The use of aeroFIX is expanding to meet workplace needs.

Company A

Achieved improved work efficiency and quality through stable workplace lifting

Lifting

Lifting stage of excenter 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.

Company B

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

Grinding

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.

Company C

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

Suction

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.

Company D

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

Suction, grinding

Vacuum chucks for general grinding

Evaluation

We intend to work together, starting with joint technical development.

Stages

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 workplace with conventional chucks.

Solution

Laser beam (poly-Si formation process that requires lifting)

Air for lifting

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

Film is filled by air from minute holes.

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

We believed 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 technology 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 inspection is possible. Please request a sample from our company’s website.

Sales of regular products

We sell regular products in a range of predetermined sizes. For details, please contact us via our website.

Contact

Nano-TEM

NanoTEM Co., Ltd.
3-2-10 Jooka, Nagaoka-shi, Niigata, 940-0021
TEL: 0258-22-6725 FAX: 0258-22-6726 E-mail: tech@nano-tem.com

http://nano-tem.com/en/
Lifts, Holds and Carries

High precision porous ceramic vacuum chuck

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 chucksm 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 autetic 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, as well as in a high temperature environment up to 150°C.

Original technology that enables partial chucking.

aeroFIX achieves "partial chucking" that can securely fasten precision parts and other components 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 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 prevent loss of suction force caused by chipping 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.

aeroFIX product lineup

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

Flat type

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Black 2 μm regular type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
<tr>
<td>Pore size (μm)</td>
<td>2</td>
</tr>
<tr>
<td>Fineness and</td>
<td>2 or less when vacuum</td>
</tr>
<tr>
<td>abrasiveness</td>
<td>is measured</td>
</tr>
<tr>
<td>Permeation (μm)</td>
<td>2 or less</td>
</tr>
<tr>
<td>Density (g/cm³)</td>
<td>2.5 - 3.7</td>
</tr>
<tr>
<td>Surface resistance (Ω/cm²)</td>
<td>10 - 10⁷</td>
</tr>
<tr>
<td>Reflectivity (%)</td>
<td>5 - 6</td>
</tr>
<tr>
<td>Hardness (HRA)</td>
<td>90</td>
</tr>
<tr>
<td>Porosity (%)</td>
<td>40</td>
</tr>
<tr>
<td>Young’s modulus</td>
<td>300</td>
</tr>
<tr>
<td>Thermal conductivity (W/mK)</td>
<td>1</td>
</tr>
<tr>
<td>Coefficient of thermal expansion (K⁻¹)</td>
<td>7 - 8</td>
</tr>
<tr>
<td>Primary material</td>
<td>Alumina</td>
</tr>
</tbody>
</table>

Roller type

GB size also available

Any shape is OK.

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 handle precision workpieces more dependably.

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.

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 pressures.

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 vacuum system allows dependable handling of thin, delicate workpieces.

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.

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.

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