



# PERMATRAN-W<sup>®</sup> MODEL 101 K

## WATER VAPOR PERMEATION INSTRUMENT

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WVTR Testing for High Transmitting Barrier Films

**AMETEK<sup>®</sup>**

**mocon<sup>®</sup>**



## WVTR Barrier Measurements... Done Right.



### Ultra-High Transmission Range Water Vapor Permeation Instrument

The PERMATRAN-W Model 101K is an automated 6-cell Water Vapor Transmission Rate (WVTR) instrument that effectively and accurately measures the moisture permeability of breathable barriers. The unique design allows measurement of permeation under actual environmental conditions these barriers are likely to experience. It is designed for high transmitting moisture barriers in the range of 500 to 100,000 g/(m<sup>2</sup> · day) and is the only instrument that conforms to the ASTM D6701 standard.

#### Accuracy at High Transmission Levels

Obtaining accurate and repeatable results when testing highly permeable materials is a challenge. Traditional Gravimetric methods such as ASTM E96 have issues with loss of driving force due to the air gap between the moisture source and the sample resulting in erroneous and inconsistent test results. The 101K WVTR instrument utilizes a modified inverted water cup concept to eliminate the air gap problem and maintain constant 100% RH driving force throughout the test period. The precision RH sensor on the carrier gas side provides accurate results. The automated system maintains consistent conditions throughout the tests yielding repeatable results without operator intervention. We also offer a special calibration film for the instrument to ensure accurate test results.

#### Time Savings

By measuring moisture concentration, carrier gas flow and temperature, the 101K is easy to set up and requires no supervision through the test. The fully automated test provides rapid test results to help reduce overall product development time or shorten product quarantine times in the production environment. Additionally, the instrument can test up to six samples simultaneously, ideal for a QC lab supporting production operations.

#### Applications

The 101K is ideal for measuring WVTR in materials such as porous and breathable polymer membranes, thin paper with polymer coatings and thin polymer nonwovens (with non-textured surface). Such barriers are common applications in the healthcare industry as diapers and bandages and in the construction industry as moisture barriers (house wraps) and soil control.

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#### High Throughput

- Inverted cup design provides results in less time than gravimetric methods
- Integrated 6-cell test head for parallel testing of 6 samples at the same time
- Compact test chamber area is easy to load
- Automated test cycle

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#### Simple User Interface

- Overview dashboard screen provides the status of all 6 cells
- Test status screen provides graphic display of data
- Automatically generate test reports
- One control system can be centralized monitoring and control for multiple instruments



## The PERMATRAN-W Model 101K provides true and accurate water vapor permeation rates for breathable membranes or films.

### Consistent Conditions

The unique inverted cup design allows transmission rate testing without an air gap that maintains a constant 100% RH driving force of water vapor throughout the test without operator interaction. The air gap that exists in traditional test methods negatively effects the RH at the barrier sample that reduces the accuracy of the test. When testing high transmitting barriers, the large amount of moisture transmitting through the barrier can result in changing the RH driving force as the test progresses. This inverted cup design prevents changes in driving force thus ensuring accurate and repeatable test results.

### Porosity vs. Permeation

Additionally, the inverted cup design relies on testing with equal pressure on both sides of the sample allowing accurate measurement of the permeation transmission rate without the need for pressure differential. These results are true permeation via molecular diffusion. This equal pressure condition eliminates any artifact of water vapor transfer through the porosity of the barrier and provides a true measure of the breathability of the barrier.

### Simple Operation

Place all desired sample films in position, attach the test head and adjust the flow to the desired level. Enter the conditions such as temperature into the connected computer with AMETEK MOCON's WinPerm™ software and start the test. Monitor each cell from the computer to see progress and test results when complete. Digital pressure and flow controls allow for simple "set and forget" test conditions. A single water reservoir in the head achieves 100% RH conditions throughout the test for all 6 cells.

MOCON's WinPerm™ Permeability software is designed for speed and ease of use. Features include:

- Quickstart – Quickly choose standard ASTM, ISO, JIS or user defined test conditions and immediately begin testing
- Pre-programmed test set-up may be saved and recalled for later use
- Test results are automatically converted to Excel format for export and further data manipulation
- Test results are available in individual detailed or multi-test summary format
- Compatible with PERMNET™, our, powerful test and data management system

ASTM D6701 cites the 100K, predecessor of the 101K, as the only known instrument to comply with the method. The 101K provides the most accurate and repeatable permeation results for your high transmitting barriers.

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### Innovative RH Control

- Maintains 100% RH driving force throughout the test
- No adjustments or refilling during a test
- True measurement of permeation based on molecular diffusion

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### Accurate Results

- Precise temperature measurement and control
- Automated flow and barometric pressure correction
- No air-gap factor
- Complies with ASTM D6701

# PERMATRAN-W MODEL 101 K SPECIFICATIONS

PRODUCT BROCHURE

## Industry Standards

- ASTM D 6701

## Conformance Standards

- CE Safety Compliance

## Accessories

- PermWare™ software for data collection and remote monitoring

## Connectivity

- Dual RS 485 ports

## Dimensions & Weight

Depth: 26" or 66,4 cm

Width: 12" or 30,4 cm

Height: 12" or 30,4 cm

Weight: 63 lbs. or 28.6 kg

## Performance Specifications

Temperature Control Range	20°C to 50°C ± 0.5°C
Humidity Control, Film Cell, Test Gas	100%
Test Range, Film Unmasked (10 cm <sup>2</sup> )	500 to 100,000 g/(m <sup>2</sup> · day) 32.5 to 6500 g/(100in <sup>2</sup> · day)
Resolution, Film	1 g/(m <sup>2</sup> · day)
Repeatability, Film	1%



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