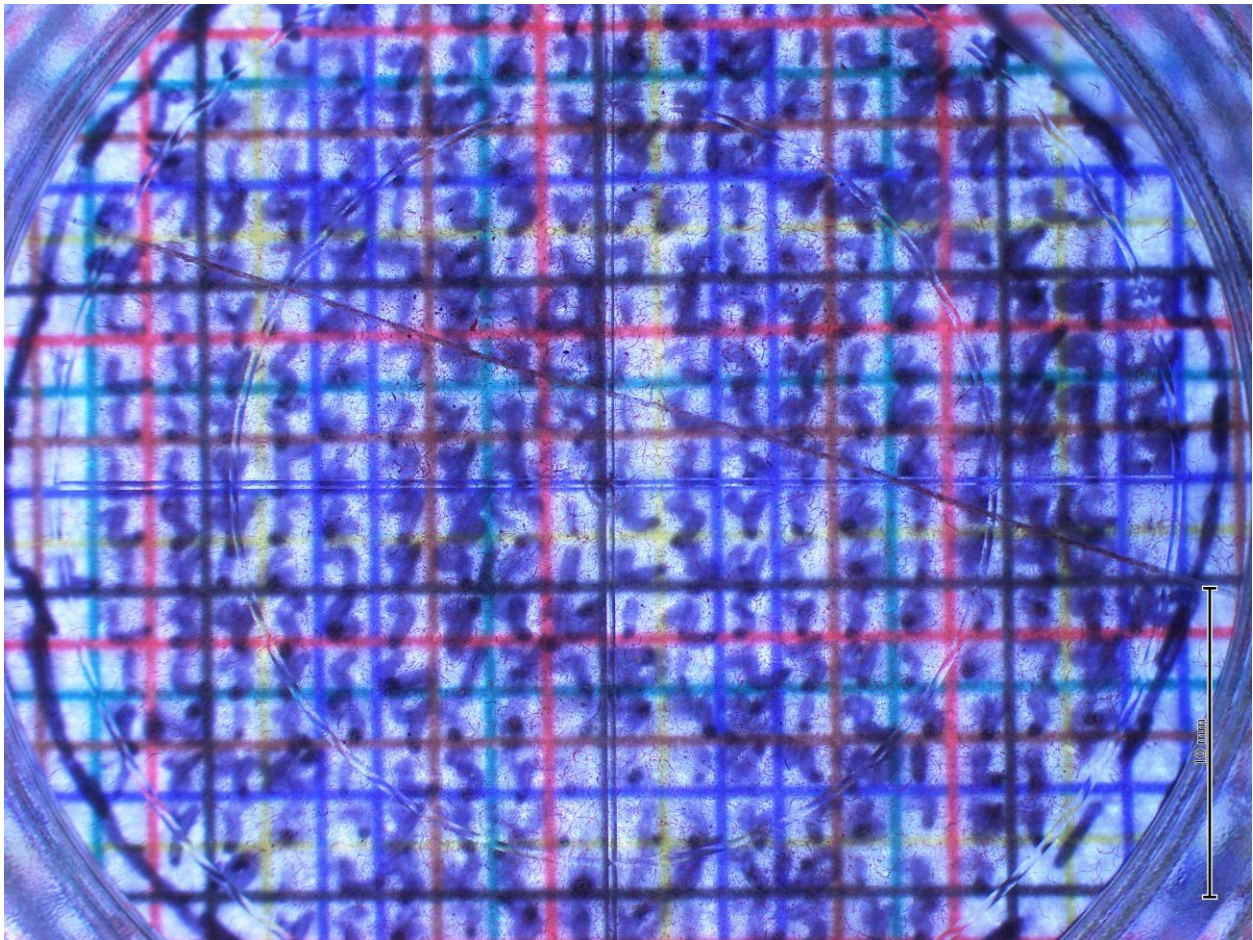


Microfiber Worksheet 1 – Counting the Fibers

For each fabric sample, researchers collect the water from the washing machine and separate the fibers from the water. The total number of fibers is then weighed, then a sample is prepared for microscopic examination and counting.

Here is an example of a single whole fiber sample from our research lab:



Note the scale bar (bottom right corner), it represents 10mm, or 1 centimeter (cm) when looking under the microscope. That gives you an idea of the size of the particles researchers are looking for! They are hard to see in this image.

Using the scale bar in the bottom right, *estimate* the diameter of the dish this researcher was using, give your answer in mm and cm: _____

Hint: use your ruler to measure the scale bar, then measure across the image from one side to the other and calculate an estimated size of the dish.

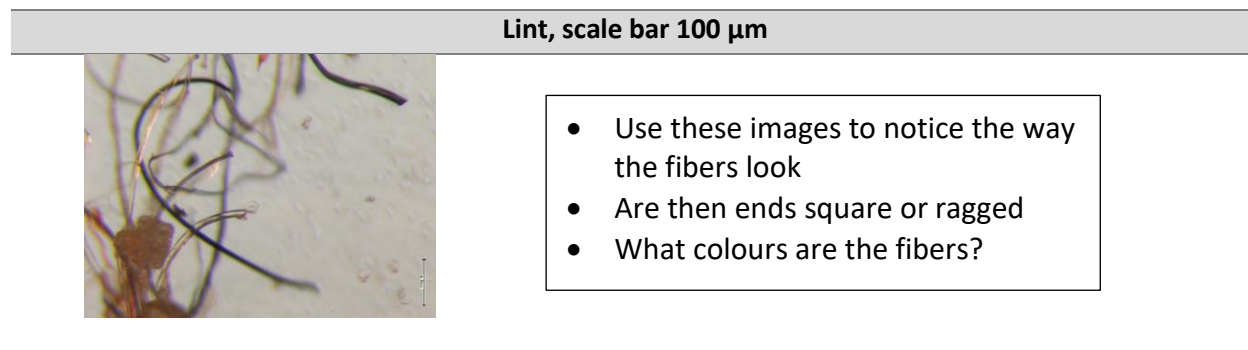
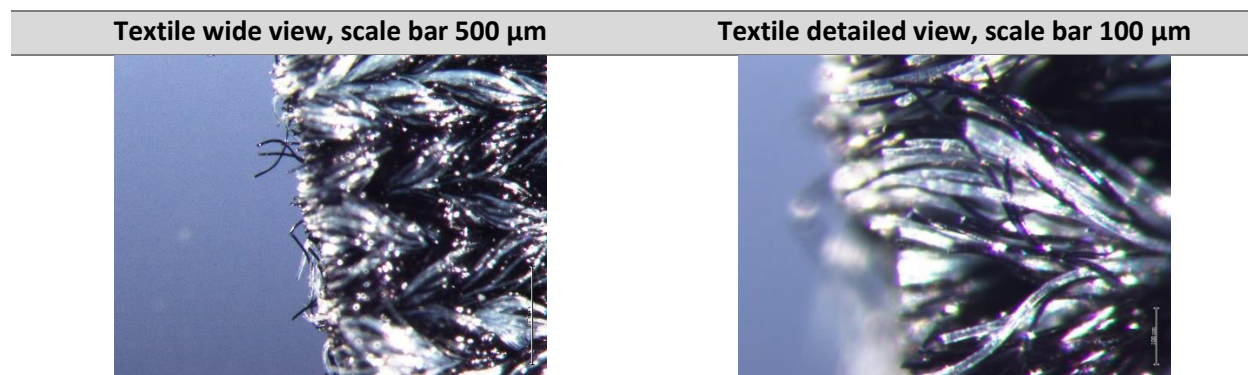
Here is all of the information our scientists collect about each textile or fabric.

Fabric 1 is: Nylon polyester stretch knit

Supplier name	NA	Description	Double-dyed heather stretch knit
Yarn type	Filament textured	Color	Black heather
Fiber Content	46% nylon, 46% polyester, 8% elastane	Chemical finishing	Wicking
Fiber-end shape	Split & pointed	Mechanical treatment	None
Construction	Knit	Composite	None
Dye method/Coloration	Dyed	Weight (g/m²)	256

Dimensions of fibers shed as a result of laundering

Fiber dimensions	Mean	Median	Minimum	Maximum
Length, μm	1,038.7	732.5	118.0	6,978.0
Width, μm	10.4	9.7	6.0	15.3



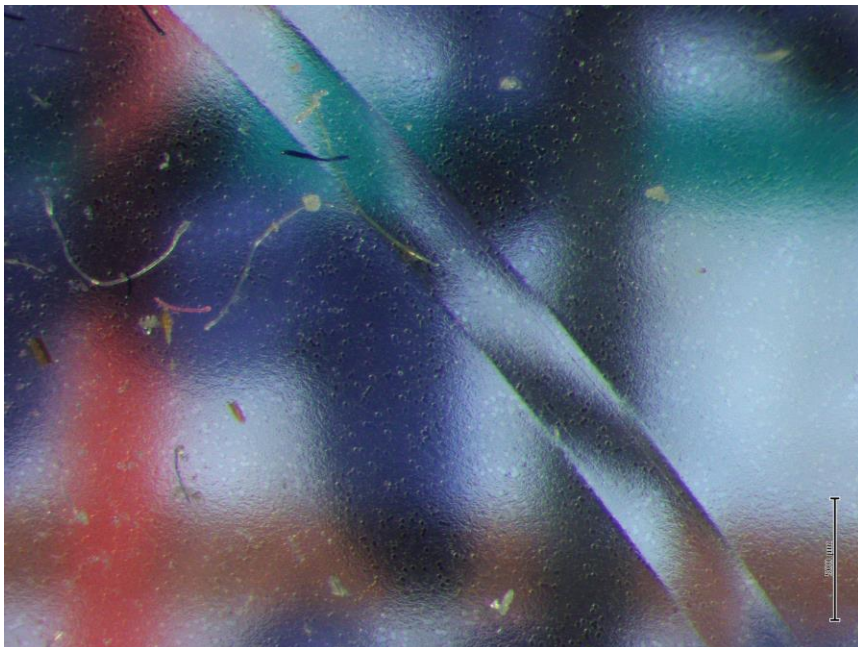
Square 1



Scale bar = 500 μm

How many fibers do you see? _____

Square 2



Scale bar = 500 μm

How many Fibers do you see Grid 2? _____

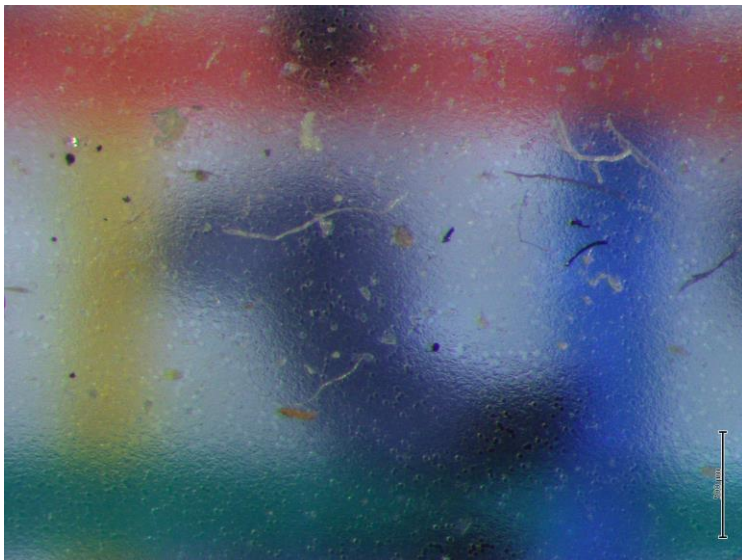
Square 3



Scale bar = 500 μ m

How many fibers do you see Grid 3? _____

Square 4



Scale bar = 500 μ m

How many fibers do you see in Grid 4? _____

Now calculate the total number of fibers for this fabric sample:

Enter the number of fibers you counted in each square below:

Square Number	1	2	3	4	Total
Number of fibers you counted					
Number of squares on grid					351
Calculate the average number of fibers per square (your total / 4)					
Calculate the number of fibers on filter (your average count x 351)					
Mass of fibers on filter, mg					0.6mg
Fibers/mg (total fibers on the filter / total mass of fibers)					

Knowing how many fibers your piece of fabric released in a single wash allows you to estimate how many fibers are released by that piece of fabric or garment over 5 washes, or 10 or 100 washes!

The number of fibers adds up quickly! Imagine how many times you wash each piece of clothing you own, now think about that number for everyone in your family, on your block, in your town or city, etc. for this fabric.