

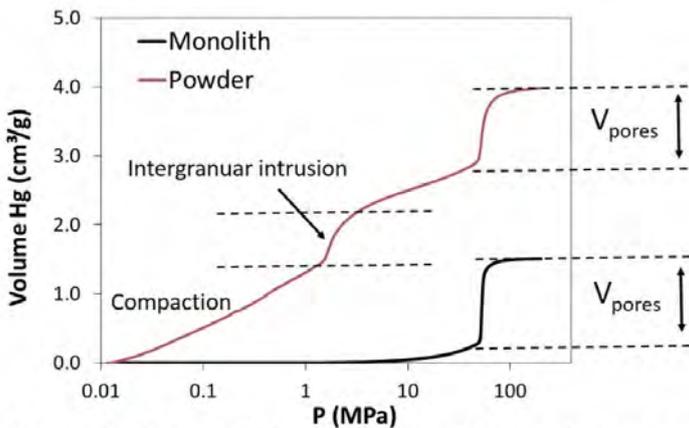


## GENERAL DESCRIPTION

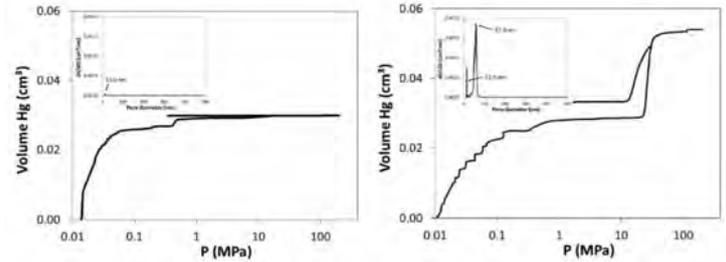
Mercury intrusion porosimetry is the technique of choice to access the pore size distribution and the total pore volume of meso- and macroporous materials. Its principle is based on the fact that the pressure needed to force mercury entering a pore is inversely proportional to the pore size. With a device that can reach a maximum pressure of 4000 bar, the pore size range that is covered ranges from 200 to 0.0038  $\mu\text{m}$ ... that is a single tool that is able to measure with accuracy and precision the diameter of a grain of sand and the height of a 30 stairs building !

The mercury intrusion curve rapidly provides the pore volume, its shape tells about how the material behaves (compaction, intrusion, compression), whereas the pressure at which intrusion occurs immediately indicates the pore sizes and their distribution.

# Mercury intrusion porosimetry



Example of intrusion curve of a mesoporous carbon in its monolithic form and reduced as a powder.



Example of a Hg intrusion curve and corresponding pore size distribution (inset) of: (left) a bare steel foil and (right) the same foil with a porous coating.

## KEY-INFORMATION :

- Shape of the intrusion curve
- Pore volume
- Pore area
- Pore size distribution
- Apparent density at different pressures

Combination of this technique with Gas adsorption extends the covered pore size range from micropores up to macropores.

Combination of this technique with Gas pycnometry (Skeletal density) provides information on the total pore volume or void fraction of the material.

## DOMAINS OF APPLICATION

- Construction materials
- Catalysts
- Textiles
- Adsorbents
- Electrodes
- Pharmaceuticals
- Rocks
- Refractory materials
- Resins
- Coatings
- Paper
- Ceramics
- Filters
- Fabrics
- ...

## REPORTING

Data treatment is performed via the build-in software of the devices (Porowin® from Quantachrome and Solid® from ThermoScientific). Further calculations are carried out in Excel®. A standard report will provide the most pertinent data such as intrusion curve, meso- and macropore volume and pore size distribution. The raw data will be supplied on demand as an Excel® file.

## PRACTICAL INFORMATION

- Measurements are carried out on powders, granules, fibers, fabrics or monolithic pieces.
- Maximum sample size:  $\varnothing$  0.9 cm, L 2 cm or  $\varnothing$  0.9 cm, L 7 cm.
- Measurements are carried out either on a Quantachrome Poremaster 60 (Pmax. 400 Mpa) or on a ThermoScientific Pascal 140/240 (Pmax. 200 Mpa), with data merging between low- and high-pressure runs and application of a blank correction.
- Optional Bulk density measurements can be realized on the basis of a low-pressure run.

## PRICING

Contact us for a quotation adapted to your needs.

