AI Technology, Inc. (AIT) Introduces Temporary Bonding Adhesive for Thin Wafer Handling

What do you use to handle thin wafers and thin reconstituted wafers? Increasingly miniaturized electronic devices require decreased profile heights, reduced foot-prints and ultimately, the perpetual thinning of wafers. Initially, working with thin wafers typically required temporary bonding of the wafer to a carrier and use of a temporary coating layer for wafer protection.

For fan-out wafer-level packaging and 3D packaging, thin wafer handling is critical; The wafer must not warp, bend or shift during any wafer-processing steps. These wafer processing steps may involve different temperature ranges and exposure to a variety of chemicals depending on the processing steps such as etching, metallization, CMP, PVD, RDL in embedded, fan-out, and 3D wafer-level packaging.

AI Technology, Inc. (AIT) manufactures a series of temporary bonding materials for processing temperatures up to 150 °C. They are well accepted for grinding, dicing, etching, and deposition. AIT customers prefer AIT bonding materials over conventional wax materials specifically because AIT’s products feature ease of use and quick removal, especially for very delicate compound wafers and photonics.

For higher temperature processing, AI Technology, Inc. (AIT) developed high temperature wafer processing adhesives (WPA) that can withstand processing temperature up to 330°C. Also important is the chemical resistance of these WPA materials to acids and bases during the etching processes. The thermal and chemical stability allows these adhesive to maintain its chemical integrity allowing the thin wafer be separated from the wafer handler/carrier by heat-sliding or by laser de-bonding equipment. The WPA adhesive layer is designed to absorb UV breaking chemical bonds at the interface allowing for ease of separation.

After separation, the WPA adhesive layer can be removed by peeling with minimum stress or solvent cleaning.

Besides supplying these WPA products in spin coating liquid, AI
Technology, Inc. (AIT) also provides WPA as a thin film. This unique and innovative WPA-film minimizes processing time and total waste produced compared to a typical spin-coating process allowing higher through-put. In high volume manufacturing, some fan-out packaging involves reconstituted panels with larger dimensions compared to the traditional circular and small wafer size. For these high volume manufacturing panels, adhesive film in sheet format may provide the most efficient productivity. Typically heat-laminated onto a wafer first and followed by vacuum lamination of the wafer onto the carrier, AIT’s WPA thin film processing conditions and debonding techniques resemble the spin coating process used in WPA products.

AIT Technology, Inc. (AIT) understands that different types of wafers, Si, GaAs, GaN, InP, glass, and sapphire are used in different applications and, depending on wafer processing conditions, demand highly specialized tools and equipment. AIT is committed to working closely with our customers and equipment suppliers to satisfy customer needs.

-For a customized temporary bonding solution, complete our application analysis form: http://www.aitechnology.com/analysis/

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