

In-Plane Porometer

Instrument

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.



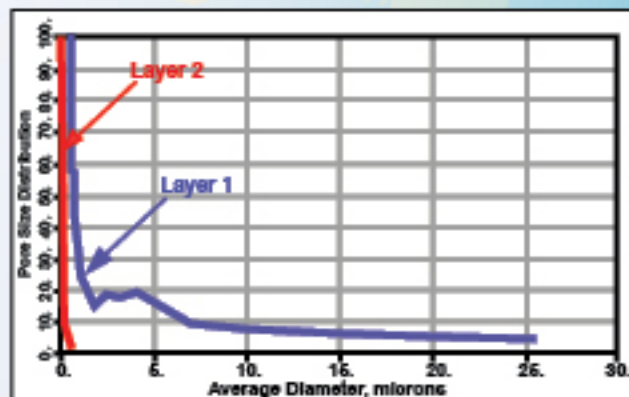
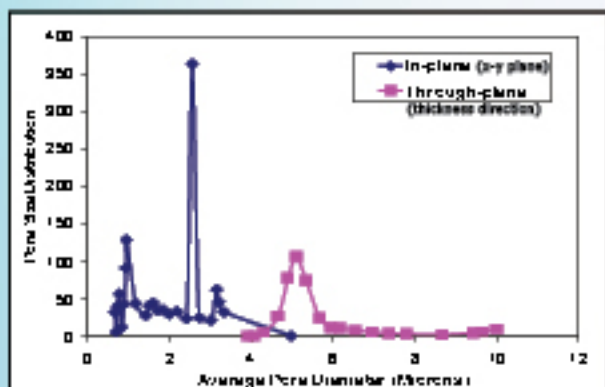
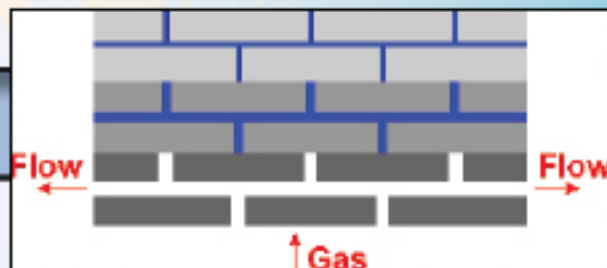
Principle

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. 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 .

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

Applications

- 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.



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

Resolution

1 in 20,000

Accuracy

0.15% of reading

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

Industries

- Automotive
- Battery
- Biotechnology
- Ceramic
- Paper
- Filtration
- Fuel Cells
- Geotextiles
- Nonwovens
- Textiles
- Diapers
- Pharmaceutical Products
- Household Products

Other Products

Average Fiber Diameter Analyzer

Bubble Point Tester

Capillary Flow Porometer

Capillary Condensation Flow Porometer

Complete Filter Cartridge Analyzer

Clamp-On Porometer

Compression Porometer

Custom Porometer

Cyclic Compression Porometer

Envelope Surface Area Analyzer

Filtration Media Analyzer

High Flow Porometer

Integrity Analyzer

In-Plane Porometer

Microflow Porometer

Nanopore Flow Porometer

QC Porometer

Diffusion Permeameter

Gas Permeameter

Liquid Permeameter

Vapor Permeameter

Water Vapor Transmission Analyzer

Liquid Extrusion Porosimeter

Mercury/Nonmercury Intrusion Porosimeter

Vacuapore

Water Intrusion Porosimeter (Aquapore)

BET Liquisorb

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