

# Clothing and TEXTILES

UTAH STATE UNIVERSITY COOPERATIVE EXTENSION

## FROM FIBER TO FABRIC: WOOL

### INTRODUCTION

Wool is a natural fiber composed of proteins, as it comes from the fleece of sheep. Over 200 varieties of fleece exist that are used for wool fabric production (Cohen & Johnson, 2010). Sheep are generally sheared once a year, usually in the Spring, and their hair is then sent to be graded and sorted. The grading system is based on the quality and length of the fleece. Each sheep has various grades of fleece found in their coat with the highest grade fibers being found on the sides, shoulders, and back, while the lowest grade are found on the lower legs. Once the wool has been graded, it is sorted so that similar grades are together and then sent to be cleaned and prepared for weaving (Kadolph, Langford, Hollen & Saddler, 1993). After cleaning, the next step is to card the wool, which results in straight slivers of wool fibers. The shorter fibers are made into woolen yarns which may have ends lying in different directions, providing a twisted look. The longer fibers are made into worsted yarns, which are smoother and more uniform in appearance due to the tightly twisted nature of the fibers (Liddell & Samuels, 2012).



Figure 1: Sheep, source for wool fiber used for fabric.



Figure 2: Fleece, the product resulting after shearing a sheep.

Wool was the most commonly used fiber to make fabrics up until the Industrial Revolution, at which time it became simpler to mass produce other fabrics, such as cotton. Today, wool is viewed as a luxury fabric due to the high cost in manufacturing and maintaining it. Due to the fact that wool is a naturally occurring fiber, it has many unique properties that allowed for it to be one of the earliest fabrics used in the past and present. Wool crimps naturally, allowing the fibers to hold together and create a very strong yarn, but also creating air pockets that act as a natural layer of insulation and making it very desirable to wear in cooler weather. As a fiber, wool is also very strong and holds the original shape well.



Figure 3: Wool fabric.

### DISADVANTAGES OF WOOL FABRIC:

- Weak when wet, handle very gently
- Dry cleaning is frequently the recommended method of cleaning
- Can shrink up to half of its size if handled improperly
- Dissolves in bleach or strong detergents (alkali)
- Becomes brittle if atmosphere is too dry
- Some people may be allergic to wool
- Articles made from worsted wool may irritate skin
- Poor luster (reflection of light on fabric)
- Expensive
- Pills (formation of tiny ball on surface of fabric)



Figure 4: Wool shawl.

### ADVANTAGES OF WOOL FABRIC:

- Extremely resilient when dry
- Good drape (ability of fabric to fold while worn)
- Good elasticity (ability of fabric to increase in length and return to original dimension)
- Hydrophobic: absorbs water slowly, allowing the wearer to feel dry
- Natural air pockets create a layer of insulation for warmth
- Great abrasion resistance
- Provides bulk and loft to end products
- Wrinkles easily fall out when exposed to humidity
- Shapes well
- Flame retardant (self-extinguishes when burned)

### END USES OF WOOL FABRIC:

- Apparel-- outerwear, sports wear, sweaters, socks, suits
- Interiors-- carpets, wall hangings (wool is the "look" against which synthetic carpets are measured)
- Industrial-- felt pieces used in machines, used to clean up oil spills



Figure 5: Sample care label for wool fabric.

### REFERENCES:

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