



Polishing Templates



TEMPLATES



Polishing Templates

PR Hoffman Machine Products designs and manufactures waxless mounting assemblies. These semiconductor-polishing templates are used to fixture single-side silicon wafers and other substrate materials during the polishing process.

Each polishing template is uniquely designed to your custom polishing application. Since each customer has their own unique requirements based on their materials, removal, pressure and so forth, we do not offer off-the-shelf stock templates.

Design

Semiconductor-polishing templates are manufactured for a wide variety of single-sided polishing machines in diameters up to 23.6" (600mm).

Each template is comprised of a carrier, which is custom machined for the pocket shape and size required in a precision thickness fiberglass-epoxy Lamitex™ or other sheet material, which is bonded to a layer of polymeric material, a layer of film for flatness, and a layer of pressure sensitive adhesive.

A chart detailing pad materials and properties is available to aid in your selection of PR Hoffman's semiconductor-polishing templates.

PR Hoffman's sales engineers will review your machine and pad details and custom design semiconductor-polishing templates for your application.

Use

Semiconductor-polishing templates are typically applied to a removable head, which has been thoroughly cleaned and dried. The head may need to be warmed after cleaning to insure proper adhesion. Remove about 1/4 of the backing paper to expose the PSA, align template on the head, press into place insuring that there are no bubbles between the head and PSA, remove backing paper and complete installation by pressing from center of template to outside edges. If air bubbles remain, make a small cut or pinhole and force out the trapped air with finger pressure.

Spray the pad material with DI water and brush the surface with a soft nylon brush, while checking again for trapped air bubbles. Rinse the pad and mount the wafers in the pockets with a twisting motion to expel the layer of water between the wafer and pad, thus creating a suction that holds the wafer in place during polishing.

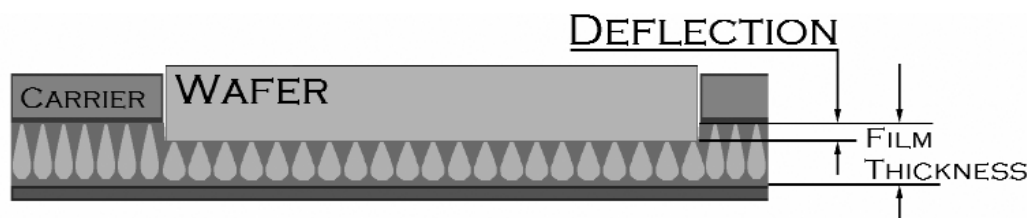


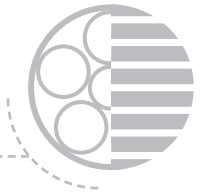
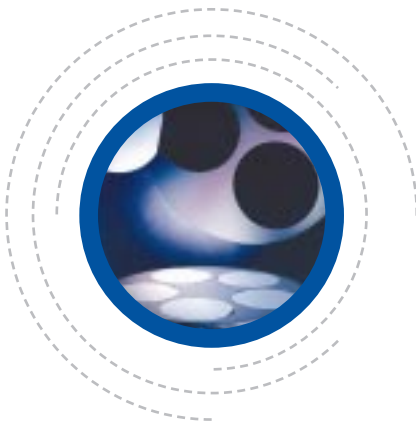
Pad Material	Napcon-1000DM	Napcon-1000	Napcon-7000	Napcon-1440
Pad Surface:	Machined	Buffed	Buffed	Unbuffed
Avg. Film Thickness:	525 μ	520 μ	600 μ	620 μ
Film Thickness Tol. %:	± 15 micron	± 20 micron	± 60 micron	± 40 micron
Pore Height:	300 - 390 micron	300 - 390 micron	300 - 390 micron	n/a - not open
Pore Diameter:	10 - 100 micron	10 - 100 micron	20 - 130 micron	n/a - not open
Pore Density ($\times 10^3/\text{cm sq.}$)	9.0 - 17.0	9.0 - 17.0	8.0 - 15.0	n/a - not open
Deflection @ 3-5 PSI:	0.0023"	0.0023"	0.0012"	0.0006"
@ 15 PSI:	0.0046"	0.0046"	0.0015"	0.00079"
Compression - 5 PSI:	17%	17%	9%	4%
@ 15 PSI:	34%	34%	11%	6%



Deflection vs. Compression

Deflection is a more accurate property than compression. Compression is a percentage gained by dividing deflection by the overall height (including various substrate heights and variations). Deflection however is the actual displacement measurement obtained from a controlled down force. For example, at 5 psi, 1000 film will deflect about 60 micron, while 7000 film deflection is about 30 micron, and 1440 film deflection is about 15 micron. As pressure is increased on 1000 film, it will continue to deflect even more, but with 7000 and 1440 films the deflection tends to "bottom out" near 5 psi and any greater deflection will cause the uncontrolled results and loss of flatness due to areas of the film which will compress and areas that will not compress.





*Global supplier of Semiconductor Polishing Templates
for all major models of waxless mounting single
sided polishers.*

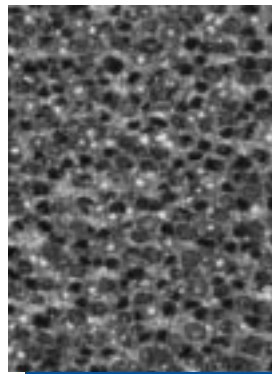
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Single-Sided Polishing

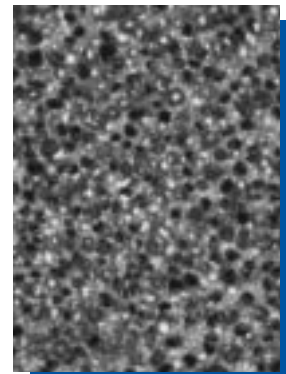
PR Hoffman's Napcon-1000DM offers the lowest friction of our series of pad materials. The DM material thus allows more freedom of rotation for the wafer during the polishing process as long as it is not used with excessive pressure. The best TTV has been obtained with less than 5 PSI. Prior to the introduction of our Napcon-1000DM, our Napcon-1000 was the industry choice by manufacturers of "Prime Silicon Wafers," and is still widely used. The stiffer Napcon-7000 is widely used where TTV is less important (such as in reclaim of wafers). We offer the closed cell Napcon-1440 to customers who are running process materials that are less compatible with 1000 or 7000 materials, or for very thin, fragile materials where higher compression may allow more breakage.

Pad Material Surfaces:

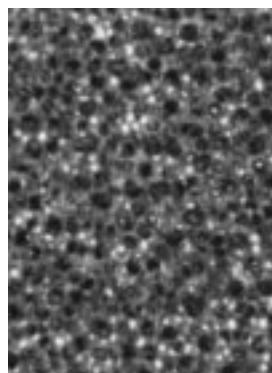
NAPCON-1000DM



NAPCON-1000



NAPCON-7000



NAPCON-1440

