

THE PMI IN-PLANE POROMETER



Not just products...*solutions!*

Application

The sample chamber of the In-Plane Porometer is such that gas is allowed to displace liquid in pores to move radially from the center to the periphery of a sheet shaped sample. Suitable sample configurations give in-plane pore structures of multi-layered materials. The instrument measures:

- Pore diameter and distribution in the x-y plane, and in the x,y and z directions.
- Permeability in x-y plane and in the x, y and z directions.
- Pore size and distribution of layers of a composite.

Principle

A wetting liquid is allowed to spontaneously fill the pores in the sample and a non-reacting gas is allowed to displace liquid from the pores in the radial direction. The gas pressure and flow rates through wet and dry samples are measured and the pore structure characteristics are computed using the following equations:

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

The differential gas pressure, p , required to remove liquid from pores and cause gas flow is related to surface tension, γ , contact angle, θ , and pore diameter, D .

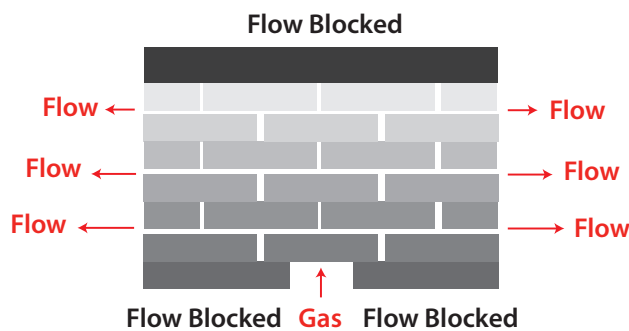


Figure 1

The principle behind the In-Plane Porometer

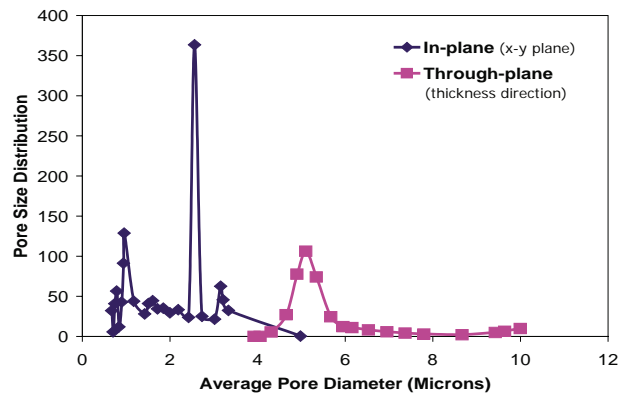


Figure 2

Pore distribution

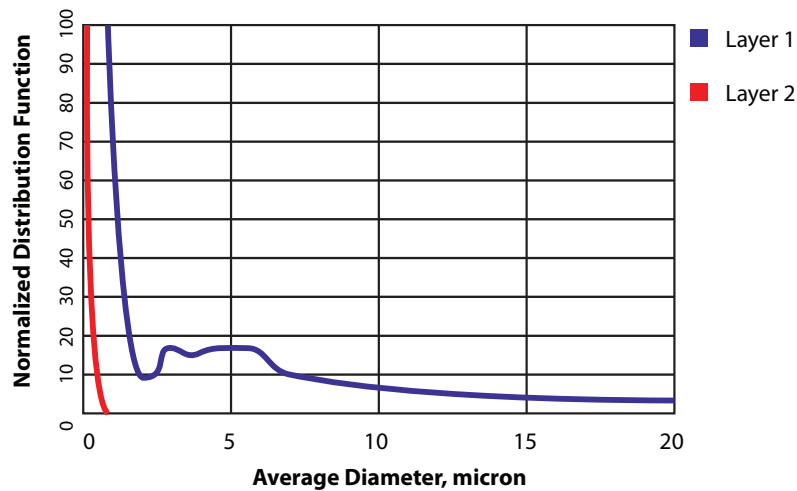


Figure 3
Average pore diameter

Directional Characteristics

Direction	Bubble Point Pore Diameter, μm	Mean Flow Pore Diameter, μm	Permeability, Darcy
x	27.1	3.86	5.3
y	39.1	3.39	6.9
z	63.0	15.2	22.5

Specifications*

Pore Size Range

0.013 - 500 microns

Permeability Range

1×10^{-10} - 1×10^{-6}

Sample Size

0.5" - 2.5" diameter

Pressurizing Gas

Clean, dry, compressed air or nonflammable, non-corrosive gas

Pressure Range

0 - 500 PSI

Pressure Transducer

Range

0 - 500 PSI

Mass Flow Transducer Range

10 cc/minute - 500 L/minute

Power Requirements

110/120 VAC, 50/60 Hz

(Others available)

Dimensions

30" H x 19" W x 18.5" D

Weight

100 lbs

Resolution

1 in 60,000

Accuracy

0.15% of reading

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



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and reproducible porometers in the world.



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