GEL-PAK DESIGNS TEXTURIZED-FILM DEVICE CARRIER PLATFORM

Problem/Application

- Semiconductor companies and industrial manufacturers alike need a universal carrier to safely to handle delicate devices of varying sizes within factories and hold components with precision alignment. Both a large OSAT company (Silicon Photonics Chip) and an industrial automation company (QFN Packages) reached out to Delphon's Gel-Pak division to design universal carrier platforms for multiple sized components. This carrier solution protects the devices from damage and avoids the high costs of custom carriers for each device size.

Challenges/Requirements

- Holds 800µm or larger device sizes on same carrier
- Provide sufficient holding force while also enabling easy removal
- Compatible with automated die handling equipment
- Make available in low, medium and high tack versions to handle wide variety of device types
- Format in JEDEC standard trays (2" 4", Matrix Tray) or on customer specific substrates

Gel-Pak Solution

- Leveraging Delphon's expertise in solving complex product development and manufacturing challenges, Gel-Pak worked closely with the customers to define their unique requirements. The R&D team researched TPE chemistries to develop a Gel-Pak bio-inspired texturized film with properties that mimic the adhesive forces of biometric structures found in nature.
- The TPE material was optimized to minimize transference and outgassing.
- The texturized film "dimple" geometry and tack levels were optimized to securely hold devices while allowing for easy of unload
- The final film construction consisted of the textured film bonded to a base PET substrate along with a coversheet. A pressure sensitive adhesive (PSA) was laminated to backside of PET substrate in order to mount the film to a standard JEDEC format tray or a customer-specified carrier.

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Outcome

- Working closely with its customers, Gel-Pak improved the efficiency of in-process handling of the OSAT's Si photonic chips and the industrial automation company's QFN packages. The textured film securely holds devices of different sizes on a single carrier, which eliminates the need for custom molded carriers.
- The texturized film carrier saves time and eliminates the costs associated with molding a custom carrier or purchasing individual carriers for each unique device size.

About Gel-Pak

Founded in 1980, Gel-Pak manufactures a line of proprietary gel and elastomer based device carriers and films that offer solutions for applications where damage during handling must be avoided. The company's unique elastomer technology serves as the basis of its Gel-Box™, Gel-Tray®, Gel-Slide®, E-Film™ and patented Vacuum Release `(VR) products. These products effectively immobilize devices during shipping and in-process handling. For further information on Gel-Pak's product line, please refer to the website at www.gelpak.com

About Delphon

Delphon is the materials incubator and advanced manufacturing center known for solving unique product development and manufacturing challenges. By combining unique materials and proprietary technologies in its state-of-the-art clean-room lab, Delphon partners with customers to move ideas quickly into novel products. Its well-known brands Gel-Pak, UltraTape and TouchMark are innovators of solutions for diverse markets including semiconductors, data storage, advanced medical devices, optical, photonics, aerospace, defense, automotive and telecom. For more information, visit www.delphon.com