THE ADVANCED OXYGEN PERMEABILITY TESTER

PMI-OPT-100A

The PMI Advanced Oxygen Permeability Tester is able to measure oxygen transmission rate through plastic film, metals, foils, laminated film, paper sheets, other barrier sheet metals, and packages. The instrument's measurement conforms to ISO 15105-2.

PMI
Porous Materials, Inc.

Not just products...*solutions!*

Applications

Many application of porous materials require very low gas permeability through these materials. Such applications are found in many industries including Biotech, healthcare, pharmaceutical, food, packaging, enviromental, power sources and chemical industries, paper industries and others. Determination of the magnitudes of flow rates of gas through materials used in these applications is important for evaluation of products.

Principle

The Advanced Oxygen Permeability Tester is used to determine the permeability of porous solids. A gas such as air is forced to flow through the test sample. Measurements of the steady-state flow rate and the corre sponding pressure drops provide the necessary data for calculation of the permeability using darcy and other units.

The basic principle of how this machine works is based on the laws of diffusion.

$F = M [dp/dx]$

Where F is the flux across the sample, [dp/dx] is the pressure gradient across the thickness, and M is a measure of diffusivity. The instrument is design to accurately measure pressure and flow rate. The sample chamber is evacuated. Gas pressure maintained at constant value on one side of the sample is measured and the increase in pressure on the other side is also measured. The data are used to compute flow rate of gas per unit area of the sample per unit time as a function of pressure gradient.

The gas flow rate is computed using the following relation:

$F = (VT/PsTs)(dp/dt)$

Where F is the gas flow rate in volume at STP per unit time, V is the volume outlet chamber, Ps is the standard pressure, T is the standard temperature, Ts is the test temperature, and (dp/dt) is the time rate of pressure increase in the outlet chamber.

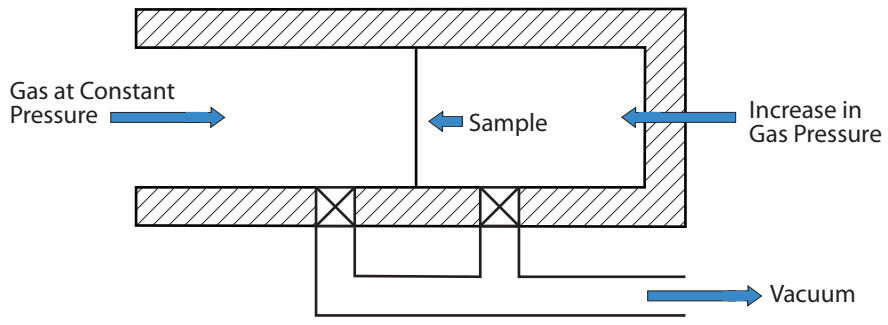


Figure 1
Diagram of the basic principle of the PMI-OPT-100A

Features

- Fully automatic
- Windows-based software handles all control, measurement, data collection, and report generation; complete manual control also possible
- Comes with computer equipt with real-time graphical test display depicts testing status and results throughout operation
- Non-destructive testing
- Length of test approximately 10 minutes
- Wide range of acceptable sample types and sizes
- Multiple sample chambers available
- Minimal maintenance required
- Units in Gurley, Darcy, Frazier, and many others
- Completely automated air permeability and surface tester
- Pneumatic Clamping

- Includes: PC, Compressor, Gurley Apparatus, Sealing Fluid, and Timer

Optional Features

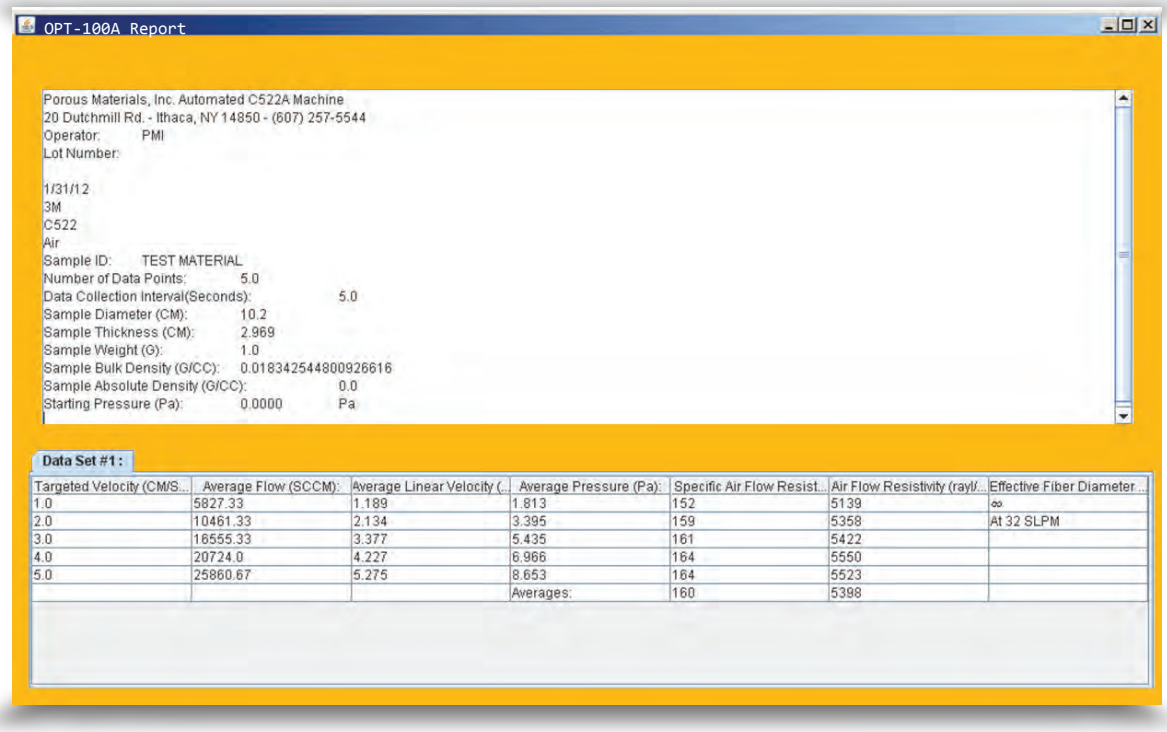
- Permeability measurement of high flow rate samples like cartridges
- Permeability of samples under compressive stress
- Use of elevated test temperaturesand a wide variety of gases

Specifications*

- Air Permeance Range: 0.35µm/(Pa•s) and 15µm/(Pa•s) and 0.1 µm/(Pa•s) and 100 µm/(Pa•s)
- Sample Size: 100mm x 100mm
- Pneumatic Clamping: (180±30)N
- Pressure Range: Up to (127 ± 0.02)kPa
- Pressurizing Gas: Clean, dry or compressed air (Or any other nonflammable and noncorrosive gas)
- Pressure Transducer Range: 0 – 150 kPa
- Reservoir Volume: 10 litres
- Pressure controller: 1.47 ± 0.02 kPa
- Accuracy: 0.15% of reading
- Mass Flow Transducer Range (3 options):
  5-150 ± 2 ml/min 50-500 ± 5 ml/min 300-3000 ± 20 ml/min
- Power Requirements: 220-230V, 50Hz
- Dimensions: 30" H x 19" W x 18.5" D
- Weight: 100 lbs
- Permeability measurement according to ISO 5636-3 and 5

** Other specifications for this machine are available. Specifications are subject to change without notice.*

PMI Software



Targeted Velocity (CM/S...	Average Flow (SCCM):	Average Linear Velocity (...	Average Pressure (Pa):	Specific Air Flow Resist...	Air Flow Resistivity (ray/...	Effective Fiber Diameter ...
1.0	5827.33	1.189	1.813	152	5139	∞
2.0	10461.33	2.134	3.395	159	5358	At 32 SLPM
3.0	16555.33	3.377	5.435	161	5422	
4.0	20724.0	4.227	6.966	164	5550	
5.0	25860.67	5.275	8.653	164	5523	
			Averages:	160	5398	

Figure 2
PMI Software Report Screenshot

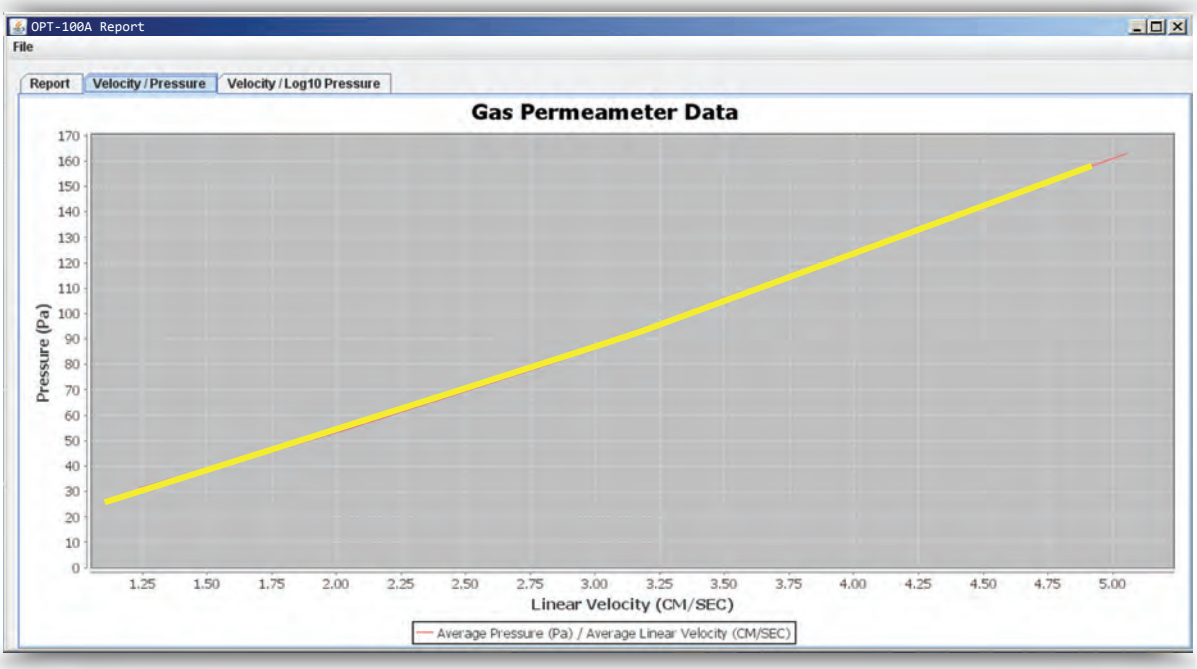


Figure 3
PMI Software Report Graph Screenshot

Sales & Services

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 offer a comprehensive range of services.

Customize your machine today!

PMI Porous Materials, Inc.

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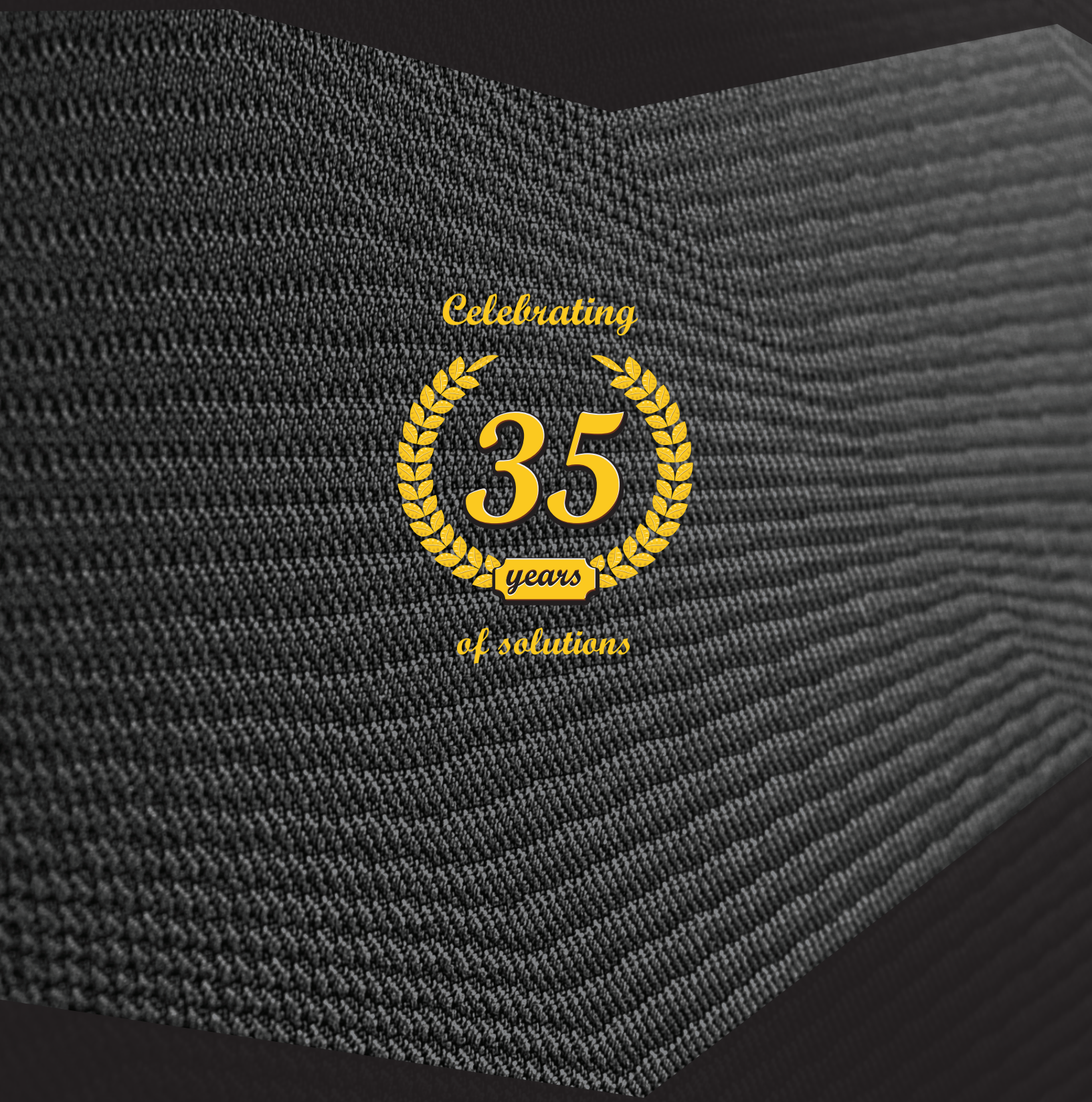
Email: info@pmiapp.com www.pmiapp.com

The most advanced, accurate, easy to use and reproducable porometers in the world.



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