THE PMI ADVANCED PERMEABILITY POROSIMETER

PMI-APPS-60

Porous Materials, Inc.

Not just products...*solutions!*

Description

The PMI Advanced Permeability Porosimeter is a versatile and accurate instrument used to determine properties such as particle size, particle distribution, pore tortuosity, pore number fraction, pore throat ratio, pore fractional dimensions, permeability, material compressibility, total pore volume, surface area, and bulk and absolute densities of solid and powder samples. With unlimited user-defined data-points, automated data collection and reduction, non-destructive testing, and the least mercury exposure of any porosimeter on the market, PMI's Permeability Porosimeter is safe, reliable, and precise. It also allows testing under ambient or elevated temperatures to simulate actual operating conditions.

Applications

Industries worldwide utilize PMI Porosimeters like the Advanced Permeability Porosimeter for R&D and quality control. These industries may include (but are not limited to) Rock Core, Automotive, Battery Separator, Filtration, Geotextiles, Textiles, Pharmaceutical, Nonwovens, Paper, and Food. Samples tested include filter media, membranes, coated and non-coated paper, battery separators, brake pads, catalytic converter materials, powder precursors, & more.

Principle

The flow of liquid through a sample is measured by the distance a column of liquid drops in relation to time and pressure. This method gives reproducible results, even for hydrophobic materials, as pressure can be applied up to 200 psi to the liquid column to force the liquid through the sample. Very low permeability samples are tested using an accurate weighing balance to measure liquid flow rate.

The Advanced Permeability Porosimeter uses mercury intrusion or intrusion of any other nonwetting liquid to determine pore volume. The machine fills the penetrometer and sample chamber with mercury under vacuum and takes a volume reading. The sample, however, is not initially intruded with mercury or other nonwetting test liquid because of the high surface tension. Gradually, increasing amounts of pressure are applied on the nonwetting liquid. For each incremental increase in pressure, the change in intrusion volume is equal to the volume of the pores whose diameters fall within an interval that corresponds to the particular pressure interval.

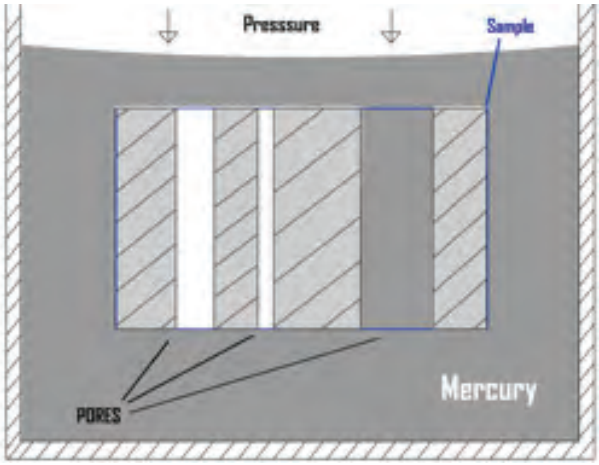

Figure 1
Principle of Operation:
Mercury Intrusion Technique

Features

- Fully automatic
- User- friendly, Windows-based software compatible for Windows XP and Windows 7
- Software handles all control, measurement, data collection, and report generation; complete manual control also possible
- Free software upgrades available for up to 3 years
- Unlimited user-defined data points based on pressure, volume, or a combination
- Comes with computer equipped with latest configuration and real-time graphical test display which depicts testing status and results throughout operation
- Displays both intrusion and extrusion curve
- Wide range of acceptable sample types and sizes
- Minimal maintenance required
- Low level of mercury exposure
- No need for sample transfer from low pressure to high pressure stations
- Non-destructive testing

Specifications*

- Pore Diameter Range: 0.003 - 350 µm
- Pressure Range: Vacuum up to 60,000 psi
- Pressure Transducers: Low, medium and high ranges
- Sample Size: 25 mm diameter and 25 mm long
- Analysis Ports: 2 low and high pressure ports
- Sample Volume: Up to 10 cc or more
- Pressurizing Fluid: Mercury
- Vacuum Pump: Two stage, direct drive rotary oil pump
- Permeability Range: $1x10^{-4}$ - 5 Darcy
- Pressurizing Gas: Clean, dry or compressed air (Or any other nonflammable and noncorrosive gas)
- Pressure Range: 0 - 200 psi
- Resolution: 1 in 60,000
- Accuracy: 0.15% of reading
- Power Requirements: 230 VAC, 50 Hz (Others available)
- Weight: 150 Kg

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

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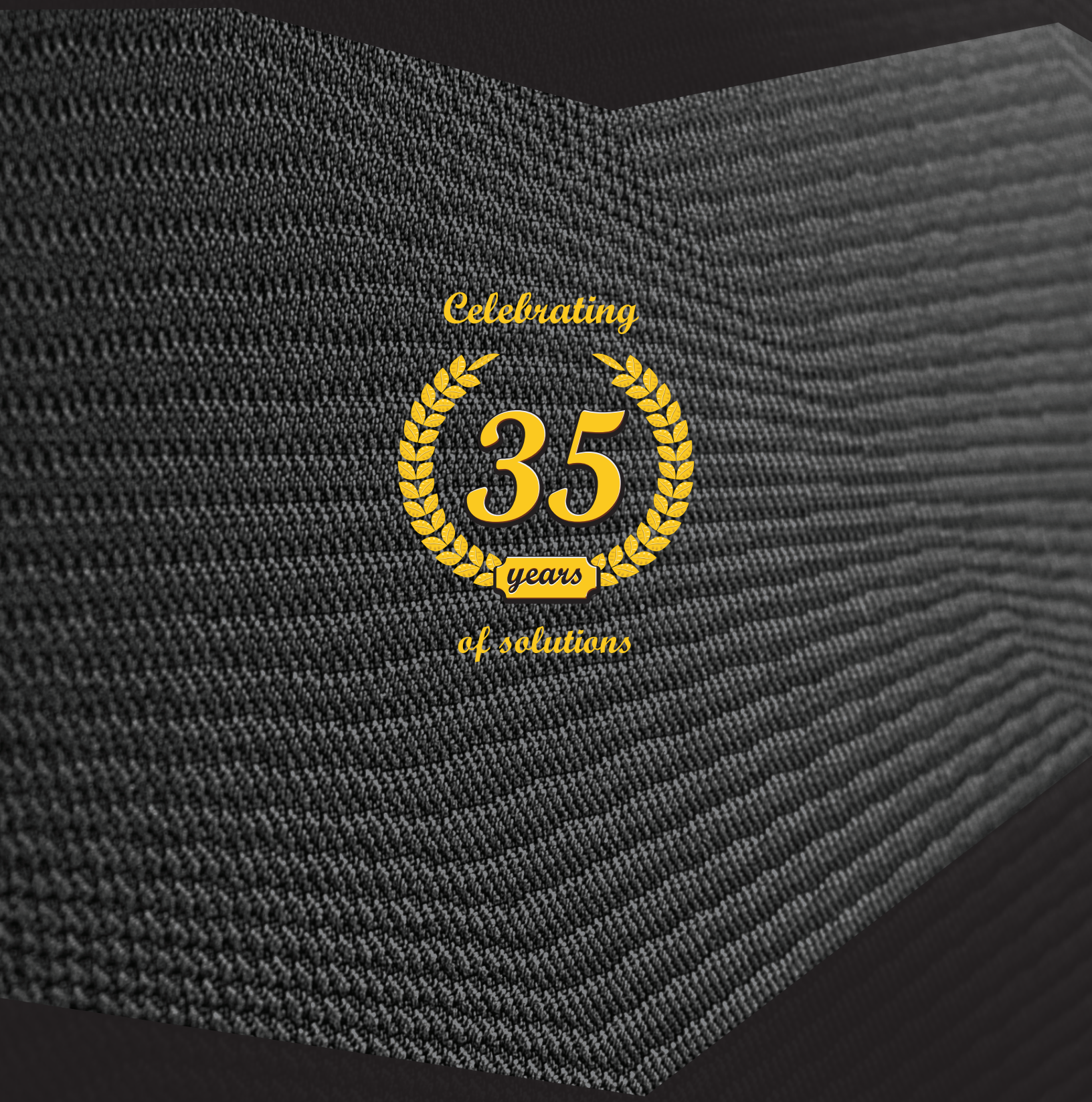
The most advanced, accurate, easy to use and reproducable porometers in the world.



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