

GEL-PAK, LLC

When a company needs to transport small, valuable, fragile devices from one location to another without risk of damage, who do they most likely turn to? GEL-PAK. Working across many industries, GEL-PAK has been creating innovative solutions for the safe handling and shipping of leading edge technologies for over twenty years.



GEL-PAK President and CEO Jeanne Beacham.



Headquartered in Hayward, California, GEL-PAK was born in 1980 out of Hewlett-Packard's need to securely transport highly fragile beam-lead diodes. Since then, GEL-PAK has successfully used their unique proprietary elastomer technology to develop a diverse and customizable line of innovative products for the safe shipping and handling of sensitive devices. At the heart of their unique product line is GEL-PAK's proprietary GEL material, an elastomer that provides a tacky surface that securely holds fragile parts in place during transport. The GEL-PAK products provide significantly more device protection than a traditional waffle pack or chip tray and without the need for pockets or cavities.

With President and CEO Jeanne

Beacham at the helm since her management buy-out in 1997, GEL-PAK, an ISO 9001:2000 certified company continues to develop enabling products designed for applications where process uniformity and optimum protection of devices is mandatory "Our focus is to continually provide unique solutions for our customer's constantly evolving needs," says Beacham. GEL-PAK has met the growing demands of device manufacturers by offering in-depth product customization and quick turn-around backed up by a worldwide network of sales support. "The only way that we can anticipate our customer's needs," adds Beacham, "is through outstanding customer communication and support."

With over 1,000 active customers,

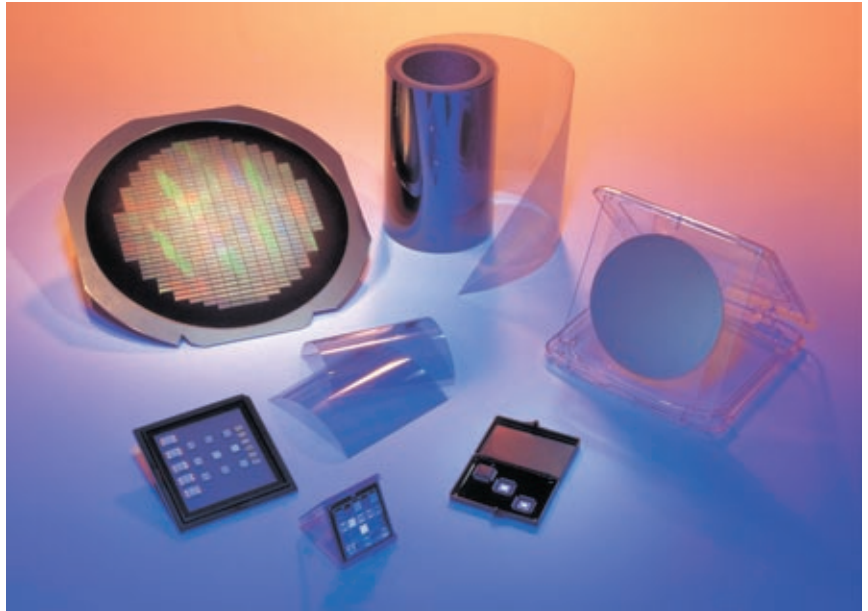
ranging from Fortune 500 companies to small start-up manufacturers and universities, GEL-PAK's one-of-a-kind products are used in a variety of industries for the protection of critical components during transport, processing, inspection, and assembly. Some of the key industries that rely on GEL-PAK products are semiconductor, medical, automobile, data storage, aerospace, microwave, opto-electronics, and telecommunications.

GEL-PAK's extensive family of products have been designed to safely hold and immobilize devices by back-side surface contact only, preventing potentially damaging contact with the edges or top surface which occur in waffle packs. Devices are held securely after making contact with the GEL surface and will stay in place, even if the carrier is inverted or dropped. All of the products can be customized by optimizing the GEL retention level (the tack or adherence of the GEL) based on the size, weight, and surface finish of the customer's device. The carriers are available in transparent, conductive, or anti-static materials as well as having the ability to be personalized with a company logo or a grid for device mapping. The versatility of the GEL-PAK products allow for a range of device sizes to be stored in a single tray or box enabling the user to greatly minimize their chip tray inventory thus reducing both production control and purchasing costs.

GEL-PAK, an ISO 9001:2000 certified company, works within industries where "clean room" quality is a must.



The GEL-Box and GEL-Tray™ product families are ideal for manual applications in which the device may be removed with tweezers or fingers. The Vacuum Release™ (VR) Trays and the Large Format Vacuum Release Carriers are designed for more automated environments in which the component may be unloaded manually by a vacuum pen or by an automated piece of equipment such as a die attach or pick-and-place machine. The GEL-Film® material is extremely versatile and is used in a broad range of customer process steps. GEL-PAK products are typically customized to the customer's specifications based on desired size of the carrier, material type, GEL retention level, and automation needs.



GEL-PAK's innovative product lines expand to meet the needs of its customers and their industries.

MANUAL RELEASE PRODUCTS

GEL-Box (AD series)

GEL-PAK's AD Series, the original "sticky box", features an integrated pocketless hinged box system that is ideal for handling, storing, and shipping medical, optical, and other small micro-electronic components that can be removed manually with tweezers or by hand. This pocketless carrier is also ideal for handling subassemblies, hybrid modules, and packaged devices.

GEL-Tray (BD and CD Series)

The GEL-PAK BD and CD Series "pocketless" chip carriers are available in a 2" tray configuration and are intended

for device off-loading with tweezers. The GEL coating is applied directly to the surface of a plastic tray (BD) or glass slide (CD).

Applications for the BD Series include the handling and shipping of GaAs FETs, laser diodes, beam-lead diodes, small thin-film passive devices, high-value medical, and optical filter components.

The CD coated glass slides are designed for high temperature applications such as bonding and reflow with a carrier capability up to 225°C. In addition,

CD slides are utilized in a variety of applications where handling of materials for microscope inspection is required.

VACUUM RELEASE (VR) PRODUCTS FOR AUTOMATION

Vacuum Release™ Trays

GEL-PAK's patented Vacuum Release (VR) technology allows for the safe handling of devices of any size from small transistors and diodes (0.25mm) to large ICs and wafers (300mm). The trays have no pockets, cavities, or compartments and can accommodate a wide range of device sizes and shapes on a single carrier. The 2" and 4" VR Tray products are ideally suited for high volume die handling applications associated with automated processing equipment such as Palomar, F&K Delvotec, BESI, Newport, ESEC and Royce.

The vacuum release trays use a thin GEL membrane over a mesh material to hold the devices securely in place. The devices can be "released on demand" by applying a vacuum under the tray which causes the GEL membrane to conform to the shape of the mesh. This greatly reduces the surface contact between the GEL and the device, freeing the device for offloading. Once the tray is in the release mode, devices may be easily removed with a vacuum pick-up tool. The hold/release mechanism is reversible



Inspection of a 300mm Large Format VR Plate during the production process.

MEPTEC Member Company Profile



GEL-PAK's original "sticky box," the AD Series is designed for manual release systems.

and the tray returns to its original holding mode when the vacuum is removed.

GEL-PAK Large Format Vacuum Release Carriers

The large format products, based on the GEL-PAK Vacuum Release™ technology, were developed in response to the semiconductor industry's trend toward larger, thinner, and higher value wafers and substrates. The carrier system is extensively used for shipping fragile InP and GaAs wafers and can accommodate larger silicon wafers up to 300mm in diameter. They are also used to immobilize partial or diced wafers that are still on a film frame during transport. In this unexpanded form, die edges are extremely sensitive. The large format carrier prevents any damage that is caused by wafer movement during transit.

PROCESS FILMS

GEL-Film®

The GEL-PAK FILM Series is a very versatile product with a wide variety of process applications ranging from front side wafer protection during the delicate process of GaAs or InP thinning to thin film head crown lapping. It also makes an excellent protective coversheet for



GEL-PAK's Vacuum Release (VR) Trays are designed for automated handling processes.

handling fragile wafers, micro-displays, and lenses. The film products are optimized to meet the specific customer process specifications. GEL-PAK's film manufacturing capabilities enable film thickness' ranging from 1 mil up to 20 mils and with a wide range of tack levels. The films can be constructed on a variety of carrier substrates and with an optional backside pressure sensitive adhesive for mounting applications.

QUIK-PAK DIVISION

In order to expand their range of services within the semiconductor industry, GEL-PAK acquired SPT, Inc. out of San

Diego in 2000 and renamed it QUIK-PAK. This separate division of GEL-PAK provides patented "open-cavity" IC plastic packages for prototyping new IC designs. QUIK-PAK allows for new IC designs to be prototyped in a plastic package that is mechanically and electrically identical to the production part.

This method of prototyping is cost effective in that there is no need for expensive ceramic packages or retooling of test boards and sockets. The open cavity technology significantly reduces the overall time to market for new IC designs and revisions because design verification and prototype units are assembled in the same package within a 24-hour period.

QUIK-PAK's open packages range from the smallest SOT up to 304 lead QFP's as well as all BGA style packages. Any IC plastic transfer molded package can be reconfigured to an "open-cavity" format regardless of package style, size, or lead count. The QUIK-PAK packages can be assembled with standard wire bonding techniques, either by the customer or by QUIK-PAK's 24-hour assembly service. QUIK-PAK can also provide an assembled device that is left open (ideal for FIB work) or encapsulated as well as flattened and marked packages.

KEEPING THE FUTURE AND THE CUSTOMER IN MIND

GEL-PAK is committed to exceptional customer service and constantly looks for innovative ways to apply their unique and highly customizable GEL technology to meet their customers' ever changing needs. "We are committed to continuous quality improvement, from initiating quick-turn programs for customers who need fast product delivery to making sure that we are employing ISO 9001:2000 standards of quality," says Beacham. "All of the industries we serve undergo constant evolution and our commitment to pursue new solutions for our customers continues to be the key to GEL-PAK's success."

For more information, please contact GEL-PAK at 510-576-2220 or visit their website at www.gelpak.com. GEL-PAK is located at 31398 Huntwood Avenue, Hayward, California 94544. ♦