Porous Materials, Inc.

MADE IN USA

PATENT PENDING

# FLOW CONTROLLED POROMETER

## FCP-1100-AEX-AI

### FCP-AI

Flow-controlled porometry engineered for precise, repeatable through-pore characterization.

***Controlling Flow. Defining Precision.***


**Advanced porometry for R&D, quality control and production support**

**Direct flow control | Multi-range measurement | Stabilized data capture | Automated analysis and reporting**

| DIRECT FLOW CONTROL | WIDE DYNAMIC RANGE | REPEATABLE RESULTS | INTELLIGENT SOFTWARE | BUILT FOR R&D + QC |
|---|---|---|---|---|
| Controls gas flow and measures equilibrium pressure. | 0.1 SCCM to 200 SLM across three ranges. | Stabilized readings reduce operator dependence. | AI-assisted methods, analysis and error detection. | Application-focused data for development and quality. |

## APPLICATIONS

| FILTRATION | MEMBRANES | TEXTILES | BATTERY SEPARATORS | FUEL CELLS | PACKAGING |
|---|---|---|---|---|---|

**Measure with Precision. Perform with Confidence.**

www.pmiapp.com

+1 (607) 280-2357 REQUEST A DEMONSTRATION 20 Dutch Mill Road, Ithaca, NY 14850, USA

## WORLD'S SMALLEST, FASTEST & MOST ADVANCED POROMETER

## The Flow-Controlled Porometer

# Engineered Around Flow - Not Just Pressure

A technically advanced system presented in a clear, customer-focused format.

## What the FCP Measures

The FCP is an automated porosity and gas-flow analysis platform for measuring through-pore structure and permeability in porous materials. It combines controlled gas flow, precision pressure sensing and software-driven analysis to deliver dependable results across a broad range of materials.

| | |
|---|---|
| **BUBBLE POINT**<br>Largest detected through-pore. | **MEAN FLOW PORE**<br>Representative pore diameter from wet and half-dry curves. |
| **PORE DISTRIBUTION**<br>Distribution of functional through-pores. | **GAS FLOW / PERMEABILITY**<br>Flow response across the applied pressure range. |

## How the Flow-Controlled Method Works

| | |
|---|---|
| 1 | Wet and load the sample in the selected sample holder. |
| 2 | Apply gas flow in programmed low, medium and high ranges. |
| 3 | Allow differential pressure to reach a stable equilibrium at each flow point. |
| 4 | Generate wet, dry and half-dry flow-versus-pressure curves. |
| 5 | Automatically calculate pore characteristics and produce the report. |

## Why Choose FCP?

**FLOW-FIRST MEASUREMENT**
Precisely controls flow and records the corresponding stabilized pressure.

**MORE RELEVANT DATA**
Collects more data in critical low-pressure and pore-opening regions.

**THREE FLOW RANGES**
Automatically covers low, medium and high flow conditions.

**LOWER OPERATOR DEPENDENCE**
Automated flow switching, stabilization, calculation and reporting.

**FLEXIBLE TESTING**
Supports wet, dry and low-pressure characterization.

**COMPACT PLATFORM**
Integrated architecture designed for laboratory and industrial use.

## Applications

| | |
|---|---|
| **Filtration Media** | **Membranes** |
| **Textiles & Nonwovens** | **Battery Separators** |
| **Fuel Cell Materials** | **Paper & Packaging** |

## Core Technical Features

| | | |
|---|---|---|
| **BROAD MEASUREMENT RANGE**<br>0.013 to 500 µm pore-size capability and 0.1 SCCM to 200 SLM flow range. | **PRECISION SENSING**<br>±0.1% full-scale pressure accuracy with 1/60,000 full-scale resolution. | **FLEXIBLE SAMPLE HANDLING**<br>Standard chamber supplied; advanced pneumatic chamber available. |
| **MULTI-GAS OPERATION**<br>Air, nitrogen, helium and compatible inert gases. | **AI + DATA ANALYTICS**<br>AI-assisted method guidance, smart error detection, graphs and custom reports. | **READY-TO-USE SYSTEM**<br>Integrated interface, software and Windows PC included with the machine. |

**Suitable for research, method development, material comparison, incoming inspection and production quality control.**

| SYSTEM ARCHITECTURE | | | | |
|---|---|---|---|---|
| **1. GAS SUPPLY** | **2. FLOW CONTROL** | **3. PRESSURE SENSING** | **4. SAMPLE TEST** | **5. SOFTWARE** |
| Air / $N_2$ / He / inert gas | Low, medium and high MFCs | Precision differential pressure | Wet or dry through-pore analysis | Curves, calculations and reports |

# Why FCP Is Different

A sales-focused comparison supported by technical differentiation and validation data.

## Conventional Pressure-Controlled Porometer vs. PMI Flow-Controlled Porometer

| COMPARISON AREA | CONVENTIONAL PRESSURE CONTROL | PMI FCP FLOW CONTROL |
|---|---|---|
| **Controlled variable** | Pressure is increased according to a programmed sequence. | Gas flow is controlled directly; stabilized pressure is measured at every point. |
| **Data collection** | Data density follows pressure increments. | Flow steps can focus data collection in critical pore-opening regions. |
| **Reading quality** | Readings may follow fixed timing or pressure steps. | Data is captured after equilibrium / pressure stabilization. |
| **Dynamic range** | Different settings may be required for low and high permeability. | Three flow-controller ranges cover 0.1 SCCM to 200 SLM. |
| **Automation** | More operator involvement may be required during setup and testing. | Automated range selection, stabilization, analysis and reporting. |
| **Analytical output** | Pressure-based response is used to calculate pore characteristics. | Direct flow-pressure curves support bubble point, mean flow pore and pore distribution analysis. |

## Software and Intelligent Automation

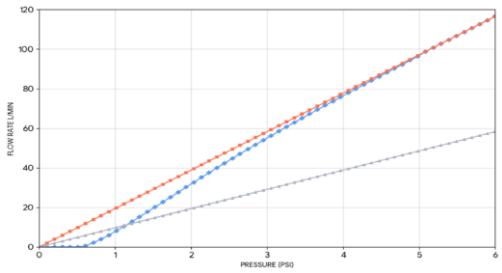
- Method setup with configurable flow, pressure and stability parameters.
- Automatic wet, dry and half-dry test execution.
- Real-time flow-versus-pressure and pore-distribution graphs.
- Automated bubble point, largest pore and mean flow pore calculations.
- AI-assisted method guidance, data-driven optimization and smart error detection.
- Customizable reports, data logging, export and multi-sample comparison.

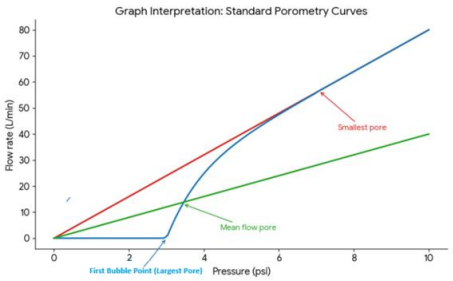
| AI-DRIVEN | REAL-TIME | CUSTOM |
|---|---|---|
| METHOD SUPPORT | ANALYTICS | REPORTING |

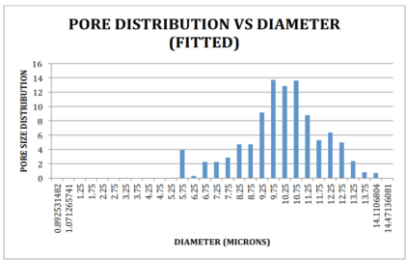
## Validation Highlights

Polycarbonate membrane testing demonstrated clear wet, dry and half-dry curves and close mean-flow-pore agreement with the nominal sample ratings.

| 5 µm STANDARD | 10 µm STANDARD |
|---|---|
| 4.838 µm Mean Flow Pore | 10.2398 µm Mean Flow Pore |




## What This Means for the Customer

| FASTER METHOD SETUP | BETTER REPEATABILITY | CLEARER DECISIONS | EASIER REPORTING |
|---|---|---|---|
| Automated ranges and saved parameters simplify repeat testing. | Equilibrium-based readings improve test consistency. | Application-focused graphs and calculated pore results. | Logged data, exports and customizable reports for teams and customers. |

| FLOW | PRESSURE | ANALYSIS | RESULTS |
|---|---|---|---|
| Controlled directly | Recorded at equilibrium | Real-time and automated | Clear, exportable and report-ready |

# Technical Configuration and System Scope

Confirmed brochure specifications for FCP-1100-AEX-AI.

## Technical Specifications

| PARAMETER | CONFIRMED SPECIFICATION |
|---|---|
| **Pore size range** | 0.013 to 500 µm |
| **Pressure range** | 0 to 500 psi; configurable 0-100 / 0-200 / 0-500 psi |
| **Overall flow range** | 0.1 SCCM to 200 SLM |
| **Typical flow controllers** | Low: 0-30 SCCM \| Medium: 0-10 SLM \| High: 0-200 SLM |
| **Measurement type** | Through-pores only |
| **Pressure accuracy** | ±0.1% of full scale |
| **Pressure / flow resolution** | 1/60,000 of full scale |
| **Compatible gases** | Air, nitrogen, helium and compatible inert gases |
| **Power** | 110/220 VAC, 50/60 Hz |
| **Dimensions** | 24 in (L) x 22 in (D) x 13 in (H) |
| **Computer** | PC included with latest Windows operating system |

## System Includes

- Main FCP test unit and integrated electronics.
- Standard sample chamber; advanced pneumatic chamber available.
- Three-range thermal mass-flow-control system.
- Pressure regulators, gauges and precision sensors.
- Integrated touchscreen / operator interface.
- FCP software, PC interface and Windows PC.
- Sample holder, standard accessories and documentation.

## Optional Test Modules

- Frazier air permeability
- Gurley-type measurement
- C522-type air-flow testing
- Custom chambers, holders and pressure ranges

**ONE PLATFORM. MORE CONTROL. BETTER DECISIONS.**

Convert complex pore-structure behavior into repeatable, traceable and application-ready results.

**R&D**

Develop materials, optimize methods and compare formulations.

**QUALITY CONTROL**

Verify incoming materials, batches and production consistency.

**CUSTOMER SUPPORT**

Generate clear reports for qualification, troubleshooting and technical discussions.

PMI Porous Materials, Inc.

**REQUEST A DEMONSTRATION OR APPLICATION REVIEW**

**+1 (607) 280-2357 | www.pmiapp.com**

20 Dutch Mill Road, Ithaca, NY 14850, USA