Comments from user businesses

The use of aeroFIX is expanding to meet workplace needs.

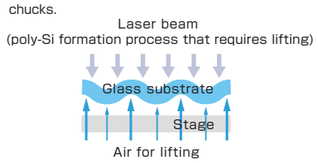
Company A

Achieved improved work efficiency and quality through stable workpiece lifting

Application	Lifting	Use	Lifting stage of excimer laser annealing equipment for small and medium-size displays
Evaluation	The strength of NanoTEM as a venture company is its ability to provide fine-tuned services, such as changing the composition of a product according to the application.		

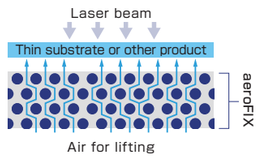
Issue

Because laser annealing involves directing the laser onto the workpiece, focusing is difficult. We wanted the laser to contact the workpiece when it is lifted, however it was not possible to securely hold the workpiece with conventional chucks.



Solution

The introduction of aeroFIX produces precise, stable lifting that makes focusing easy. The fine pores deliver powerful partial chucking, resulting in a large improvement in work efficiency.



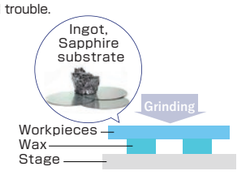
Company B

Because wax is no longer necessary, we were able to eliminate processes and succeeded in improving work efficiency.

Application	Grinding	Use	Holding stage used in artificial sapphire grinding for LCD and LED products
Evaluation	There are many other interesting products in addition to aeroFIX. In particular, we are also interested in the grinding wheels.		

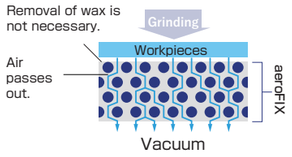
Issue

Wax is used to hold sapphire substrates in the process of grinding. However, the wax needs to be removed and cleaned which involves time and trouble.



Solution

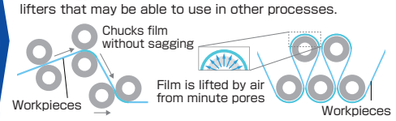
The introduction of aeroFIX achieved stable holding without the use of wax. Eliminating the wax-related work resulted in a large increase in work efficiency and cost savings.



Company C

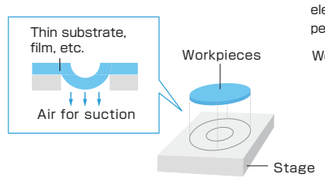
Excellent technical capabilities helped us resolve all issues and turn our attention to new challenges.

Application	Suction	Use	Film holding stage for next-generation displays (OLED)
Evaluation	In addition to flat surface suction, there are many advanced technology products such as suction rollers and precision lifters that may be able to use in other processes.		



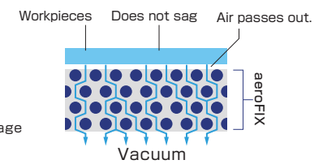
Issue

With conventional vacuum chucks, the film material would be sucked into the air holes on the suction surface, causing sagging and quality problems.



Solution

The reasons for introducing aeroFIX were the following: (1) partial chucking without sagging, (2) capable of holding large areas, (3) produces no dust, (4) produces no static electricity, (5) high cost performance. It has performed extremely well in all these areas.



Company D

Creative ideas with high future potential, and the possibility of collaborative technical development

Application	Suction, grinding	Use	Vacuum chucks for general grinding
Evaluation	We intend to work together, starting with joint technical development.		

Issue

Our company develops and sells grinding equipment, however holding the workpieces during grinding has been a difficult issue for us, and we felt the need to develop products utilizing new technologies.

Solution

We viewed the actual NanoTEM equipment and technologies, and were highly impressed with their technical capabilities and originality - more so than we expected, in fact. We felt that there is much future potential for the use of porous alumina and the technologies developed for grinding in technologies (for fixed abrasive grains) that are not currently in the mainstream.

Information about free lending of samples and sales of regular products

Free sample lending	NanoTEM has prepared free samples that are available to borrow. They can be tested immediately in an environment where compressed air can be used. Please request a sample from our company's website. Customers can also bring products to our company for tests.
Sales of regular products	We sell regular products in a range of predetermined sizes. For details, please contact us via our website.

Contact

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2018.2

Lifts, Holds and Carries

High precision porous ceramic vacuum chuck

aeroFIX

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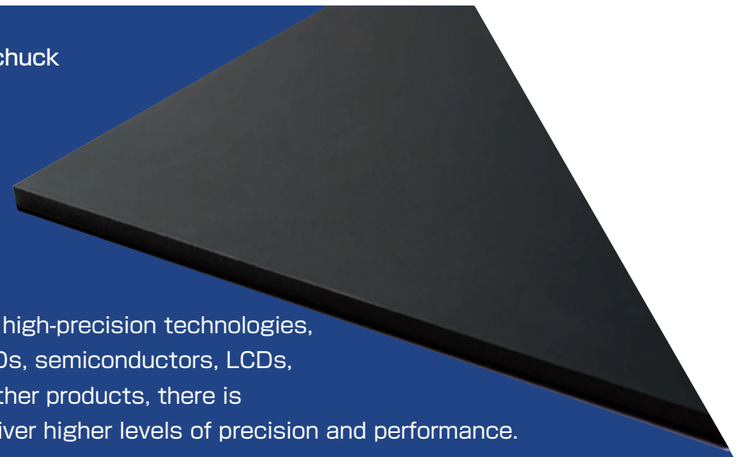


With improvements in miniaturization and high-precision technologies, and higher performance of solar cells, LEDs, semiconductors, LCDs, organic EL, PCBs, and a broad range of other products, there is growing need for vacuum chucks that deliver higher levels of precision and performance.

The aeroFIX developed by NanoTEM is a completely new type of vacuum chuck that utilizes our original ceramic sintering technology to resolve the issues facing conventional through-hole type vacuum chucks!

What is aeroFIX?

aeroFIX is a next-generation vacuum chuck that was created from original NanoTEM technologies.

The original NanoTEM ceramic sintering method that controls the eutectic reaction of the primary agent and auxiliary agent produces uniform 2μm pores that were impossible with conventional technologies, producing 40% porosity that achieves both light weight and high strength. It can be used in a wet or dry environment, also in a high temperature environment up to 150℃.

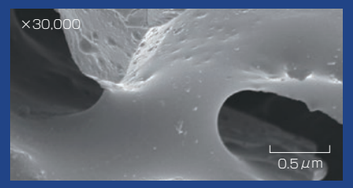


Photo taken with an electron microscope

Original technology that enables partial chucking.

aeroFIX achieves "partial chucking" that can securely fasten precision parts and other workpieces which cover only a part of the suction surface.
This is made possible by the 2μm pores that are produced by an original NanoTEM material that contains alumina, and by our original sintering technology.
It is no longer to necessary to change the chuck for each different workpiece.

Chucking performance that protects the quality of precision workpieces.

Because aeroFIX pore sizes are so small and uniform, it is possible to prevent workpiece deformation and also to prevent loss of suction force caused by clogging with dust.
Because complete sintering is performed during the manufacturing process, there is no dust produced from inside the product, preventing effects on the service environment and eliminating static electricity.

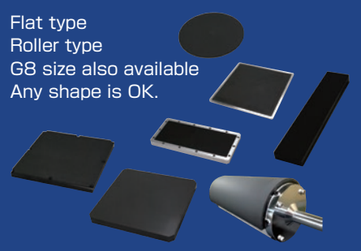
Comparison of characteristics

	aeroFIX	Conventional through-hole product
Surface resistance	◎	×
Use with thin workpieces	◎	×
Partial chucking	◎	×
Suction strength	◎	△※
Use in wet environments	◎	◎※
Use in high-temp. environments	◎	×
Cost	◎	△

※: × when workpiece is small

aeroFIX product lineup We can produce sizes and shapes to meet a wide range of customer requests.

Flat type
Roller type
G8 size also available
Any shape is OK.



[Specifications] Black 2 μm regular type

Color	Black	Hardness (HRH scale)	90
Pore size (μm)	2	Porosity (%)	40
Flatness and parallelism (μm)	Target 20, commit 30 (for a square 500 mm on a side)	Bending strength (MPa)	50
Permeation flow (L/min)	2 or less (when vacuum is measured)	Young's modulus (GPa)	50
Density (g/cm3)	2.5 - 2.7	Thermal conductivity (W/(m-K))	1
Surface resistance (Ω/sq)	10^6 - 10^9	Coefficient of thermal expansion (10^{-6} /K)	7 - 8
Reflectivity (%)	5 - 6	Primary material	Alumina

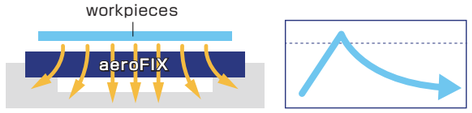
6 advantages of aeroFIX

1 Use as an antistatic material!

Resolves contamination issues for ultra-thin PCB and other workpieces!

Because this product does not carry or discharge static electricity, the addition of an ionizer or other neutralizing equipment is not necessary. This makes it possible to dependably handle precision product workpieces.

No ionizer required | A solution to contamination issues

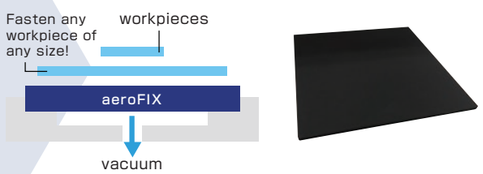


2 Partial chucking is possible!

A single unit that can be used with a wide range of workpiece sizes!

Can be used in wet and dry environments and with a wide range of workpiece sizes.
It is not necessary to maintain a lineup of shapes and sizes for different workpieces, producing cost savings and improved work efficiency.

Cost savings | Improved work efficiency | OK in wet environments



3 Reduce the risk of workpiece contamination!

Achieve non-contact floating transport!

The workpiece is lifted up by the floating unit and can be freely moved on the vacuum pads with the smallest of force.
This is the advanced NanoTEM technology that individually controls the air supply and vacuum suction to produce positive and negative pressure.

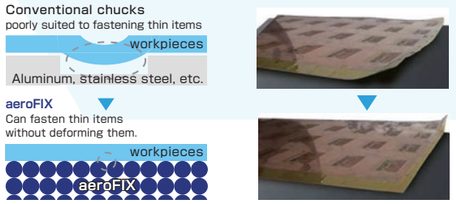
Improved work efficiency | A solution to contamination issues

4 High-performance, high-precision, uniform suction force!

Perfect for films and other thin, delicate workpieces!

This product solves the issues of deformation, sagging, strain, and edge warping that plague aluminum, stainless steel, and other conventional vacuum chucks.
The use of ultra-fine micron-order pores and our original evacuation system allows dependable handling of thin, delicate workpieces.

Cost savings | Improved work efficiency

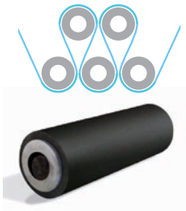


5 Space savings!

The suction rolls!

The suction rolls allow chucking and high-speed transport of film materials without leaving suction marks on them.
Because fastening at any part is possible, this product delivers space savings on plant production lines.

Improved work efficiency | Space savings



6 Just place it onto your current equipment!

Convenient & cost-saving!

Simply place the fixed top plate onto the vacuum chuck that you currently use to deliver high performance and function.
No fastening parts are required.

Cost savings | Simple

Watch the video below for an introduction to the aeroFIX features and specific examples of how it is used.
http://nano-tem.com/product/aerofix.html

See the reverse side for comments from user companies. ▶