**Trace Evidence: Fiber Unit Review Key**

1. Natural and synthetic
2. Animals and plants
3. Sheep’s wool
4. Cotton
5. Hemp is a common name for cannabis for industrial use. It is typically used for rope or sack.
6. Polyester. Wrinkle-resistant and often spun together with cotton or other natural fibers for a more “natural” look.
7. Nylon – elastic, and strong when produced as fibers. When stretched it becomes shiny and silk-like in appearance. It is often used in hosiery and was first created by DuPont in 1935.

Acrylics – wool-like, soft, and warm, it is resistant to moths, sunlight, oil, chemicals, and quick-drying.

Acetates – cellulose-based, wrinkle-resistant fibers. Made from cellulose of softwood trees dissolved in acetic acid solution.

1. Natural fibers appear to be irregular (with twists and curls) in their shaft diameter, while synthetic fibers appear more regular and consistent in their diameter. Natural fibers made from animal hair will have scales.
2. Heat resistant aramid fiber is a light, but strong, synthetic fiber that is typically used for bulletproof vests, military applications, and racing tires. Fire-resistant aramid fiber and used by firemen or disaster response teams.
3. Plain, Basket, Satin and Twill
4. Color, Diameter, Lines/markings on the surface, Presence or absence of delustering agents, Cross-sectional shapes
5. Polarized light microscopy – a light microscope with two polarizing filters that is used to determine birefringence

Birefringence – the difference between two refractive indices

FTIR – Fourier Transform Infrared Spectrophotometry is an analytical instrument used to analyze the chemical composition and relative quantity of synthetic fibers

UV-Visible Microspectrophotometry – an analytical instrument used to determine the absorption or transmittance of samples at different wavelengths within the ultraviolet and visible range

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