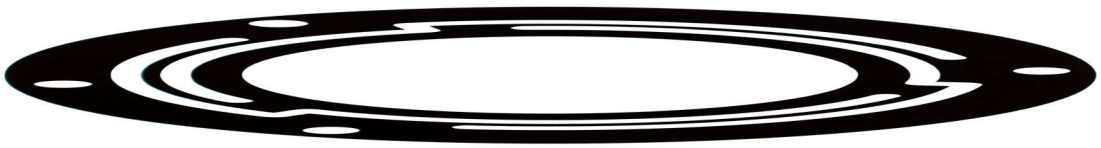
Laser Cutting Semiconductors

The semiconductor industry makes vital components for the technologies we all depend on. The semiconductor industry is looking for faster, smaller, more powerful, intricately precise, and massively efficient processes. Ultraviolet (UV) laser cutting is a perfect fit. A-Laser's beam can hold up to .0005" tolerance, it can cut complex profiles, and it can easily change the required cut by altering the computer aided design (CAD) file.

Laser machines can also process a variety of materials like Polyimide (Kapton), Polyimide (Cirlex), Q-pad, and Grafoil. Processing those materials using lasers can add huge value to the overall supply chain for the semiconductor industry.

Gaskets for instance, used in semiconductor processing are vital in the production stream. The uniformity of the cut profiles for parts ranging in size from 11.500" inches OD x 9.75" ID to 19.600" ODx17.75" ID, are a requirement when used in such conditions. Tolerances held are as small as +/- .001" mil. Utilizing a beam diameter of 20um, this kerf creates well defined sharp edges, straight walls, and consistent cuts. Whether a simple or complex geometry, a shim can be vital in the functioning of mechanical devices. Requiring more durability, shims from stainless steel reinforced Grafoil, have proven to be a welcomed solution. From sizes of .250 O.D. up to 5.40 O.D., and a tolerance of +/- .001" mil is providing reliable long-term use.

Frequently Processed Materials for the Semiconductor Industry



Grafoil

Grafoil® is compactable, resilient, and conformable, or compliant. It's chemically resistant to fluids, can withstand a lot of heat and pressure, and fits snugly to any surface to prevent leaks.

Grafoil's unique physical and chemical properties make it ideal for sealing and for high-temperature applications. The flexibility of Grafoil is due to its naturally-occurring graphite flake. The crystal structure of natural graphite consists of layered planes of carbon atoms with bonding between the planes. This structure leads to the electrical, thermal, and mechanical differences in the conventional properties of graphite and explains its natural lubricity.

Q-Pad

Q-pad, for example, is a composite of silicone rubber and fiberglass. What makes this material special is its outstanding mechanical and physical attributes, which makes it ideal for many applications.

Q-pad materials vast application possibilities are due in part to its flame retardant characteristics. This makes it ideal to be used to electrically isolate power sources from heat sinks. It can be applied between a transistor and a heat sink or between a heat sink and a chassis. Q-pad, then, is

excellent under electrically isolated power modules, in gaskets, or in devices such as resistors, transformers and solid state relays.

Q-pad also has:

- Thermal impedance: 1.13°C-in2/W (@50 psi)
- Thermal Conductivity 0.9 W/mK
- Maximum Usage Temperature

Laser Cut Grafoil

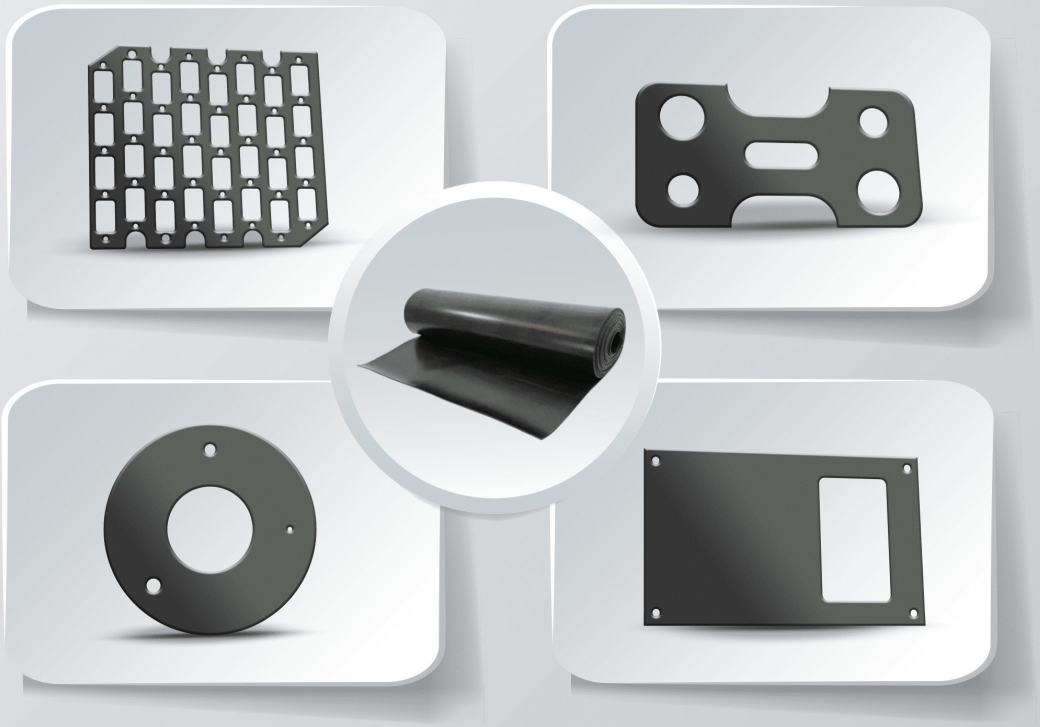
Grafoil is a flexible graphite fluid sealing material made exclusively from pure, natural graphite flake.

THERMAL MANAGEMENT

Grafoil's directional heat conductivity properties is ideal for use in electronic devices to control and spread heat flow, or as heat dissipation liners in furnaces.

SHIMS

Grafoil's flexible nature combined with its ability to withstand repeated use in harsh conditions makes it an obvious choice of material for many applications requiring durable shims.



FLUID SEALS AND GASKETS

Grafoil's superior thermal stability, thermal conductivity, and chemical resistance outperforms elastomeric alternatives, making it a leading choice for sealing applications.

ELECTROMAGNETIC INTERFERENCE SHIELDING

Grafoil's flexibility and compliance of flexible graphite material, in addition to its electronic and thermal behavior makes it very effective for EMI shielding applications.

ALASER

In addition, there are many physical advantages to using the Q-pad material. Q-pad is easy to handle and can be installed prior to soldering and cleaning. It conforms to surface textures and eliminates processing constraints associated with grease.

Laser cutting can improve both quality and efficiency, and its use in processing Q-pad proves it. Lasers provide the best software-controlled beam quality. Engineers can design the drawing and the laser will give them the freedom to request tight tolerances and precise cuts.

Please Read More At:

Semi Conductor - A-Laser Precision Laser Cutting

A-Laser Precision Laser Cutting - Laser Ablation, UV and IR Lasers