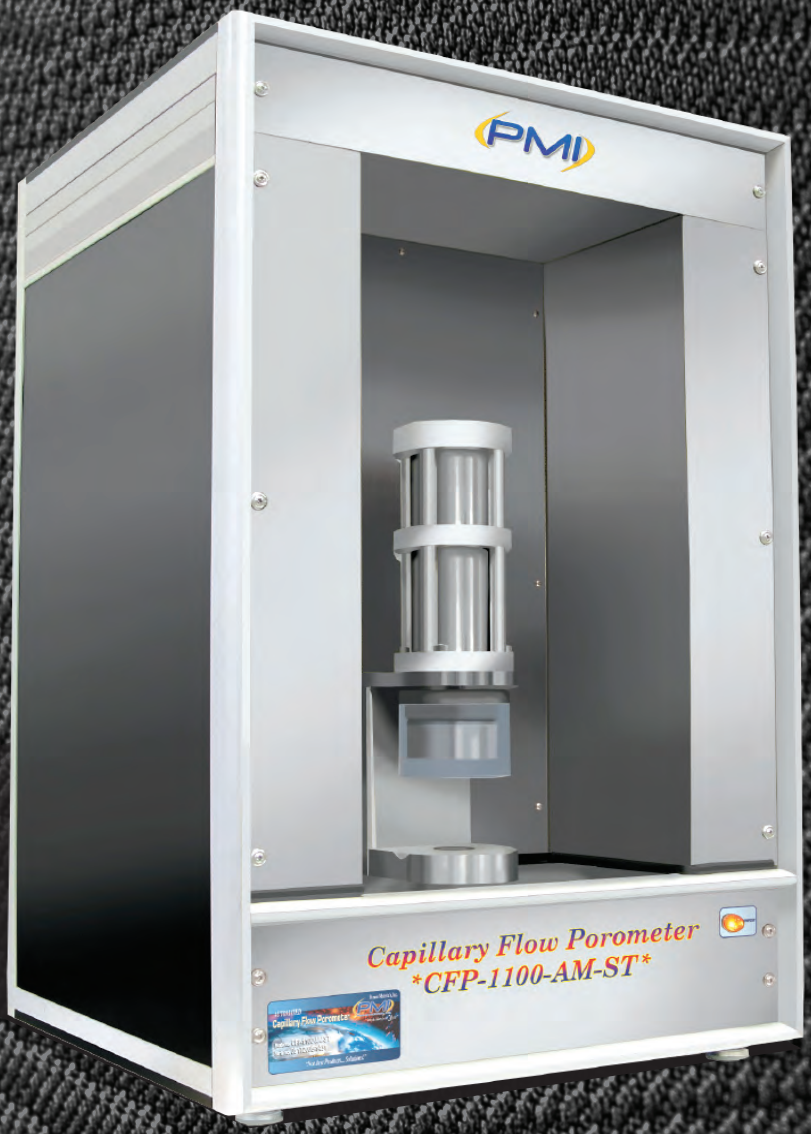
THE PMI CPOMPRESSION POROMETER



PMI
Porous Materials, Inc.

Not just products...*solutions!*

Description

The pore structure characteristics of products experiencing considerable stress during service could be appreciably different from those evaluated in the laboratory. This award win ning instrument provides a unique opportunity for evaluating the component under true service conditions.

Principle of Operation

A fully wetted sample sandwhiched between two porous and rigid plates is placed in the sample chamber. The plates are much more porous than the sample. Compressive stress is applied on the plates. Gas pressure behind the sample is increased. When the pressure is sufficiently high, the largest pore is emptied and has starts to flow. With increase in pressure, smaller pores are emptied and the flow rate increases through the sample. The flow rate and pressure are measured using wet and dry samples. These data are used to calculate the effects of compressive stress on pore size and pore distribution. The pore size is obtained from differential pressure.

$$D = 4\gamma \cos\theta / p$$

D= pore diameter
γ= surface tension of liquid
θ= contact angle of liquid
p= differential gas pressure

The PMI Compression Porometer, thus, characterizes porous materials under conditions of their actual use.

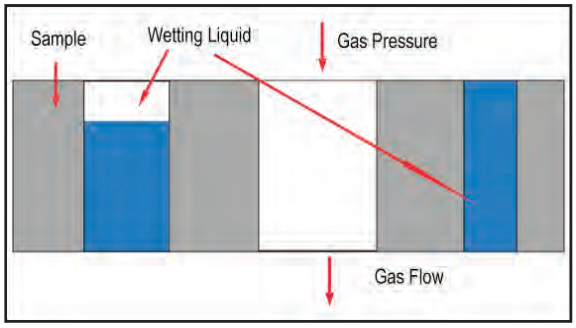


Figure 1
Principle of Compression Porometer

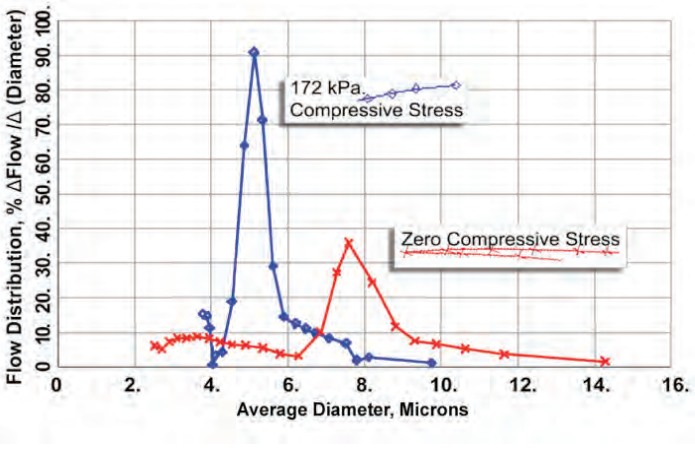


Figure 2
Flow Distribution Graph

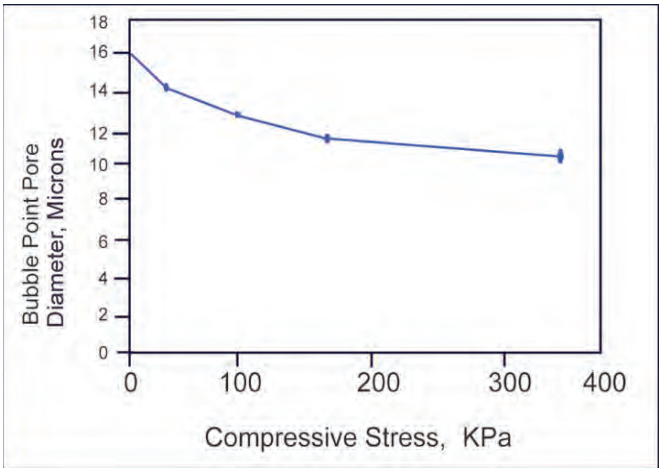


Figure 3
Bubble Point Pore Diameter Graph

Applications

The Automated Compression Porometer is designed to characterize the pore structure of a material under compression. Industries worldwide use the PMI Compression Porometer for R&D and quality control. Samples often tested include filter media, membranes, paper and battery separators. The instrument permits tests to be carried out under simulated true service conditions.

Industries

Automotive, Battery Seperator, Filtration, Geotextiles, Textiles, Nonwovens, Paper, Fuel Cells

Features

- Measures effects of compressive stress on the largest pore diameter (bubble point), the mean flow pore diameter, pore distribution, and permeability
- Fully Automated
- Windows based software for data aquisition, storage and reduction
- Compressive stress adjustable by the operator

Specifications*

- **Pore Size Range:** 0.013 - 500 microns (Others Available)
- **Permeability Range:** 1x 10^{10} 1x 10^{6} (microflow
- **Sample Size:** 0.5" - 2.5" diameter
- **Pressure Transducer Range:** 0 - 500 psi
- **Resolution:** 1 in 20,000
- **Accuracy:** 0.15% of reading
- **Pressurizing Gas:** Clean, dry, and compressed air or non-flammable and
- non-corrosive gas
- **Mass Flow Transducer Range:** 10 cm^3/min -
- **Power Requirements:** 110/120 VAC, 50/60 Hz
- **Dimensions:** 30" H x 19" W x 18.5" D
- **Weight:** 100 lbs

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

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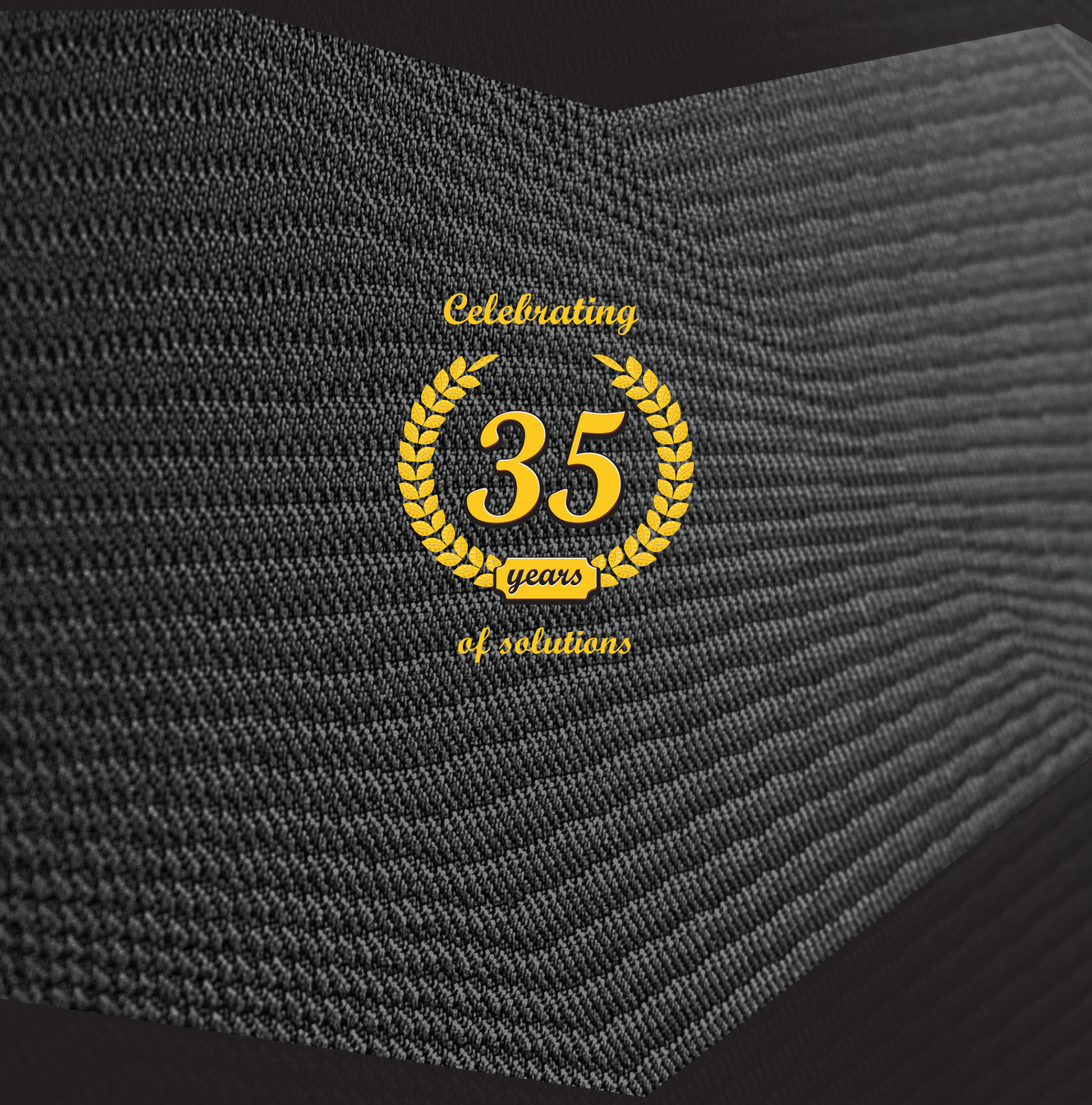
The most advanced, accurate, easy to use and reproducable porometers in the world.



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