

TRACE EVIDENCE: FIBERS

- Fibers can create a link between _____ and _____

Type of Fiber Transfer

- 1) _____ : transfer occurs from _____ to _____ or vice versa
- 2) _____ : transfer occurs from a _____ to the _____ then to the _____

Fiber Investigation

- In an investigation, collection of fibers within _____ is critical
- Fiber evaluation can show such things as
 - _____
 - _____
 - possibility of _____
 - _____ of suspects
 - point of _____

Fibers typically found by the naked eye, however can be also found by:

- _____
- _____

Fibers in question are collected by the use of:

- _____
- _____
- _____

Sampling and Testing

- Use of an ordinary _____, or in some cases the use of infrared spectrometry to reveal _____ structure of fibers
- If a large quantity of fibers is found, some can be subjected to _____ tests to see other characteristics

Fiber and Textile Evidence

The most common fiber transfer is _____ of textiles

Fibers can be classified as

- 1) _____ : come from animals, plants and minerals mined from the earth
- 2) _____ : man-made and are either regenerated or polymers

Natural Fibers

Animal Fibers (made of proteins)

- Wool from _____, cashmere and mohair from _____, angora from _____, and hair from _____, _____ and _____ are commonly used
- Silk from _____ is longer and also used

Plant Fibers (made of cellulose)

- most commonly used is cotton from _____
- coir from _____
- Hemp, jute and flax from _____ grown in bundles
- Manila and sisal from _____ (deteriorate quickly)

Plant fibers are different than animal fibers in that they can absorb _____, are _____ in water, very resistant to damage from _____, can only be dissolved by strong _____, and become _____ over time

Mineral Fibers

- Fiberglass is a fibrous form of _____
- Asbestos is a _____ occurring mineral with a crystalline structure

Synthetic Fibers (half the products produced today are artificially produced)

These fibers include a) _____
b) _____
c) _____
d) _____
e) _____

There are also fibers called Regenerated Fibers (derived from _____)

- Rayon: most common and imitates natural fibers, but is _____
- Celanese is cellulose chemically combined with acetate and found in _____
- Polyamide nylon is cellulose combined with 3 acetate units, and found in _____

Yarns, Fabrics and Textiles

Fibers can be _____ into yarn of any length, thick or thin, loose, or tight. A blend can be made to meet different needs. Fibers spun this way can be woven into fabrics or textiles.

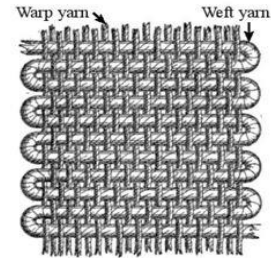
-Threads are arranged side by side (the warp).

-More threads (the weft) then are woven back and forth crosswise in one of a number of different patterns through the warp.

_____ : lengthwise threads

_____ : crosswise threads

Weave Pattern: The pattern in which the weft passes over and under the warp.



Weave Patterns: Place the following weave patterns above the diagram they represent

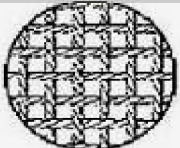
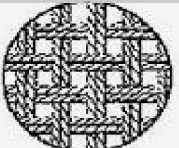
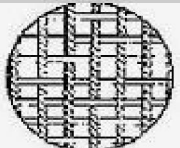
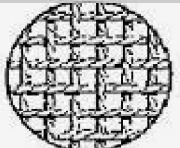
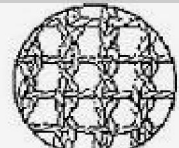
Basket

Leno

Plain

Satin

Twill

				
<ul style="list-style-type: none"> ◆ firm and wears well ◆ snag resistant ◆ low tear strength ◆ tends to wrinkle 	<ul style="list-style-type: none"> ◆ open or porous weave ◆ does not wrinkle ◆ not very durable ◆ tends to distort as yarns shift ◆ shrinks when washed 	<ul style="list-style-type: none"> ◆ not durable ◆ tends to snag and break during wear ◆ shiny surface ◆ high light reflectance ◆ little friction with other garments 	<ul style="list-style-type: none"> ◆ very strong ◆ dense and compact ◆ different faces ◆ diagonal design on surface ◆ soft and pliable 	<ul style="list-style-type: none"> ◆ open weave ◆ easily distorted with wear and washing ◆ stretches in one direction only