Water Vapor Transmission Testers

WVTR-1663

Not just products... Solutions

APPLICATIONS

The PMI Water Vapor Transmission Tester is capable of measuring water vapor transmission through porous media such as textiles, leathers, man made materials, membranes, nonwovens, and fabrics used in numerous high technology components and consumer products manufactured by a variety of industries. The instrument has the unique ability to measure vapor transmission rate over a wide range of humidity, temperature, and pressure under gradients of humidity, temperature, and pressure encountered in application environments.

PRINCIPLE OF OPERATION

Two independent gas streams are maintained on the two sides of a sample at the desired temperature. Humidity and gas flow rates are measured. The transmission rate through the sample is computed using mass balance.

$$(dn/dt) + [(p_{e,i}\Phi_i / P_i) M_i] = [(p_{e,o}\Phi_o / P_o) M_o]$$
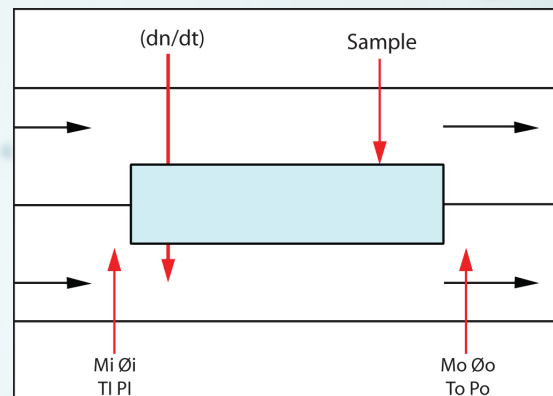
Where,
i = inlet   o = outlet
t = time   M = flow rate
n = moles Φ = humidity
P = total pressure   p = equilibrium vapor pressure

SPECIFICATIONS

- **Conforms to ISO Standard 1663 standard method testing**

- **WVTR Measuring Range:** 0.1 g/m² .day - 10,000 g/m² .day

- **Accuracy:** 0.01 g/m² .day

- **Temperature Range:** ambient 10°C to 45°C
  (can be upgraded up to 70°C)

- **Humidity Range:** 5% RH to 90% RH

- **Calibration:** Using test standard films

Instrument

The sample is enclosed in a sample chamber. A part of the gas flowing through each independent stream is allowed to go through bubblers while the other part bypasses the bubblers and mixes with the gas passing through the bubblers. For maintaining constant humidity in the inlet gas stream, the flow rate in each part of the gas stream is controlled. The gas pressure is controlled by the valve at the end of each gas flow line. The valves automatically control and maintain either zero differential pressure or a finite definite pressure difference. Absolute pressure remains close to the standard pressure. The inlet and outlet flow rates and humidity are measured. The water vapor transmission rate through the sample is computed using the following relation.

$$(dn/dt) = [(p_e/P)\Phi_o - (p_e/P)\Phi_i]M_o/[1 - (p_e/P)\Phi_i]$$

Features

- Non-destructive testing

- Minimal maintenance required
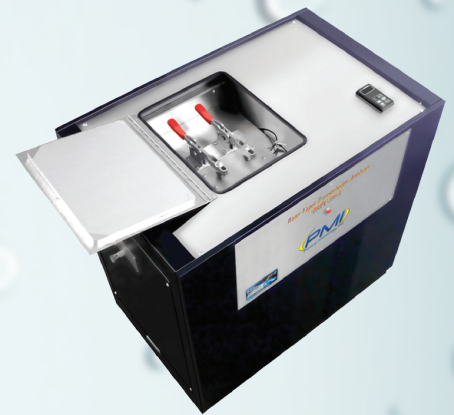
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Our sales team is dedicated to helping our customers find which machine is right for their situation. We also offer custom machines for customers with unique needs. To find out what we can do for you, contact us. We are committed to customer support including specific service products, short response times & customer specific solutions. To quickly & flexibly meet our customer's requirement, we oller a comprehensive range of services.

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35

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