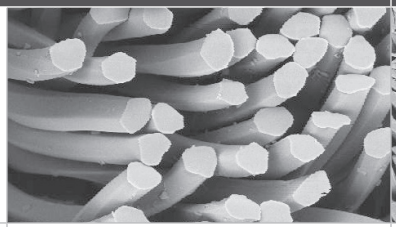
INITIAL THERMAL BENEFIT

A garment that feels cool when you initially put it on is . . . well, cool. It's generally well-understood that for a cooling sensation to be felt, there has to be a way for heat to actually be removed from your skin. Textile scientists have proposed that thermal conduction to fibers is one route for that to occur. The problem is that synthetic fibers just don't have all that much capacity to absorb a lot of heat. Basically, most such fibers are made from essentially the same polyester material, so the only way to speed up the rate of heat absorption (and, as such, the intensity of any cooling sensation) is to increase the surface contact between the fibers and your skin[1]. Enter the remarkably high surface contact area provided by the truly unique combination of size and shape that is enabled by Avra.

One of the analytical test methods which has been developed to evaluate thermal comfort of fabrics is the Kawabata Evaluation System Thermolabo instrument (KES-F7). By quantitatively measuring the heat flux into/across a fabric, it provides an indication of the potential transient or dynamic warming or cooling benefits provided by a fabric on its initial contact with the skin. The property which is determined through this test is referred to as "q_{Max}." Higher values indicate a measurably greater heat flux from body to fabric—or, in real terms, a fabric which will feel cooler to the touch.[2] Table 1 depicts a comparison of a stretch jersey fabric containing Avra with a popular commercial garment having a similar construction. Despite having a slightly lower permeability and a slightly higher basis weight, the Avra-containing fabric has a q_{Max} value that is 33% higher than the commercial fabric—a difference that is not only measurable but which feels meaningful. Now, that's cool.

Table 1. Initial fabrics tested for q_{Max} at NCSU Textile Protection and Comfort Center (TPACC). Fabrics are single jersey knits having spandex.

	Comparable commercial fabric (84% PET, 16% spandex)	Stretch jersey containing Avra (90% Avra, 10% spandex)
Scanning electron micrograph, 2000x magnification		
Weight, g/m^2	170	220
Air permeability, ft^3/min/ft^2	93	76
Moisture vapor transmission rate, g/m^2/24 hr	1438	1426
Thickness, mm	0.418	0.416
Q_{Max}, W/m^2	1x	1.33x