AUTOPORE V
Mercury Intrusion Porosimetry
The mercury porosimetry analysis technique is based on the intrusion of mercury into a porous structure under stringently controlled pressures. Besides offering speed, accuracy, and a wide measurement range, mercury porosimetry permits you to calculate numerous sample properties such as pore size distributions, total pore volume, total pore surface area, median pore diameter and sample densities (bulk and skeletal).

The AutoPore V Series Mercury Porosimeters can determine a broader pore size distribution more quickly and accurately than other methods. This instrument also features enhanced safety features and offers new data reduction and reporting choices that provide more information about pore geometry and the fluid transport characteristics of your material.
A NEW BENCHMARK FOR OPERATIONAL SAFETY

Triple Fail Safe - 1
Penetrometer Safety Cap
In case of operator error, this device prevents the penetrometer or rod being released from port unintentionally.

Triple Fail Safe - 2
Interlock on Locking Cap
Verifies that capacitance detector is installed on low-pressure port, automatically suspends run, and permits user to check filling of the penetrometer prior to run.

Triple Fail Safe - 3
System Pressure Vent on Manifold
Works in concert with Cap Interlock to automatically vent system pressure if above ambient pressure and error condition is detected.

Mercury Collection Trays
Safe collection of mercury for disposal in the case of compromised penetrometer seals or operator error resulting in broken penetrometers.

Improved Mercury Funnel Design
Attached screw cap and funnel-shaped opening eliminates mercury contamination and possible drip-spillage associated with separate detached filling funnel. Attached screw cap prevents loose cap and possible vapor release.

Mercury Vapor Detection Device
Handheld device to check localized mercury vapor levels that exceed defined safety limits. Portable device allows point checks at the instrument or any location within the lab exposed to mercury.

Software Control for Fine Powder Samples
Prevents fine powder from accidental aspiration into low-pressure ports during analysis by using intelligent evacuation controlled by sample type.

Mercury Vapor Capture Filter
Affixed to vacuum pump, this filter prevents release of mercury vapors. This is a superior and safer solution to cold trap dewars used in competitive instruments, particularly if the constantly evaporating cryogen level is insufficiently maintained.

Mercury Temperature Sensor
The ability to set a temperature limit in the software allows the display of a warning message if the temperature is exceeded.
OPERATIONAL ADVANTAGES

• Ability to measure pore diameters from 0.003 to 1100* µm
  *Calculated with an initial filling pressure of 0.2 psia (0.00128 MPa)

• Controlled pressure can increase in increments as fine as 0.05 psia from 0.2 to 50 psia. This allows detailed data to be collected in the macropore region

• High-resolution (sub-microliter) measurement of intrusion/extrusion volumes produces extraordinary precision allowing the development of tighter sample specifications, improved production processes, and high-quality research data

• Operates in scanning and time- or rate-of-intrusion equilibrated modes

• Real-time diagnostics provide knowledge of an issue before it becomes critical or impairs your analytical results

• Collects extremely high-resolution data; better than 0.1 µL for mercury intrusion and extrusion volume

• Improved linear motion for high-pressure chamber closure

DESIGN ADVANTAGES

• Improved safety features reduce the risk of mercury spills and operator exposure

• Available with four low- and two high-pressure ports for increased sample throughput

• Available in 33,000 psia or 60,000 psia models

• Low-noise, high-pressure generating system

• A quick-scan mode allows a continuous pressure increase approximating equilibrium and providing faster screening

• A choice of correction routine for baseline (automatic, differential, or manual) produces greater accuracy by correcting for compressibility and thermal effects caused by high pressure

• Choice of pressure ramping methods lets you choose the scanning mode for high-speed or on-demand results, or equilibration mode for more accurate results with greater detail

• Mercury temperature sensor allows automatic calculation of mercury density used for penetrometer calibrations

• MicroActive software allows you to interactively manipulate data, define custom reports, and quickly achieve analytical results

• Compensation for material compression under high-pressure analysis

TWO MODELS

The AutoPore V is available in two models to best match the needs of individual quality assurance and research labs.

<table>
<thead>
<tr>
<th></th>
<th>9605</th>
<th>9620</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Pressure</td>
<td>4 ports</td>
<td>4 ports</td>
</tr>
<tr>
<td>High Pressure</td>
<td>2 ports @ 33,000 psia</td>
<td>2 ports @ 60,000 psia</td>
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</tbody>
</table>
MICROACTIVE FOR AUTOPORE

Intelligent, Intuitive, Interactive

MicroActive software greatly improves the functionality, convenience, diagnostics, and data interpretation that establish the new standard for high-performance results in mercury porosimetry.

Method Wizard

Build a method through an interactive step-by-step script. Eases method creation and new user introduction to the operation of the AutoPore V.

Mercury Density Calculation

Unlike competitive systems that use mercury density at ambient temperature only, the AutoPore V automatically measures the actual mercury temperature for accurate density calculations under operation conditions.

User-Defined Reports and Report Options

You can quickly create custom advanced reports to meet your specific needs using Python scripting. New report options permit automatic report conversion to PDF or spreadsheet formats.

Post-Analysis Parameter Change

Allows analysis parameters (stem volume, maximum head pressure, pen constant) to be changed or corrected post analysis, eliminating re-running samples due to error.

Reverberi Method Data Reduction

Receive information on the distribution of pore shape. The method yields a three-dimensional array of cavity size and throat size vs. volume.
Diagnostic Dashboard
- Real-time monitoring of critical system components for preventative maintenance and trouble shooting

Intelligent Data Reporting
- Warnings are supplied automatically when suspect data are collected

Variety of Available Plots
- Pore volume, pore area, and pore size plots are available as well as the ability to calculate total intrusion volume, total pore (surface) area, median pore diameters, average pore diameters, bulk or envelope density, and apparent (skeletal) density

Enhanced Penetrometer Calibration
- Simplifies penetrometer calibration through automated calculations either volumetrically or gravimetrically

Reports Include
- Summary
- Tabular Report
- Cumulative Volume vs Size
- Incremental Volume vs Size
- Cumulative Area vs Size
- Cumulative Volume vs Pressure
- Incremental Volume vs Pressure
- Differential Volume vs Size 1
- Log Difference Volume vs Size
- Differential Reference % Volume vs Size
- Out Spec. % Volume vs Pressure
- Differential Volume vs Size 2
- Material Compressibility
- Cavity to Throat Size Ratio
- Fractal Dimension
- Mayer-Stowe Particle Size
- Tortuousity
- Permeability
- Reverberi
- Advanced Report System

Overlay Multiple Runs and Gas Adsorption Data
- MicroActive for Autopore V provides the ability to overlay up to 20 runs. Included is the option to import pore size distributions from gas adsorption isotherms to provide analysis data in the micro to macropore range in a single report.
Partial List

<table>
<thead>
<tr>
<th>Model#</th>
<th>Size</th>
<th>Volume</th>
<th>Medium</th>
<th>Typical Use</th>
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<tbody>
<tr>
<td>01</td>
<td>15 cc</td>
<td>0.392</td>
<td>Solid</td>
<td>refractories, low-porosity solid rocks/cores, low porosity solid polymers</td>
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<tr>
<td>02</td>
<td>15 cc</td>
<td>0.392</td>
<td>Powder</td>
<td>low-porosity powders, gravel, irregular rock shapes</td>
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<tr>
<td>03</td>
<td>15 cc</td>
<td>1.131</td>
<td>Solid</td>
<td>medium-porosity rocks/cores, solid materials</td>
</tr>
<tr>
<td>04</td>
<td>15 cc</td>
<td>1.131</td>
<td>Powder</td>
<td>medium-porosity rocks, solid materials, fumed silica</td>
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<tr>
<td>07</td>
<td>5 cc</td>
<td>0.392</td>
<td>Solid</td>
<td>paper, flexible polymer/membrane sheets, pharma tablets</td>
</tr>
<tr>
<td>08</td>
<td>5 cc</td>
<td>0.392</td>
<td>Powder</td>
<td>silicates, catalysts, powders (general use), pharma powders</td>
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<tr>
<td>09</td>
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<td>1.131</td>
<td>Solid</td>
<td>medium/high-porosity sheet-form materials (paper, polymer, etc.), pharma tablets</td>
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<tr>
<td>10</td>
<td>5 cc</td>
<td>1.131</td>
<td>Powder</td>
<td>silica-alumina, silicates, zeolites, catalysts, powders (general use), pharma powders</td>
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<td>Powder</td>
<td>powders (general use), materials with low quantity available</td>
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<td>high-porosity rock/cores, low-density/high-porosity foams</td>
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<td>15 cc</td>
<td>4.185</td>
<td>Solid</td>
<td>high-porosity material with large volume</td>
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</table>

Accessories

Mercury QuikVac

Mercury QuikVac is an excellent low-cost method for quickly containing mercury spills. The device is designed to be specifically useful in collecting those elusive mercury droplets and small mercury-contaminated particulate matter. Mercury is collected in a 250-mL recovery vessel and a replaceable 0.3 - 0.5 micron activated carbon filter assures that the device exhausts clean, safe air.
Height: 143 cm (56.25 in.)

Width: 54.3 cm (21.38 in.)

Depth: 78 cm (30.75 in.)

Weight: 250 kg (500 lb)

Micromeritics Instrument Corporation
4356 Communications Drive
Norcross, GA 30093 U.S.A.

To request a quote or additional product information, visit Micromeritics website at:
www.micromeritics.com

Contact your local Micromeritics sales representative, or our Customer Service Department at:
770.662.3636