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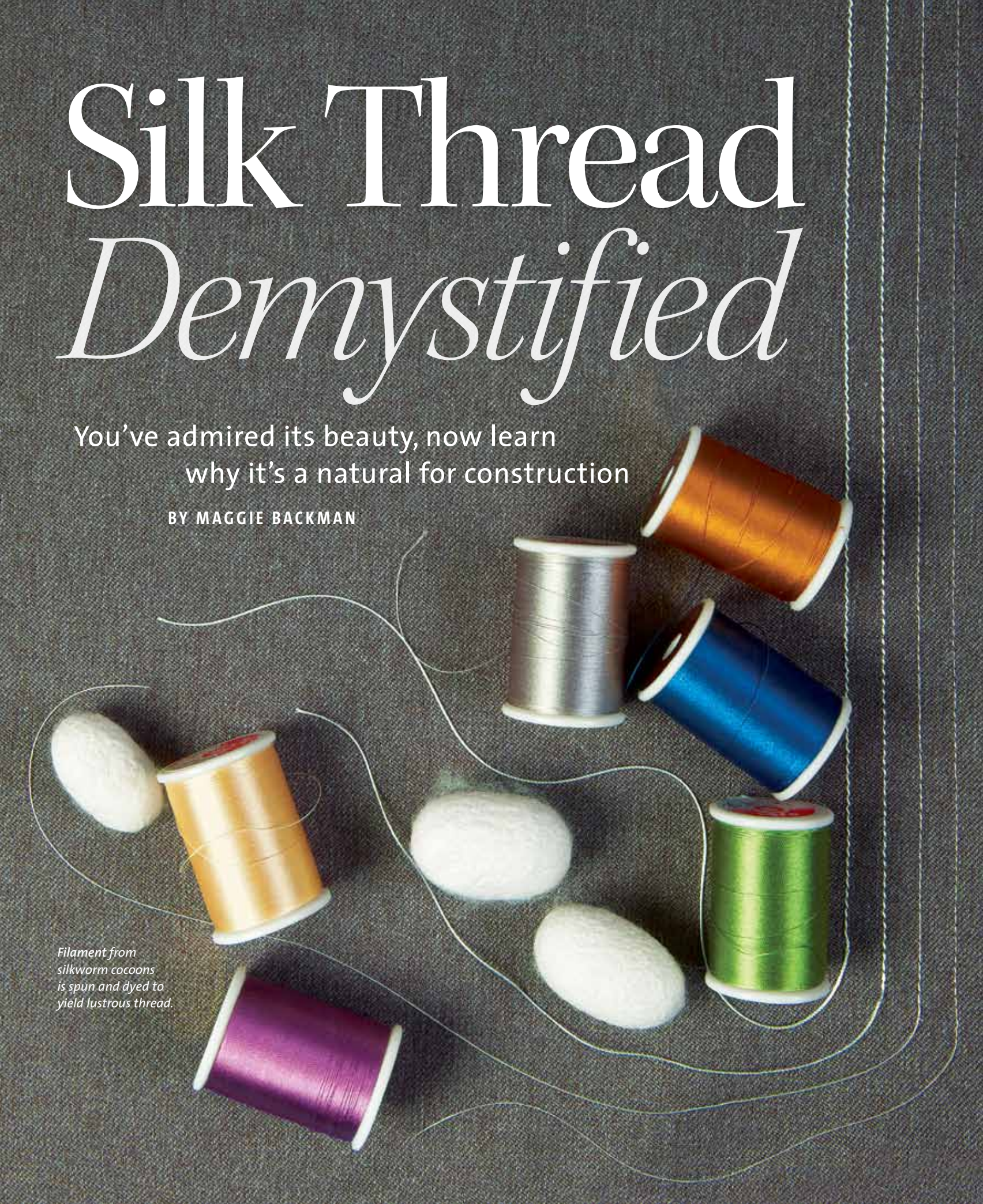


Silk Thread *Demystified*

You've admired its beauty, now learn
why it's a natural for construction

BY MAGGIE BACKMAN

*Filament from
silkworm cocoons
is spun and dyed to
yield lustrous thread.*

A collection of colorful silk thread spools and white silkworm cocoons is arranged on a dark, textured fabric background. The spools are in various colors: orange, silver, blue, green, purple, and yellow. The cocoons are white and oval-shaped. A thin, white thread is draped across the scene, looping around the spools and cocoons. The background fabric has a subtle, repeating pattern and a vertical line of white stitching on the right side.

If silk thread were a person, it would be a supreme overachiever. It has properties valuable to anyone seeking perfection in sewing projects. It is strong and fine, flexible and durable, long-lasting and lint-free. Yet it has carried a slightly nefarious reputation as a sewing-machine thread. There are claims that it snags and breaks in machines, that garments made with it must be dry-cleaned, or that it can shear right through fabric, destroying seams.

The truth is, with understanding of its origin, care, and how to match thread type to projects, silk thread is an unparalleled asset as a machine-sewing thread.

I'll explain the difference between the two types of silk thread, spun and filament. Then, I'll focus on the extraordinary qualities of silk filament thread, which is a superior sewing-machine thread when the correct twist and weight is selected for a project.

I'll debunk commonly held misconceptions about silk thread and open your consideration to constructing garments with it—not just decorating them.

MEET TWO SILK THREAD TYPES

Silk thread is available in two varieties: spun and filament. Spun silk thread twists short fibers into long ones. These shorter silk fibers come from “waste silk” portions of the cocoon. The shorter fibers and added spinning result in a different look and thread performance for the fibers. Spun silk thread does not have the same qualities as silk filament thread, but it is less expensive.

Silk filament thread, the focus of this article, is made from continuous silk fibers, which are reeled from cocoons to produce a superior thread. These smooth, unbroken fibers create a perfect “passing thread,” meaning it travels through fabric uninhibited by short fiber strands that cause resistance.

Pure silk fabrics are made from either or both silk filament and spun silk. A single thread, however, will be either silk filament or spun silk.

THE SECRET TO MATCHING THREAD TO PROJECT

Here is my secret for selecting a silk thread for construction: Pull a weft thread from the fabric. Match your silk sewing thread to the size of the weft thread.

The Japanese sell silk by weight, a logical way to standardize silk fibers in thread and fabric. For example, a kilogram (about 2.2 pounds) of silk fiber produces a certain length of thread, depending on the thread's size, ply, and twist. The finer a filament thread, the cheaper a length is. The thicker the thread, the heavier and more expensive the same length is. Though there are no international standards for designating silk

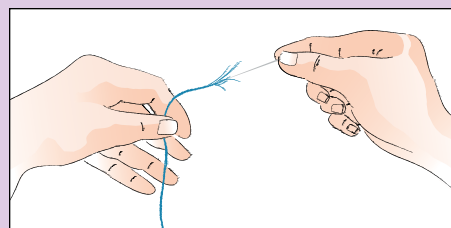


Each cocoon is spun within an individual compartment at a Japanese silk-rearing house. At left, thousands of completed cocoons await harvesting within compartment frames. Each cocoon will be boiled, washed, and unraveled during the thread-making process.

GOT SILK? HOW TO TELL IF IT'S FILAMENT OR SPUN

There is a simple way to determine what type of silk thread you have.

Use a pin to separate the thread's end. Pull on one strand as if to remove it from the thread. If it pulls down into the thread, puckering it without breaking or shredding, you have a silk filament thread. If the strand pulls out or begins to shred, you have a spun silk thread.



Filament thread strands are continuous and won't pull free of the whole thread.



Above, mature silkworms are ready to spin cocoons. A silkworm increases its weight 10,000 times during a monthlong life from egg to cocoon. Below, at a sericulture farm in Hachioji, Japan, farm owner Masahiro Koyota (right) points to silkworms feeding on fresh mulberry leaves, their sole diet.



thread sizes, here are the typical classifications for Japanese silk filament thread sizes:

- 100-weight silk thread is the thinnest. It contains fewer filaments and is a wonderful all-purpose thread. One kilogram of silk produces 100,000 meters of 100-weight silk thread.
- 50-weight silk thread is twice as thick as the 100-weight. Manufacturers derive 50,000 meters of 50-weight silk thread from one kilogram of silk. It is also a prime construction thread for many fabric types.
- 30- and 16-weight silk threads are respectively thicker. Both are decorative, buttonhole, or general-attachment threads. These threads may be more than 10 times thicker than 100-weight silk thread.

SERICULTURE: THE SOURCE OF SILK

To understand the unique attributes of silk filament, we must look at the “machine” that makes it. The silkworm is biologically able to create silk and is driven to do so. The process of breeding and harvesting silkworms is known as sericulture.

There are numerous breeds of silkworms around the world and various means of extracting the fibers from their cocoons. Here, I explore the domestic silkworm, *Bombyx Mori*, and the processes developed to harvest its particular type and quality of silk filament fiber.

The silkworm eats mulberry tree leaves until it is ready to metamorphose into a moth. In order to achieve that mutation, it surrounds itself with a hammock of protecting material. The silkworm emits from two spinnerets a single continuous fiber made from two chemicals, protein and seracin. The silkworm weaves the fiber around its

SOURCES

The following companies are the major suppliers of silk filament thread. Their Web sites offer more information about the colors and types of silk thread they carry.

Clover, Clover-USA.com

Superior Threads, SuperiorThreads.com

Things Japanese, SilkThings.com

YLI, YLICorp.com



Above, dried silkworm cocoons. Filament silk thread is made from continuous fibers reeled from the inner cocoon, fibers that are consistent in size and quality.

shrinking body, and the fiber becomes its cocoon.

The single fiber the silkworm produces must be strong, smooth, and elastic to create a complex casing. The constant movement of its body as it spins and turns requires the silk fibers to be flexible and moldable. The silkworm spends three days in constant motion, patiently engulfing itself inside a fiber capsule.

WITHIN THE COCOON

During the silkworm's metamorphosis into a moth, its body changes drastically. As new organs develop—wings, in particular—others atrophy. The developing moth loses the organs and the complete ability to eat or see.

In order to mate, the moth must escape by emitting an enzyme that creates a hole in the cocoon. This is when the farmer intervenes to prevent the escape and the consequent damage to the continuous silk fiber. The cocoons are boiled and the worms stifled within.

Only a few moths are allowed to emerge, spared to mate and begin another generation. Male and female silk moths have only a rudimentary mouth and digestive system. Domestic silkworm moths cannot even fly. Even if they are spared in the cocoon, their fate is to die within a few hours or days, with their life cycles completed.

On its journey, the silkworm has provided us with a natural fiber that is porous and has the capacity to withstand climate and atmospheric changes. It has also made a very absorbent but elastic fiber, which soaks up color easily. Last, under microscopic examination, the single silk fiber reveals a prism-shaped molecular makeup. It is the basis of silk filament's luminosity.

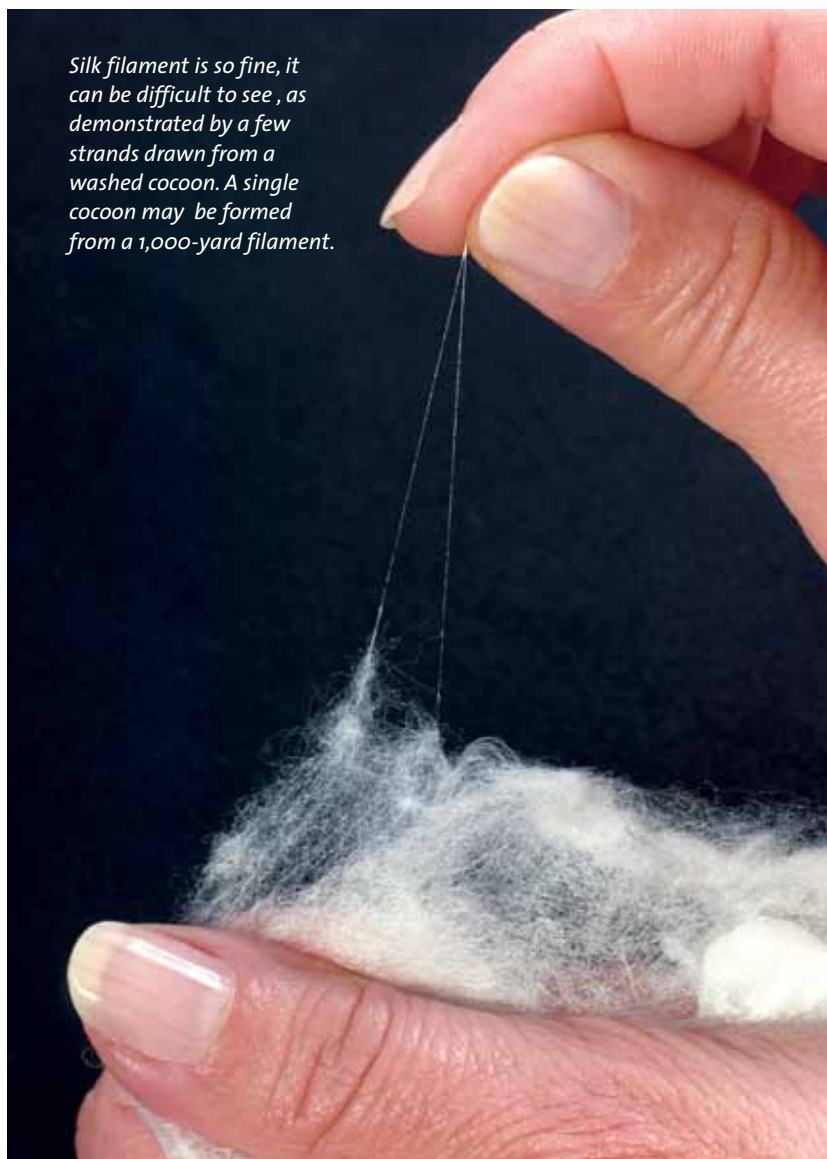
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At top, washed cocoons are sorted for quality. Underlighting helps workers distinguish irregular cocoons. At right, filaments are hand-reeled in a demonstration. Enough sticky seracin remains in the washed cocoons to bind the filaments. Above, machines reel continuous silk filaments from bins of cocoons in a modern silk-reeling factory.



In a traditional technique, cocoons are washed and stretched to form a mawata square. Mawata are used in their own form, or as a source from which to draw spun silk, as in the photo below.



Silk filament is so fine, it can be difficult to see, as demonstrated by a few strands drawn from a washed cocoon. A single cocoon may be formed from a 1,000-yard filament.

THE SILK HARVEST

To process the cocoon and extract the silk, the stiff outer portion of the cocoon is removed first, and then 20 to 25 prepared cocoons are placed in a hot-water bath and boiled to remove the seracin. (Of the two compounds the silkworm emits in a single filament, protein provides the strength and seracin the stickiness, to form the silkworm's cocoon.) The hot water softens and loosens the fibers for handling. Fibers from each cocoon are gently gathered, and a remaining seracin residue causes them to stick together and form a strand.

Every portion of the cocoon is used. Shorter, broken silk fibers are salvaged and processed by washing, combing, and carding. Even the remains of the stifled moth are recycled as fertilizer.

Modern silk reeling mills sort cocoons for quality and color, remove the outer portion, gather the cocoons, and automatically reel the fibers from cocoons with sophisticated machinery. Mechanization means more “raw silk” can be produced faster. It also ensures a more consistent silk filament diameter is sent to thread manufacturers for processing.

SEWING WITH SILK

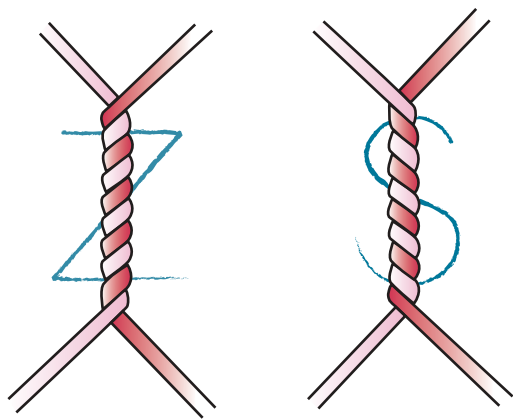
The myths about silk thread are easy to dispel with a little research and preparation. For construction sewing, match a filament thread size to the fabric's weft thread, set your machine to a short stitch length, and almost any color silk thread will disappear into your fabric.

Thread is commonly engineered with one of two types of final twist. The fibers wrap clockwise in Z-twist threads and counterclockwise in S-twist threads. This detail can be difficult to see, and the information is not always included on the thread label.

A Z-twist silk filament thread will work best in your sewing machine, but not for hand-sewing projects. If you are right-handed, and hand-sewing with a Z-twist thread, you untwist the thread as you stitch. Spun silk threads in particular have a tendency to catch on the twisted fibers.

To determine if you have a Z-twist or an S-twist thread, cut a 4-inch length, and roll it between your fingers to see which way it untwists.

Silk thread is appropriate for use with any type of fabric—not just silk. A high-quality domestic silk filament thread is colorfast, washable, and



Filament-silk thread with a Z-twist is spun clockwise and is the right selection for machine sewing. An S-twist thread is more prone to untwist as it passes through a sewing machine.



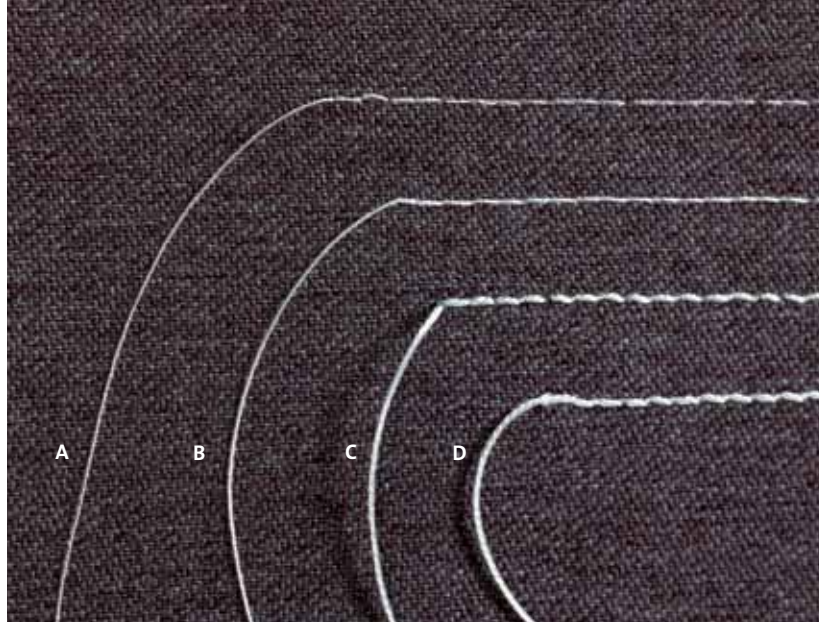
Unbroken silk fibers form 50-weight, Z-twist filament thread, as shown in this close-up image.

will not shrink. You will have a strong, flexible seam that is hardly visible, less bulky, and smooth to the touch. On thin, delicate, or microfiber yardage, silk filament thread is the best choice for its delicacy and strength.

I leave a natural-colored 100-weight silk filament thread in the bobbin on my sewing machine, pair it with a 100- or 50-weight top thread, and set the machine to a short stitch length. This meets my sewing needs for many projects. I've found that most fabric weft threads are narrow. The thin and reflective silk thread is not visible, even on dark fabrics.

I'm often asked about the care of garments sewn with silk thread. There are many variables in the fiber processing for domestic or commercial threads, and information about thread type, colorfastness, washability, and fiber quality are not always provided on thread labels. It's best to check with the supplier for that information.

Maggie Backman, the owner of Things Japanese (SilkThings.com), imports Japanese silk thread.



Four silk thread weights: A, 100-weight, and B, 50-weight, are excellent for all-purpose construction. C, 30-weight, and D, 16-weight, are choices for machine embellishment as well as construction with heavier fabrics.



FACTS ABOUT SILK FILAMENT THREAD

- A sewing-machine bobbin holds 200 meters of 100-weight silk filament thread. That's equivalent to an entire polyester thread spool.
- Silk filament thread leaves no fuzzy residue in the bobbin case or sewing machine.
- Silk filament threads, sewn at shorter stitch lengths, eliminate the need for reinforced stitching at seam stress points.
- The 100- and 50-weight silk filament threads eventually mold to body curves. The thread is flexible and elastic. Quality silk filament thread has as much as 28 percent natural elasticity.
- Silk filament thread is an excellent choice for basting. It slides from fabric easily without marring the fabric.
- Silk filament's luster means it doesn't have to perfectly match fabric. The filaments reflect the shade surrounding them. Also, 100-weight thread sinks into the fabric.

