

Innovative Solutions  
from MOCON...

# System for Measuring High Transmission Water Vapor

**PERMATRAN-W<sup>®</sup>**  
**Model 101K**  
**Water Vapor Transmission Rate**

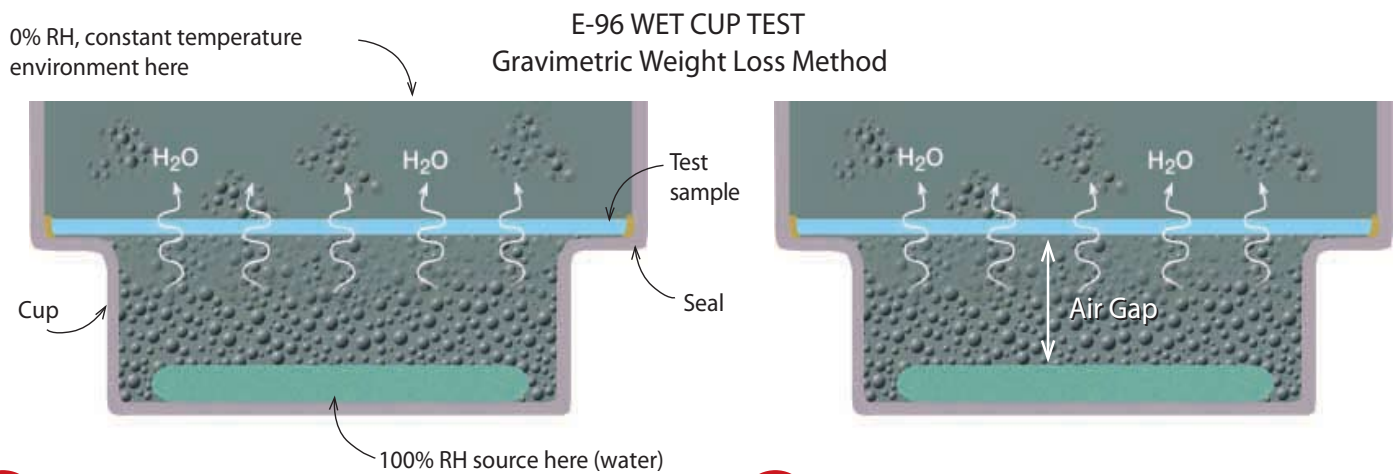


- Test non-wovens, fabrics, textiles, breathable membranes, plastic films and paper
- Permits testing of up to six samples simultaneously on a single system module

**mocon<sup>®</sup>**

# At Last... A System That Can Accurately Perform High Transmission

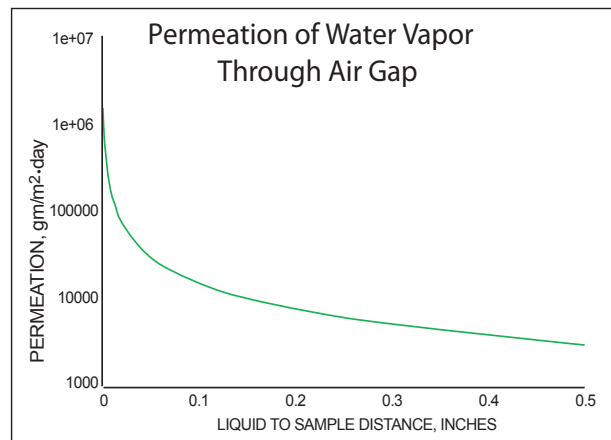
## Traditional Test Methods to Measure WVTR through High Transmitter Barriers Are Inaccurate!



**1** Traditionally, even though there are known limitations, the gravimetric test method, better known as the Wet Cup and Dry Cup versions of ASTM E-96 has been used to measure moisture through high transmitter barriers.

**2** The conditions of the standard cup test that are assumed are not true. With high WVTR transmitters, the actual RH concentration at the test sample is much lower than 100% dependent upon the distance of the air gap between the RH source and the test sample.

**3** Both type of cup tests give inconsistent and erroneous answers because of the air gap. RH changes as you move away a distance  $X$  from a source. The air itself is a significant barrier and it must be accounted for in measuring high water vapor transmission rate barriers.



With The

**PERMATRAN-W Model 101K**

MOCON has

developed a **solution** (patent pending) to account for the air gap

to **provide true and accurate answers** for high

transmitting moisture barriers.

# Measurements For Water Vapor (Moisture) - PERMATRAN-W<sup>®</sup> Model 101K

What is the difference between POROSITY and PERMEABILITY?

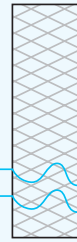
## Situation 1

Higher Static Pressure

Lower Static Pressure

Porosity

Gas Flow



Paper Sample

## Situation 2

Static Pressure

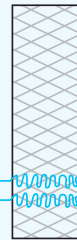
Same Static Pressure

Higher Partial Pressure

Lower Partial Pressure

Permeability

Molecular Diffusion



Let's consider the case of a porous material challenged by a test gas.

**POROSITY** is the measure of a gas flow (such as water vapor) through a barrier material (such as paper) when a static pressure difference exists across the barrier. This flow can be measured in different ways, and is usually expressed in Gurley seconds or Darcies. This is often not a real-life test because the sample doesn't have a different pressure on each side in field use. Also, this test does not measure permeability, diffusion, or transmission rate.

**PERMEABILITY** is a measure of the permeant moving through the barrier material when there is equal static pressure on both sides of the barrier, but the partial pressure is different (Fick's Law). This is a real-life situation with many non-wovens, textiles, microporous membranes, and papers. This type of test, as performed by the new PERMATRAN-W<sup>®</sup> Model 101K, measures the permeability or transmission rate of water vapor through barrier materials, porous or non-porous.

With The PERMATRAN-W<sup>®</sup> Model 101K, You Get Accurate Answers to Reflect Real-Life Situations.

- Sample test time in minutes (approx. 10 min /sample)
- Six test cells for maximum throughput
- Precise temperature measurement and control
- Flow and barometric pressure correction
- No need for reference films
- Computer controlled



# Product Selection Information

	PERMATRAN-W Model 101K
<b>Test Temperature Range:</b>	
20 C to 50 C	X
<b>Sensitivity:</b>	
500* g/m <sup>2</sup> . day (32 g/100in <sup>2</sup> . day) to 100,000 g/m <sup>2</sup> . day (33,000 g/100in <sup>2</sup> . day)	X
<b>Test Sample Area:</b>	
Six 10 cm <sup>2</sup> test cells	X
<b>Test Modules:</b>	
1 - 6 test cells	X
<b>Automatic Temperature Monitor &amp; Control (standard)</b>	X
<b>Automatic Digital Barometric Pressure Compensator (standard)</b>	X
<b>Automatic Digital Flow Compensators (standard)</b>	X

\* depending upon material sample, lower sensitivity values can be obtained

## MOCON Commitment

This new system is another example of MOCON's long-standing commitment to innovation and quality in the design of permeation testing systems for barrier material and package assessment.

## Technical Support & Service

MOCON maintains an applications and testing laboratory to assist customers in realizing the full potential of their MOCON instrument. Seminars and intensive training classes are held for those interested in maximizing their understanding of the systems, technology, and operating procedures. Call your MOCON representative for more information on these programs or for a system quotation.

This instrument is ETL listed,  
 Conforms with UL Standard 1262, is  
 Certified to CAN/CSA C22.2 No. 151,  
 Complies with ASTM D6701-01, and  
 Complies to CE Product Safety,  
 Electromagnetic Emission & Susceptability

**mocon**<sup>®</sup>

Phone: 763- 493- 6370

Fax: 763- 493- 6358

7500 Boone Ave N, Minneapolis, MN 55428 USA

Visit our website at  
[www.mocon.com](http://www.mocon.com)

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