Porous Vacuum Chucks and Platens

Customers: Semiconductor (chip/wafer manufacturers), Film manufacturers, Camera manufacturers

Applications:

- Semiconductor
  - Vacuum hold down for “chips” for subsequent manufacturing operations
  - Rotary vacuum chucks for the application of photo-sensitive liquid to substrate material for electronic and integrated circuitry components
- Film Manufacturing
  - Vacuum transfer platens on an automatic rotary index machine
  - Vacuum hold down for transporting film
- Camera Manufacturing
  - Vacuum Platen for an assembly operation

Mott Product Description/Solution:

Mott’s porous metal can be used as a vacuum chuck or as a platen. Porous metal provides a flat, smooth, uniform surface for maximum hold down capability. These features eliminate both deflection and the tendency to produce a pattern on the work piece.

The standard media grades used for vacuum applications are media grades 10 and 20. Discs can be manufactured up to an 8” diameter with typical flatness within 0.020”. Mott’s standard Media Grade offerings include 0.2, 0.5, 1, 2, 5, 10, 20, 40 and 100. The Mott media grade can be thought of as the mean micron rating of our sintered metal media. It is not its exact pore size. Mott sintered metal products consist of a wide size distribution of pores that form an interconnected, 3-dimensional porous metalwork winding throughout the part. On the surface, a pore can appear large and then neck down to a smaller pore within the depth of the part. The pore size of Mott media can not be determined by looking at the surface of the filter under magnification.
Competitive Products:

- Conventional vacuum chucks and platens made from a series of interconnected slots with an external o-ring to maintain vacuum over the surface results in stress on the material being held down.
- Drilled holes in the vacuum chuck or platen surface produce a pattern on the thin film or other surface sensitive materials and holding power is limited due to the minimum vacuum area of the small holes.
- Ceramics are susceptible to thermal shock.

If you have any questions regarding your specific requirements and the application of Mott porous metal products, please contact us at Quest@mottcorp.com and request Technical Assistance. Our Tech Service Department will contact you to answer any questions and provide you with the information you need.