spin! Go ahead and spin the amount you've decided on for your sample. Use the method you have planned for your project, and spin the thickness of yarn you want to use.



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When you're done spinning, ply your yarn and skein it, or if you are going to use singles yarn, just skein it. Wash the yarn as you plan for your full project, and let the skein dry (you can skip washing if you're going to weave with unwashed yarn). Finally, measure the yardage of the skein. Repeat this process for each type of yarn you're planning to use, if they differ in spinning method or fiber type/preparation.

If you're going to weave your project, you're done already! Skip to weaving calculations, below, to see how much more yarn you need to spin. If you're planning to knit, the next step is a swatch.

## Swatching

I know, swatching by any other name is still a sample! But it's an important tool in finding out how your project will look when it's finished, and how much yarn to make for it. Please don't skimp on your swatch! I've learned the hard way that a skimpy swatch is no better than no swatch at all.

- ❖ First of all, use the same needles and stitch pattern you want for your project. Your swatch won't give you accurate results if you change needles or stitch later on.
- ❖ Next, knit as large a swatch as you can stand. Elizabeth Zimmerman recommended a "Swatch Cap". I don't usually go that far, but I do try to knit at least 4 inches / 10 centimeters by 4 inches/10 cm. A smaller swatch I find less effective because it takes a full inch or more of knitting for my fingers to get into the same relaxed rhythm they will have when I'm knitting the full project. What this means in practice is that my knitting is still somewhat tight. When I measure the swatch, it will be too small compared to when my knitting is more relaxed. If I plan the project based on that tighter gauge, the whole project will be way too big—ask me some time about the sweater I made when my daughter was six which finally fit her when she was ten! Another swatch possibility may be a bottle carrier. I made one as a swatch for a fair-isle coat, and it's my preferred bottle carrier now.
- ❖ Measure the yarn left in the ball and subtract that from the total amount of yarn in the skein before you started your swatch. The resulting number is the amount of yarn in the swatch.
- ❖ Figure out how many square inches are in the swatch by multiplying the inches in height by the inches in width. Make sure the knit swatch is flat but not stretched when you measure it. Don't block it unless the finished knit project will be blocked the same amount—like a lace shawl.
- ❖ Go back to the project you have in mind. Sketch it on a piece of paper along with the measurements for each part. Work out approximately how many square inches are in this project.
- ❖ Next, divide the total number of square inches in your project by the square inches in your swatch. This tells you how many 'swatches' of yarn are in your project. If there are, for example, 20 'swatches' of knitting in your project, then you know 20 times the yardage in the swatch is how much to spin as a minimum
- ❖ **Important!** Now, round up everything by 15 or 20 percent. This allows for "accidents" and design changes while you work. You probably won't need all the yarn you spin, and that allows for yarn to stash for mending the inevitable holes from bugs or wear-and-tear. It's always better to have a skein leftover than be a skein short!



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## A Knit Example to Walk Through

Let's suppose you want to make a long, loose, sleeveless knit vest. It will be in stockinette stitch with ribbing picked up and knit around the edges for a smooth finish.

You spin the yarn you think you want to use. Yardage in this sample skein is 100 yards (handy, huh?). You knit your swatch and find that 20 square inches of knitting uses about 50 yards of yarn. I'm making these numbers up as I go along, you understand—don't expect them to be at all realistic :)

Now you sketch your vest and scribble in some measurements. The finished item will be about 40 inches around and about 40 inches long from shoulder to bottom edge. That's about 1600 square inches (40 inches x 40 inches) altogether, plus whatever it takes to knit the ribbing that borders the front opening, neck opening, and armholes—let's say another 400 square inches, for a total of 2000. This is a really rough estimate, but that's OK, we'll build in a comfortable margin for error. If you have substantial amounts of very different stitches in your project, you will need to swatch each stitch to find out what the yarn requirements are.

Your finished project will be about 2000 squares inches of knitting. Your swatch used 50 yards to produce 20 square inches. Divide the 2000 square inch total number for your project by the 20 square inches of your swatch, resulting in 100 'swatches' of handspun. Each swatch is 50 yards of yarn, so 50 yards times 100 swatches equals about 5000 yards to spin for your project.

You're almost done figuring! Now we add on 15-20% to be on the safe side. This allows for your gauge changing a bit, or the ribbing being three inches deep instead of two, or adding pockets, or using a slightly more textured stitch than stockinette—don't switch to something drastically different like cables or garter stitch without swatching again! In this case, 20% more than 5000 yards makes a total of about (reaching for calculator) 6000 yards for your project.

## How Much Fiber is That?

You know how much yarn to spin, but how do you take that back to the amount of fiber? Here's how:

- ❖ If you spun a batt to 100 yards, you figure 6000 yards of yarn divided by 100 yards of yarn to find you need 60 batts of similar weight to complete your project.
- ❖ If you spun, say, one ounce of combed top or carded rolags to make 100 yards of yarn, then you find you need 60 times one ounce, or 60 ounces of fiber, which is 3.75 pounds—I'd go ahead and round it up to 4 pounds to make things extra sure.
- ❖ Or perhaps you weighed 50 grams of fiber for your 100 yards of yarn. In that case, you need 60 times 50 grams of fiber, totaling 3000 grams or 3 kilograms of fiber. I know, that last one mixes imperial and metric. I think in grams OK, and use them quite often for more accuracy in weight, but still don't think in meters or centimeters very well, so generally stick to imperial for length.



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Things get a little trickier when you're trying to figure out how much raw wool to buy. First, look at pieces similar in size, yarn type, and stitch pattern to what you're planning, and note their weights. Patterns will usually give an idea of how many balls of yarn, and what weight each is. Multiplied, this gives you an approximate total weight. After you have an estimate of what your project may need, round up at least 20% to be on the safe side. This new number will be the amount of finished, clean fiber you need for your project.

I generally figure that a raw fleece will yield about half its raw weight in finished, ready to spin fiber, if it's a medium or coarse breed with little grease and other weight that will wash away. If working in fine wool, I figure a raw fleece will yield about 1/3 its raw weight in clean fiber. Yes, these are conservative numbers—better to be safe than sorry!

If your project will need about two pounds finished, clean fiber to make, then, for medium and coarse wools, you will need at least four pounds raw wool. To do the project in fine wools, figure on needing about six pounds of raw wool. To be safe, again round up by 15-20% if you're buying your fiber by the pound.

Most of the time, when buying raw wool, you will be buying entire fleeces, so be sure the weight of the fleece after good skirting is still adequate to your needs. A good seller will allow you to unwrap the fleece and spread it out to see how well it's been skirted before you buy.

Most projects may be made from only one fleece, but if you're planning a really large item, like a garter stitch king-size coverlet using worsted weight yarn (shore up the bedsprings!), you may need to buy more than one fleece to be sure you have enough for the project. Buy both before you start, and blend them together as you work. Wool can vary a lot from sheep to sheep, year to year. Even the same sheep's wool can be quite different from one year to the next, in color, texture, length, handle, etc.

## Weaving Calculations

Weavers have it easy! They don't need to sample if they are familiar with the type of yarn they plan to use. The biggest question is the sett, or the number of warp ends per inch of the cloth's width. Figuring that out is beyond the scope of this article, but check any good weaving book for information on this. When using handspun, I generally use half the wraps per inch of the warp yarn for a drapeable cloth for shawls, etc, when woven in a balanced 2/2 twill. A closer sett would be better for items that will receive much wear and tear.

Warp yardage is figured like this:

- ❖ First, figure the sett, which is how many threads will be in one inch width of warp. Let's say 15 ends per inch.
- ❖ Next, figure how wide you want the cloth to be on the loom. How about 30 inches?
- ❖ Now you need to figure how long the warp will be. That's the length of the cloth you want to weave plus the loom waste, plus some extra for take up and mistakes. We'll figure based on a 10 yard warp (yes, you can do a 10 yard warp in handspun yarn!)

What do we have? Sett x warp width x warp length, or 15 x 30 inches x 10 yards, or 4,500 yards of warp.



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Just as in the knitting calculations, it's best to add 15-20% for a fudge factor. In this case that would be about 5,400 yards.

Weft is figured about the same:

- ❖ Figure your weft picks per inch. I like a balanced weave, so I'll say 15 ppi, just like the 15 epi.
- ❖ Figure how long each shot of weft will be. I add on to the actual width of the warp some random number that feels right. In this case, for a balanced twill, the width of the warp is 30 inches, so I would allow about 33 inches for the length of each shot of weft.
- ❖ How long will the cloth you're weaving? On a 10 yard warp, let's suppose you will weave 8 1/2 yards.

Our calculations are: 15 ppi x 33 inches per shot x 8 1/2 yards of weaving, or  $15 \times 33 \times 8.5 = 4,207.5$  yards of weft to spin. Add on your 20% fudge factor, and you have about 5,500 yards to spin for your weft.

When figuring out what this means in terms of fiber to prepare or purchase for your project, do just as explained above. If you need a total of 10,000 yards for the warp and weft of your project, and your sample skein weighed one ounce and produced 100 yards, then  $10,000 \div 100 = 100$  ounces of fiber, or 6.25 pounds. (Yes, weavers, I know these figures are strange—a yarn so thick as just 100 yards per ounce couldn't be woven in a balanced twill at 15 epi/ppi—it's the process that counts, not the imaginary figures to explain it :)

## Conclusion

Figuring out how much fiber to prepare for a project isn't just a matter of guessing and good luck. Just a small sample and a little bit of basic math can make the difference between a project that will be used with pride and one that skulks unfinished and unloved (except by moths!) in a bag buried deep in a closet somewhere. Or it can make the difference between finishing the project with the right yarn, or one that you've cobbled together in an attempt to match the right yarn when it ran out. That may be another article, as I've done it more than once! It may spark the creative juices, but it's not as satisfying to me as doing it right to start with.



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