

Homework Assignment #1: Textile Terminology and Concepts (50 points total)

Review the following: iTextiles Introduction chapter and Fibers: 1-3, and answer the following questions *in your own words*. Turn in through Black Board as PDF by 2/20/19 by 10 pm.

1. Define “end use” and list the 4 major categories for textiles. Why is “end use” important when choosing fabrics? (6 points)

An “end use,” according to Merriam-Webster’s dictionary, is the ultimate specific use to which a manufactured product is put or restricted. The four major categories for textiles are apparel, household and institutional textiles, textiles for interiors, and technical textiles. “End use” is important when choosing fabrics because you want to pick the right fabric for the right job, I can’t imagine hazmat suits being made out of linen.

2. Name 3 aspects of fabric performance under each of these categories: Aesthetics, comfort, durability. (6 points)

Aesthetics: Physical appearance, drape, and shape retention.

Comfort: Moisture management, thermal insulation, and static charge buildup.

Durability: Strength, abrasion resistance, and weathering resistance.

3. What is “colorfastness” and how is it tested? Why do we want fabrics to be colorfast? (2 points)

“Colorfastness” is a product’s ability to retain color during use and care. Laboratory tests are conducted to measure colorfastness to bleach, perspiration, salt water, washing, dry cleaning, rubbing (crocking), light, fumes, and other factors. We want fabrics to be colorfast because nobody wants their t-shirt bleeding and staining the rest of their clothes or the color fading away.

4. What is the difference between natural fibers and synthetic [manufactured] fibers? Define each, and give two examples of each type. (6 points)

Generic names for natural fibers are based on fiber source while generic names of manufactured fibers are based on the chemical composition. All-natural fibers (except silk) are staple fibers and all manufactured fibers are produced as filament fibers (silk bring the only natural filament fiber). Two natural fibers are cotton and wool while two manufactured fibers are nylon and polyester.

5. What is the difference between a Trademark name and a Generic name? (2 points)
In the United States, fiber generic names are established by the Federal Trade Commission while fiber manufacturers can assign trades names, in addition to generic names.

6. Define filament and staple fibers, and give one example of a natural fiber in each of these forms. (2 points)

Filament fibers are long continuous fibers extending for great lengths (several hundred yards) while staple fibers are short fibers (ranging from <1" to a few feet). Cotton is an example of a staple fiber while nylon is an example of a filament fiber.

7. Describe the physical properties of wool including: color, luster, crimp, strength and abrasion resistance. (4 points)

Color: The color of the wool and specialty wool depends on the breed. The majority of wool fibers obtained from sheep and lamb are off-white and can therefore be easily dyed. Camel hair is brown. Other wools and specialty wools are shades of white, gray, brown, and black.

Luster: Wool fibers are usually dull. Some fibers, such as cashmere wool, have a degree of luster.

Crimp: Wool fibers have natural crimp, which varies by breed; textures range from fine crimped to almost straight.

Strength and abrasion resistance: The finer fibers are used to produce worsted wool fabrics and coarser wool fibers are used to manufacture rugs and carpets.

8. Why is wool such a good insulator? Describe the physical properties of the fiber that make it warm. (2 points)

Fabrics made with wool are suitable for cold conditions; the natural crimp of the fiber creates lofty yarns which trap air. The trapped air serves as an insulator. Bulkier wool fabrics that trap more air have higher insulative properties.

9. What is the process of silk cultivation called, and what kind of moths are bred? (2 points)
Silk production is also known as sericulture and the moths that are bred are called bombyx mori silkworms.

10. What is "peace silk"? How is it made, and why is it called that? (2 points)

Peace silk is produced without killing the silkworm, it's made using wild and cultivated silk cocoons from which a moth has already emerged from.

11. Describe the physical properties of silk including: color, luster, tenacity, moisture properties, and resistance to sunlight. (5 points)

Color: The color of the silk is dependent primarily on the species of silkworm and its diet prior to spinning its cocoon. Cultivated silk is off-white, whereas the color of wild silk ranges from off-white to dark brown.

Luster: Silk fibers, especially cultivated silk, are lustrous.

Tenacity: medium to high

Moisture properties: Hydrophilic

Resistance to sunlight: Low

12. What country held the monopoly on silk production for thousands of years? (1 point)

China held a monopoly on silk production for thousands of years.

13. What made silk so desirable as a commodity? Name 2 things. (2 points)

a. Silk is one of the strongest natural fibers

b. Does not irritate the skin; the fibers are very fine.

14. Name two different end use categories for each: Wool, silk, flax, cotton (8 points)

Wool: Apparel and Textiles for interiors

Silk: Household & institutional and textiles for interiors

Flax: Textile for interiors and apparel

Cotton: Technical textiles and textiles for interiors