

Note: In order to read the commentary that accompanies the following slides, click on the yellow 'notes' icon if they appear at the top left corner of the page.



Is it Moisture Management? How Do You Know?

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Resistance, Absorbency, and Wetting Agent
Evaluation



Agenda

- Technical Supplement
- Terms
- Concepts
- Test Methods
 - Published by AATCC
 - Under development/Currently being balloted
 - Other standards, industry or academic
- Specifications



MOISTURE MANAGEMENT TECHNICAL SUPPLEMENT

**Applicable to Textile Apparel, Linens and
Soft Goods**

This Supplement is published as a cooperative effort between the AATCC Research Committee RA63, Water Resistance, Absorbency, Wetting Agent Evaluation Test Methods and the ASTM International Committee D13 on Textiles

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- Published in 2008
- Jointly between
AATCC and ASTM
- Committee of industry
contributors





Moisture Management

- *for apparel, linens and soft goods, the engineered or inherent transport of water vapor or aqueous liquids such as perspiration or water (relates to comfort)**

*from AATCC / ASTM Moisture Management Technical Supplement at

www.aatcc.org





Terminology

- Absorbent capacity
- Breathability
- Comfort
- Cling
- Drying rate
- Drying time
- Wicking
- Horizontal wicking
- Vertical wicking
- Wicking rate
- Wicking time
- Wicking distance



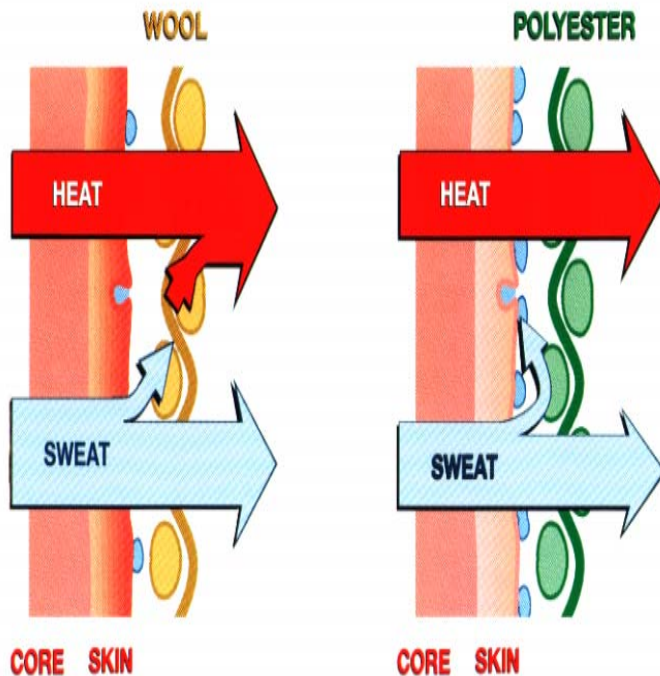


Other Sections

- Concepts & Considerations
 - General Concepts
 - Considerations in Testing
 - Technical Considerations
 - Consumer Considerations
- Comfort Testing and Relationship to Moisture Management
- Bibliography



Moisture Transport



◆ Liquid transfer

◆ Convection

◆ Water vapor

◆ Evaporation/condensation

◆ Fiber moisture sorption



Human Sensations of Clothing Comfort

- 3 key factors contribute to the subjective Human “comfort” perception
 - Thermal-moisture comfort
 - Tactile comfort
 - Fit/Ergonomic/Pressure comfort
- ~50% of total variance of comfort comes from the “thermal-moisture comfort”
- Other authors suggest fit or sensory perceptions outweigh thermophysiological factors



** Portion of slide courtesy of SDL-Atlas*





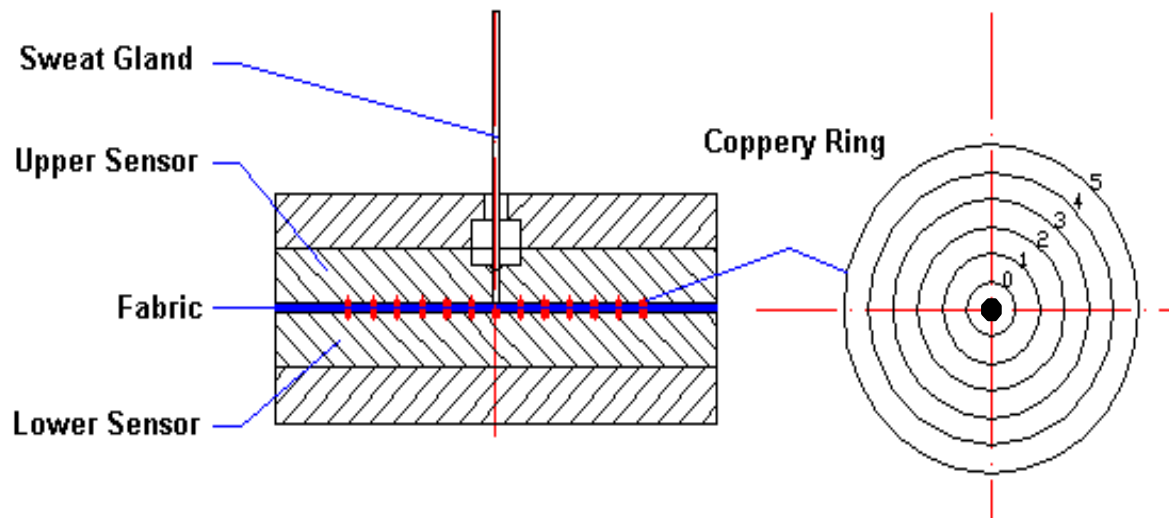
TM79 Absorbency of Textiles



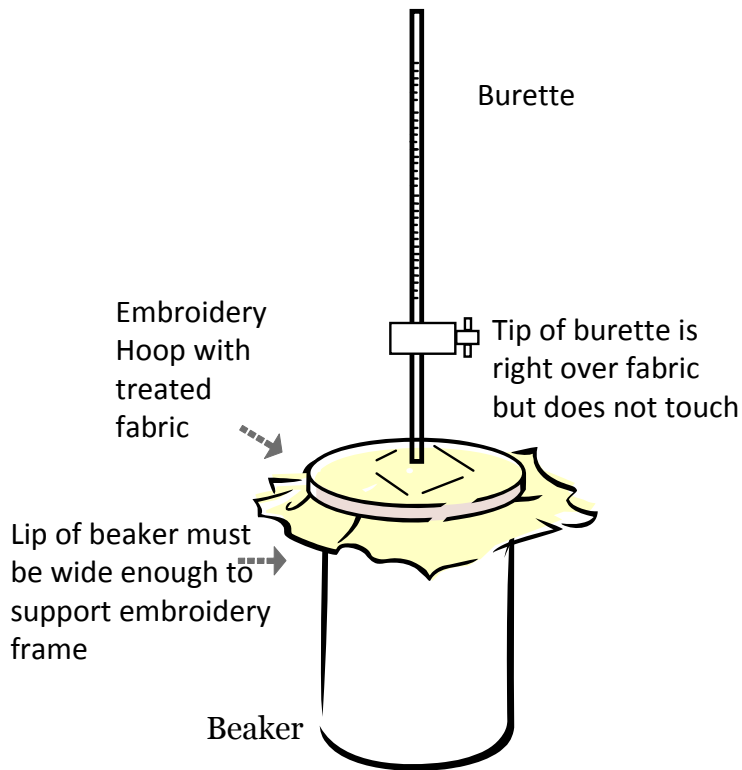
- Originally used to check preparation of bleached textiles
- Use has expanded to finished goods
- Relationship to comfort??
- Relationship to other properties

TM195 Characterization of Liquid Moisture Management of Textiles Moisture Management Tester (MMT)

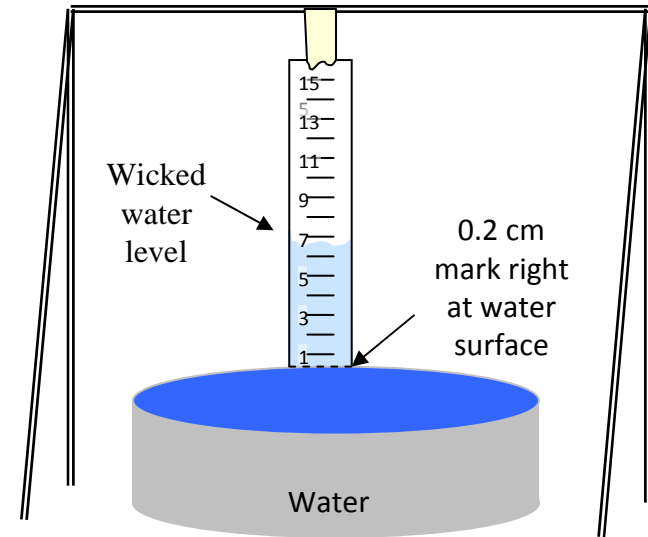
Measures dynamic liquid transport properties of fabrics in 3 dimensions



Wicking

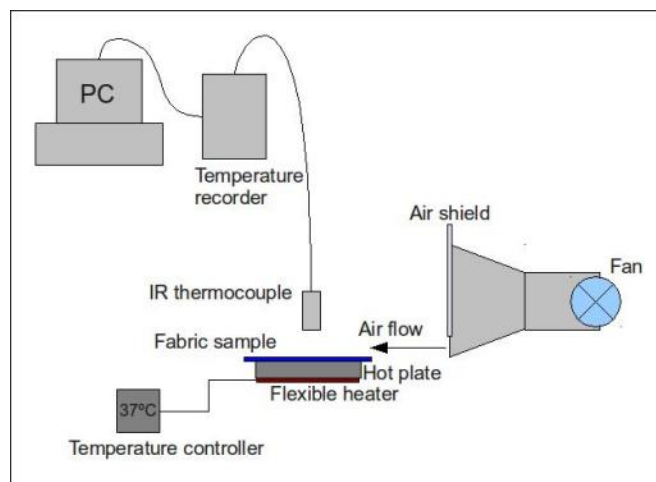


Vertical Wicking



Horizontal Wicking

Drying Methods



- Several approaches are being considered
- Testing Factors:
 - Amount of water & how applied
 - Specimen orientation
 - Specimen size
 - Atmospheres of testing
 - Direct or indirect measurement
 - Test endpoint
- What is the purpose of the test? (i.e., air dry vs. tumble dry vs. wearing)



Other Standards

Property	Designation
Air Permeability	ASTM D 737
Terminology for Moisture in Textiles	ASTM D 4920
Water Vapor Transmission	ASTM E 96
Sweating Guarded Hot Plate	ASTM F1868
	ISO 11092
Dynamic Moisture Permeation Cell	ASTM F2298
Manikin Testing	ASTM F2370
	ISO 15831

Don't forget! ASTM has standards for things such as thickness, yarn count, fabric count, etc. that impact the MM properties.

(www.astm.org)





Other RA63 Test Methods

Properties	Designation
Water Penetration (Hydrostatic Pressure Test)	AATCC 127
Water Penetration (Impact Penetration)	AATCC 42
Water Repellency (Tumble Jar Dynamic Absorption)	AATCC 70
Water Repellency (Spray Test)	AATCC 22
Water Resistance (Rain Test)	AATCC 35



Standard Specifications



- AATCC does not publish specifications.
- ASTM does.



THANK YOU! Any Questions?

