

# Textiles

## Part II: Fibers

by Diane Day, CPF

**M**any textiles are valued for their decorative qualities and are often put on display. The proper hanging of these decorative pieces is important to their preservation. Whether the textile is a contemporary or an antique piece, or its value is sentimental or monetary, you should consult a conservator regarding proper mounting and framing methods and materials. There is no set formula for textile framing; each piece must be assessed individually. Certain unique pieces should not be framed, so consider other ways to preserve a one of a kind piece.

There is also no clear distinction between types of textiles. In general, there is a group of decorative textiles that includes small contemporary pieces, such as needlepoint, embroidery, machine and hand-woven oriental embroideries, batiks, quilted pieces, and commercially produced textiles. Another, larger group of textiles, consists of the heirloom and antique pieces, which includes painted and embroidered silk pieces, samplers from before 1900, beadwork, heirloom quilts, ancient fragments, ethnographic textiles, flags and banners, lace, contemporary fiber art, large tapestries, and rugs.

Most antique and ethnographic textiles are made from natural fibers, including wool, silk, cotton, and linen. Each of these fabrics has some inherent fault. Pieces made from protein fibers, such as silk and wool, for instance are particularly susceptible to insects. While insects do not generally bother cotton and linen, silverfish can be attracted to starch finishes. The best protection is good housekeeping.

Problems also can arise depending on the manufacturing process, or the manner in which the textile was constructed. At one time, iron, which causes fibers to rot away, was used as a fixative for some dyes. And some of the early chemical dyes will bleed if they become damp. In the nineteenth century, silks were heavily weighted using

metallic salts, which not only made the silk more susceptible to light, but also caused the fibers to split and break.

To take good care of a textile, it is necessary to know some of the properties of the fibers used, and what causes them to deteriorate. Fibers can be made from both natural and man-made materials. There is a wide variety of fibers and fiber combinations, and a few are mentioned here.

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### Natural Fibers

Natural fibers include all fibers that occur in the natural world. The two types of fibers in this group are animal and plant. Animal fibers are made of proteins that deteriorate when exposed to alkalis. Silk and wool fall into this group. Plant fibers are cellulose and are adversely affected by acids. Cotton and linen are in this group.

Wool tends to become hard, dry, and brittle in an environment with a very low relative humidity. Wool loses half of its breaking strength in 480 hours of exposure to full sun, and reacts badly to heat in general. Wool is a protein-based fiber. It is pH neutral and therefore sensitive to both acids and bases. Wool contains a lot of sulfur and will encourage silver to tarnish if framed together with this metal. Wool fibers have a certain amount of elasticity. It can absorb up to one-third of its weight in water and still not feel damp. Wool fibers also shrink and attach themselves to each other when agitated in water, thus forming felt.

Silk, like wool, is a protein-based fiber and should be stored or mounted on pH neutral boards. Light, in addition to hot, dry conditions, causes silk to become dry and brittle. Silk loses half of its breaking strength in 200 hours of exposure to full sun. Silk also contains sulfur, but to a lesser degree than wool. The natural “glue” that holds silks together in the cocoon is removed during the manufacturing process. Other substances replace this gum-like material, one of which was metallic salts used in “weighted” silk.

# Textiles

Cotton can withstand high temperatures better than most fibers and can be stored for a long period of time without deteriorating. However, it yellows when exposed to light, and loses half of its breaking strength with 400 to 480 hours of exposure to full sunlight. It darkens and becomes brittle when in contact with wood.

Linen is also made from fibers that carry moisture up the stem of the flax plant. Even when these fibers are woven into cloth, they attract and carry moisture. When placed against wood, linen darkens and becomes brittle.

## **Man-Made Fibers**

Man-made fibers have only been in use for a little over 100 years. Rayon, meant to imitate silk, was the first man-made fiber. Rayon is a cellulose-based fiber that is highly absorbent and wrinkles easily. The development of rayon opened the way for the creation of other cellulose-based fibers like

acetate and triacetate.

Noncellulose man-made fibers include nylon and polyester. Nylon was the first, developed in 1938. These fibers will soften at high temperatures. This allows fabrics made from these fibers to be heat treated to set a shape or embossed design. They are abrasion resistant and, therefore, withstand surface wear.

Most of the fibers in this group spring back when crushed and have good dimensional stability. They are easy to wash and dry quickly. The nonporous surface of most of these fibers resists dirt and grime. Moths or mildew do not generally affect them. They can be dyed bright colors and have resistance to fading. ■

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