



## Synthetic Fabric

**M**an-made fibers have come a long way from the polyester blouses we remember from the 1970's. Often blended with natural fibers including cotton and linen, these synthetic fabrics mimic suede, silk, and velvet so well you often need the actual content list to tell the difference.

There are six primary synthetic fibers manufactured today: rayon, polyester, nylon, acrylic, acetate and olefin. This article will discuss several of the most popular synthetics.

### Rayon

The very first synthetic fiber developed was rayon. As early as 1855 a patent for artificial silk was granted to a Swiss chemist. He created cellulose liquid by dissolving fibers of a mulberry tree. But it wasn't until the 1880's that English chemist, Sir Joseph Swan, took the cellulose to the next level by forcing it through fine holes and then making the filament into a textile. Although it was originally called "artificial silk" the name was changed to Rayon to make it more palatable to the public. Rayon, for beam of light, was first manufactured in France in the early 1890's by Count Hilaire de Chardonnet. In 1910 the American Viscose Company began producing Rayon in the United States.

Rayon is actually made from processed wood pulp, or cellulose. The purified cellulose undergoes a series of chemical baths and processes before being forced through a spinneret (looks similar to a large shower head) to create a long filament.



*Rayon Fibers*



*Rayon Fabric*

Rayon comes in several different forms:

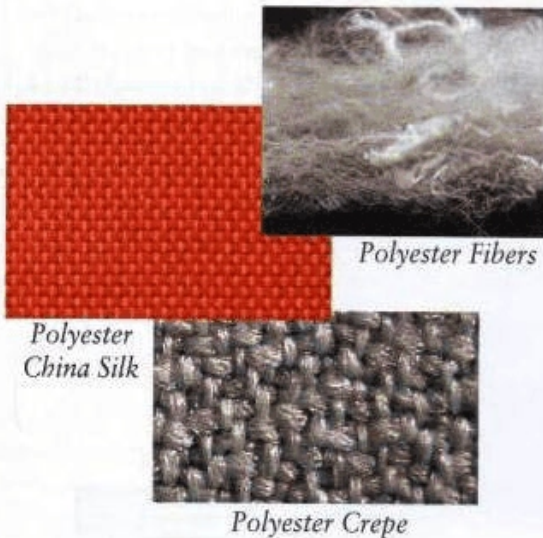
- 1) Regular rayon—often labeled viscose. Viscose is actually the process in which most rayon is created. When treating the cellulose one of the steps creates a solution that has a very high viscosity (the amount a fluid resists flowing) and this developed into the term Viscose.
- 2) High wet modulus rayon (HWM)—a modified rayon with a high wet strength. Often used like cotton, it can be washed, while regular rayon should be dry cleaned.
- 3) High tenacity rayon. This rayon has great strength and is used mostly for industrial uses such as tire cord.
- 4) Microfibers. This is not actually a type of rayon, but is a fabric that is made from regular rayon fibers or HWM rayons. Microfibers are very fine, drape beautifully and look and feel much like silk.

Rayon is a strong, durable fiber that is absorbent, breathable and easily dyed to create vivid colors. It is resistant to insect damage drapes well. When working with rayon it is important to take into account several factors. Rayon is very sensitive to moisture and a spitting iron will create a wet spot or ring on the fabric, similar to those that form on silk. A too-hot iron will burn the fibers and can create tears, slits or shiny areas on the fabric. Rayon is very unstable when it is wet, so bias hems in a damp climate may stretch and grow over time. Lastly, dry cleaning can often remove the sizing and starches placed on rayon to give it body and keep it from fraying. Although dry cleaners can apply sizing, the fabric will rarely have the same look it had prior to the cleaning process.

### Polyester

Polyester is probably the most well known of all synthetic fabrics. It is inexpensive and it washes well, resisting shrinking and wrinkling.

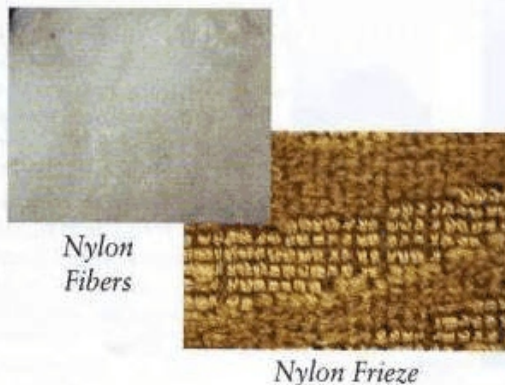
Polyester was first discovered in 1929 by a scientist, W.H. Carothers, who was working for the DuPont Corporation. DuPont did not pursue further research on polyester, choosing instead to concentrate on nylon. In 1941, two British chemists, John Whinfield and James Dickson, patented polyethylene terephthalate (PET OR PETE).



Then, in 1945, DuPont bought the U.S. rights for more development of PET and in 1950 they began manufacturing polyester fibers under the name Dacron®.

Unlike rayon, which is drawn from wood pulp, polyester is a completely artificial, man-made fiber, created from petroleum (oil). Polyester is formed when an acid and alcohol react in a vacuum at high temperatures. This creates condensation polymerization, or the forming of a compound or polymer by eliminating water or alcohol. In other words, Dimethyl Terephthalate and Ethylene Glycol react to create a Polyethylene Terephthalate, a material which is in the form of ribbon. The ribbon then hardens and is cut into chips.

The chips are completely dried, heated and sent through a spinneret and wound around cylinders. The final fibers are heated again and stretched further. Microfibers are



created by stretching the fibers out even more and making them even thinner.

Polyester is a very strong fiber. It is lightweight. Its best feature is its wrinkle resistance. It can easily be machine washed and dried or dry cleaned, with little ill effect. It does not absorb much water and water does not destroy its strength. It is also resistant to both insects and mildew.

While the ability to wash polyester makes it a wonderful fabric for sheers, it can be difficult to work with. Water spots are not a problem, but an iron that is too hot can both melt the fabric and make it pucker, causing difficulties in the hems. Also polyester lining against polyester fabric can repel each other and force the draperies to flare.

A final problem with polyester is that its resistance to wrinkles makes it difficult to train into a memory. For example, making the folds of a Roman shade.

### Nylon

Nylon was discovered by Dr. Carothers (see Rayon) at DuPont in 1935. It was first sold commercially in 1939. Besides nylon stockings, it was used extensively during World War II for parachutes, flax jackets and even tires. Later it was used for carpets and bridal veils.

Nylon is non-absorbent, dirt resistant and elastic. It will melt at high temperatures and should be ironed on the wrong side.

### Acrylic

Acrylic was also discovered at DuPont by a scientist working to improve rayon. It is produced from a petrochemical called acrylonitrile. It took DuPont almost 20 years to make acrylic commercially popular. It took off when women's sweaters became popular in the 1950's. Acrylic is easily dyed, resistant to sunlight, moths, oil and chemicals and retains its shape when washed. It is popular for area rugs, blankets, upholstery, and outdoor furniture.

### Acetate

Acetate was created in 1910 in Basle, Switzerland by brothers, Camille and Henri Dreyfus. It was manufactured in the US in 1924 in Maryland. It is created with the use of cellulose from wood pulp and put through an acetate solution. It is often used in satin, brocades and taffetas. Acetate fibers are hypoallergenic and resistant to mold and mildew.



Because so many artificial fibers are often blended with both natural and other artificial fibers it is important to pay close attention to the type and amount of fiber listed on the client's fabrics. The contents will affect both how you work with the fabric and how it behaves as a completed treatment. The next time your client picks out 100% rayon for a well used bathroom with no ventilation, you'll be able to tell them with confidence that this is a bad idea and maybe some nice cotton would be a better choice.

*Polyester*



*Rayon*



*Acrylic*



*Acetate*



*Editor's Note:  
This Parson's  
chair cover was  
created by  
Annette Brandt,  
owner of  
Annetti's  
Custom Window  
Treatments. The  
pillows are from  
past *Q&A* What?  
Magazine contest  
entries.*



*Nylon*



*Sydney Schwartz Hardman is the owner of The Silken Scissor, a retail and wholesale workroom, based in Pittsburgh, PA. Sydney is the winner of PA's Best 50 Women in Business and Pittsburgh's Top 40 Under 40. She is also the founder of the Western PA Window Treatment Association. She can be reached at 412-734-1364 or visit her website at [www.TheSilkenScissor.com](http://www.TheSilkenScissor.com).*