

Fiber Identification
Cotton, Wool, or synthetics

Name: _____
Date: _____ Block : _____

In this investigation, you will determine the properties that help distinguish cotton from wool from synthetics. Each fiber has unique characteristics that help to determine the identity of the fiber.

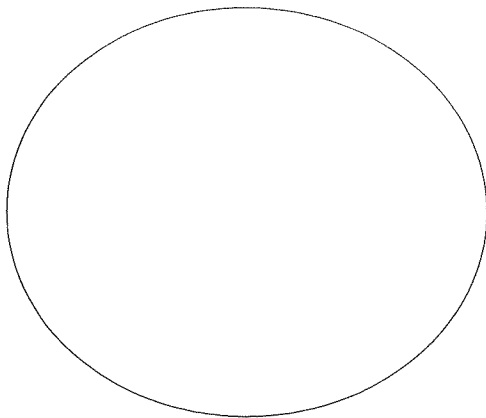
The first step is to look at the fiber under the microscope. The fibers will have different properties using just the sense of sight. There are prepared pictures of each fiber under 40X magnification. You will try to make slides that are similar with your samples.

The second step is to do burn tests on the fibers. The important step in this test is to use only 1 fiber for the test. Do not burn your entire sample.

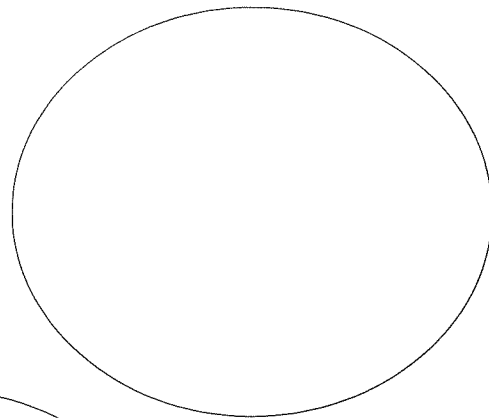
The last steps in determining the identity should include the sense of touch and smell. Certain fibers have a unique feel to them. Wool contains an oil called lanolin and some people can feel the oil. I can smell the oil.

STEP 1:

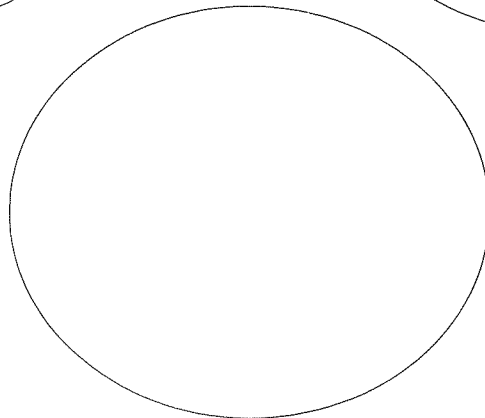
Prepare slides of each of your fibers. Make a picture of your sample for each of the fibers Cotton, Wool, and Polyester. Note any distinguishing features of each fiber on your data sheet.



COTTON



WOOL



POLYESTER

STEP 2: Burn Tests

Things to look for:

- Does the thread melt before burning?
- What does it smell like when burning?
- Does the thread continue to burn when taken out of the flame or does it self-extinguish?
- What does the residue look like after the fiber is burned? Is it white ash or black hard substances? Make note of this.

Fill in the data table with your observations:

FIBER	Approach Flame (Does it melt, curl away, or do nothing?)	Burn in flame (note smell, smoke, melt, drip, etc...)	Does it continue to burn or self-extinguish?
Cotton			
Wool			
Polyester			

Part 3: Using your senses:

Touch each of the samples and smell them. Note any characteristics that could be used to help distinguish each fiber from each other.

FIBER	DATA (note touch and smell)
Cotton	
Wool	
Polyester	

PART 4: Unknown Fiber

Obtain an unknown fiber from your teacher. Collect data on your fiber. Record data in the space below. Be neat with your data. Identify the fiber giving an explanation of why you think your fiber is either cotton, wool, or polyester. (Your fiber might not be the same color as the fibers you tested in parts 1-3)

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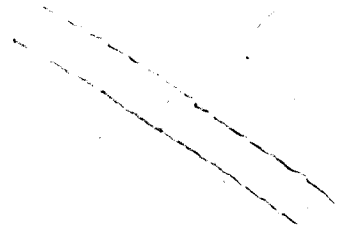
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STEP 1:

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COTTON



WOOL

POLYESTER

STEP 2: Burn Tests

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- What does it smell like when burning?
- Does the thread continue to burn when taken out of the flame or does it self-extinguish?
- What does the residue look like after the fiber is burned? Is it white ash or black hard substances? Make note of this.

Fill in the data table with your observations:

FIBER	Approach Flame (Does it melt, curl away, or do nothing?)	Burn in flame (note smell, smoke, melt, drip, etc...)	Does it continue to burn or self-extinguish?
Cotton	Does nothing, will not bend or melt	Chars and burns. May leave a glowing ember. Smells like paper burning. Remember, cotton comes from plants, so does paper.	Continues to burn when removed from flame.
Wool	Curled away from heat	Chars and burns. Smells like burning hair.	Self-extinguishes
Polyester	Melts as you approach the heat	Melts. It may burn depending on the different synthetic. Polyester should just melt. Drips to a hard black bead. May give a smoky flame.	May or may not continue to burn.

Part 3: Using your senses:

Touch each of the samples and smell them. Note any characteristics that could be used to help distinguish each fiber from each other.

FIBER	DATA (note touch and smell)
Cotton	Smooth feel, no smell
Wool	Rough feel, may be itchy. Smells like a sheep.
Polyester	Smooth feel slips past other fibers when rubbed together.

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