

## Textiles 101: Testing Moisture Management Performance

### Don't Sweat It...Measure It!

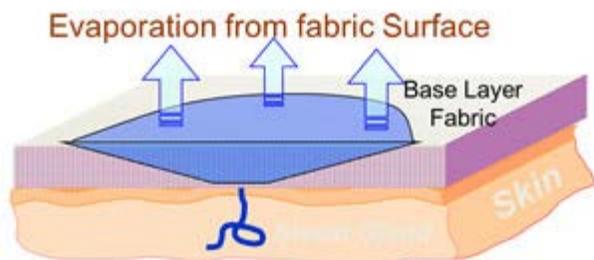
Textiles play an increasingly larger role in our day-to-day quest for comfort, fit, and fitness. Will these fabrics keep you dry no matter what the temperature or weather? Control of a person's microclimate is becoming a critical factor in achieving consumer satisfaction when purchasing textiles. [Moisture Management \(MM\)](#) is key to this success. MM is a complex subject because water can move so many different ways through fabric. Controlling this flow is essential to good MM.



### Putting it to the Test

AATCC has recently developed a new series of test methods to help measure and evaluate MM properties, along with related water resistance and repellency test methods (see table below).

[AATCC Test Method \(TM\) 195, Liquid Moisture Management Properties of Textile Fabrics](#), measures electrical conductivity changes as a test solution migrates across the top of, through, and across the bottom of the test specimen. Factors affecting this movement include fabric water repellency, water resistance, and water absorption, and fiber and yarn wicking properties. A moisture management tester (MMT) is used with this method. Perspiration is mimicked with TM 195—this test provides data that can contribute to an overall rating of comfort. Wetting times may be related to absorbency as measured by [AATCC TM 79, Absorbency of Textiles](#).



[AATCC TM 197, Vertical Wicking of Textiles](#), is used to measure "the ability of vertically aligned fabric specimens to transport liquid along and/or through them..." Wicking rate is a particularly important property that measures a fabric's ability to remove sweat from contact with the body. In TM 197, gravity plays a role.

[AATCC TM 198, Horizontal Wicking of Textiles](#), is similar to TM 197, except that horizontally aligned fabrics are tested. Wicking rate is also evaluated here, although without the influence of gravity.

[AATCC TM 199, Drying Time of Textiles: Moisture Analyzer Method](#), can be used to determine the drying time for fabrics "at an elevated temperature [including skin surface temperature of 37°C] using a gravimetric moisture analyzer." Drying time at body temperature is critical. Once moisture has been transported to the outside of the fabric, it should be evaporated away quickly.

[AATCC TM 200, Drying Rate of Textiles at their Absorbent Capacity: Air Flow Method](#), uses a different procedure than TM 199—one that allows drying rate determinations at the test specimen's absorbent capacity (i.e., "the maximum amount of liquid a material can hold; dependent on the specific test method used.")

[AATCC TM 201, Drying Rate of Fabrics: Heated Plate Method](#), determines the drying rate of a test specimen containing a prescribed amount of water and heated at a constant temperature of 37°C to mimic skin surface temperature.

TMs 195, 197, 198, and 201 can be used to test knitted, woven, and nonwoven fabrics. All of these test methods can be purchased on the [AATCC website](#) or by contacting [Brenda Jones](#) (+1 919 549 8141) in our Order Department.

### Future Challenges

It is important to note that AATCC TM's are not performance standards (i.e., the methods produce measurements only, and do not determine acceptable maximum or minimum values). TM users are responsible for deciding what maximum or minimum value is appropriate for their specific product. Chris Leonard, past technical director of AATCC, commented that "there are no specific [industry wide] performance specifications that say there is a minimum requirement [for moisture management test results]. [There are] no current performance specifications. Now that we have new methods, how does industry determine what will be the acceptable criteria for evaluation?" For example, how fast is "fast enough" to dry or what moisture movement is effective enough, asks Leonard?

AATCC has taken the first crucial steps to effectively measure critical moisture management properties in textiles. Now industry can use these metrics to ensure that their products measure up to today's activewear users' demands.



## AATCC Test Methods: Test How Your Fabric Handles Moisture

AATCC has a variety of test methods to check a fabric's performance with regard to moisture.

How do you need to test *your* fabric?

- TM 22-2010 [Water Repellency: Spray Test](#)
- TM 35-2006 [Water Resistance: Rain Test](#)
- TM 42-2007 [Water Resistance: Impact Penetration Test](#)
- TM 70-2010 [Water Repellency: Tumble Jar Dynamic Absorption Test](#)
- TM 79-2010 [Absorbency of Textiles](#)

- TM 127-2008 [Water Resistance: Hydrostatic Pressure Test](#)
- TM 193-2007 [Aqueous Liquid Repellency](#)
- TM 195-2010 [Liquid Moisture Management Properties of Textile Fabrics](#)
- TM 197-2011 [Vertical Wicking of Textiles](#)
- TM 198-2011 [Horizontal Wicking of Textiles](#)
- TM 199-2011 [Drying Time of Textiles: Moisture Analyzer Method](#)
- TM 200-2012 [Drying Rate of Textiles at their Absorbent Capacity: Air Flow Method](#)\*
- TM 201-2012 [Drying Rate of Fabrics: Heated Plate Method](#)\*

\* **NEW** test method!