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Do you Kill with Steam?

by Sharon Nani

The Knitting for Profit" series concentrated on the topics and procedures involved in first steam, hard press, and final steam in the last three issues. This article was to implement the knitting and finishing techniques in an actual project. I am going to deviate from my plan by interjecting the topic, "Killing with Steam."

I appreciate getting questions from the readers, it shows me that there is an interest in the topics that I write about. And perhaps even more important, is that it shows me the areas that need more clarification. My goal is always to help the knitter understand the subjects that I discuss as they relate to them or their situation. One of the questions that I have received regarding the topic of "The Three Stages of Steam" is:

Can you please explain what happens when you "kill a fabric" and why some fabrics take steam/heat better than others to allow for a better draping of the fabric?"

Before I can explain the phrase :

1. "kill a fabric" and
2. The effects of steam/ heat on fabric in relationship to drape,

you should have an understanding of the fiber properties that influence these items.

Yarns are affected by many factors, such as: content, twist, spinning, size, finish, and properties. In turn, properties affect categories such as: comfort, durability, looks, shrinkage, strength and stretch. Each of these categories is also influenced by the factors first mentioned; but for the purpose of this article, I will discuss the following topics as influenced by fiber properties. Watch for the properties that answer the reader's question regarding effects of steam and drape.

The *comfort* of a yarn is partially determined by the ability of its fibers to 'trap air.' This is called **insulation.** The structure of wool fibers is very efficient in trapping air. This results in a warm fabric. Synthetics are artificially made to have 'bulk' to simulate these natural properties of wool. The amount of **moisture a fiber can hold** affects several of the categories: comfort, shrinkage, speed of drying, and the amount of static electricity that it produces. It stands to reason that a synthetic fiber that cannot absorb much water would be uncomfortable in hot, damp weather. Cotton absorbs moisture nicely and is often a favorite yarn for summer wear. How fibers conduct heat will affect its ability to store electricity. Poor conductors of heat store electricity, which when rubbed, generate **static electricity**, especially in drier climates. Synthetics are poor conductors of heat. Now stop and take a common sense look at this paragraph and relate these properties to each other. Think about the fact that wool and cotton trap air efficiently. These air pockets also seem to affect their ability to hold moisture (steam) and therefore conduct heat.

The strength or *durability* of yarn fibers are affected by their **susceptibility to moths, mildew, abrasion, moisture, temperatures, and light**. Moths and mildew, which is a fungus, both affect natural fibers. The moth larvae eat hair or silk but cannot digest synthetic fibers. Synthetics can be made to be very strong. Natural fibers can also be treated to add strength, such as mercerizing cotton. Light not only reacts differently to the dye colors in yarn, but it can also weaken some fibers. Therefore, you should never store your yarn or knit products in direct sunlight. Some fibers like acrylics and rayon become weak with heat and/or moisture. They also may have a low melting point, so care must be taken when they are steamed or pressed. Heat and moisture are discussed again under 'shrinkage.'

The appeal of the *look* of yarn fiber is influenced by several properties. Both the **color of dyes** and the **process** by which the fiber is dyed play a part in the way a fiber knits up and hangs (or drapes). The way a fiber 'shines' (**luster**) depends on the structure of the fiber surfaces. The greater the number of reflecting surfaces the less

shine to the yarn. These two properties show an interrelationship when you examine two different fibers such as wool and a synthetic dyed with the same dye. The wool looks duller because it has more reflecting surfaces. The way a fiber hangs or drapes when it is knitted into fabric contributes greatly to the ultimate look. I bet you did not realize the importance of the property of '**relative density.**' The larger the relative density of a fiber, the more weight it has, the better drape it has. Of course, relative density is only one factor that affects drape. Stitch size, construction of fabric, and the effects of steam all contribute to the drape as well. Here is a comparison of the relative density of some fibers of the same dimensions: Notice that acrylics have the least relative density. Now, you can see why some acrylics seem to be too "limp" to drape nicely unless you add yet other factors such as a tighter twisted fiber that has been blended with yet another fiber.

Viscose (Rayon)	1.53
Cotton	1.5
Wool	1.32
Acrylic	1.17

The final category that I will discuss is **shrinkage.** A big factor which affects shrinkage is friction, or the process of rubbing. In a fiber where hairs (or scales) run in one direction, the **rubbing action causes the scales to interlock**. This in turn causes the fabric to shrink. An example of a fiber that does this is wool. This is also the property that causes the matted look of the wool in areas that undergo rubbing action, such as at the underarm. **Moisture** causes many fibers to swell. This in turn thickens the fiber which in turn shortens the yarn length. Watch as you just 'first steam' wool or cotton; by passing the moist steam over the fabric, it shrinks. If instead, in the final steam, you wanted to set the stitches larger, then you must apply pressure with the iron or hand to counteract this shrinkage. **Heat or temperature change** can affect fibers. Acrylics are heat set in manufacture. This means that they are heated to a certain temperature then cooled. The important thing to remember about acrylics, and their relationship to properties is that there was no mention of bad effect of moisture and heat (steaming). When steaming is done properly, *meaning no pressure or distorting of stitches, and no moving or distorting of stitches while the fabric is still damp or warm,* it gives all fabric that polished finished look.

Now, to the final part of the question, ***"what happens when you 'kill a fabric'?"*** According to the dictionary,
to kill - to destroy the vital or active qualities of -. In domestic knitting, I usually hear this term in reference to the fact that a person has destroyed the qualities of a fabric, usually acrylic, because he/she steamed improperly as described above. In professional knitting, this statement does not necessarily carry a bad connotation. For example, a steamer may be told to kill a rayon fabric knit in a tuck stitch. This is done on purpose to take the stretch out of the rayon. Yes, it is destroying the "resilience" (ability to bounce back into shape) of the rayon fabric. If this were not done, this rayon fabric would stretch out of shape due to the body heat of the person who was wearing the knit garment.

I hope that this article has given you the insight that it is very valuable to understand your yarn's properties. Above all, be willing to experiment with your swatches knit of different fibers, stitch sizes, and stitch fabrications. Test the effects of steam on all of them and determine for yourself the look and drape that you are trying to achieve.

Happy and Profitable Knitting,
Sharon ■