Hub Blades for Dicing Low-k Type Wafers

Nova Hub Blades are an immediate solution to the challenges posed by the dicing of low-k type materials by reducing chipping and delamination.

**Developed Specifically for Low-k Wafer Dicing**

As product features continue to shrink in size, the need to maintain IC performance is driving a transition to low dielectric constant (k) materials in wafer fabrication. While offering fast electrical signal speed and low power consumption, low-k dielectric materials have a tendency to peel and chip during the dicing process, resulting in product loss. K&S’ Nova Series hub blades enables the dicing of various low-k wafers with high yield and good productivity, using current dicing equipment and practices. Without requirements for new technologies, the Nova Series hub blades offer a quick, low-cost turnaround for IC manufacturers when transitioning to low-k wafer dicing, without the expense of purchasing laser dicers.

**K&S Nova Hub Blades Increase Yield and Throughput in Low-k Wafer Dicing**

By incorporating specific formulations of diamond concentration and nickel bond, the Nova Series hub blades address specific needs of low-k wafers to minimize chipping and delamination during the dicing process. High yields are achieved even when advancing wafers at industry standard feed rates. By using the Nova Series hub blades during low-k wafer dicing, yield is maintained without compensating productivity.

**Different Formulations Address Various Low-k Wafer Requirements**

As some low-k wafers are more sensitive and difficult to dice than others, K&S offers different formulations of Nova Series hub blades, using standard thicknesses and exposures to meet specific requirements. K&S will assist you in selecting the proper dicing process parameters and Nova hub blade to optimize the results of your application.

- Improve Low-k Wafer Dicing Yields
- Immediate Solution Using Current Dicing Practices
- Wide Process Window (Feed Rate & RPM)
- Choice of 3 Standard Bond/Grit Matrices
- Diamond Grit from 2.0-6.0 µm
- Available in 0.8 mil to 2.0 mil Thicknesses

Low-k layer delamination resulting from the use of a standard blade.

Minimal delamination of low-k layers through the use of the NOVA blade.
Blade Dimensions

Part Number Configuration

Example: S1435-K200-000

This is the part number for a 1.4 mil thick x 35 mil exposure blade with 4-6 μm (S) grit, the softer bond hardness and grit concentration for low-k wafers (K2), an AccuCut hub (00), and no customization (000).

Grit Size

K&S hub blades for low-k wafer dicing applications are available with diamond grit sizes in the following ranges:

- J*: 2-6 μm
- Q*, S: 4-6 μm

* J and Q ranges designate the use of our improved diamond dispersion technology in the manufacturing process.

Bond Hardness & Grit Concentration

Selection of a specific combination (matrix) of a particular bond hardness and grit concentration for low-k wafer dicing is a function of the low-k value, wafer structure (number of low-k layers), and the type of low-k material. K&S offers three standard combinations. These are:

- K3: Soft Matrix
- K2: Softer Matrix
- K1: Softest Matrix

K&S will assist you in selecting the correct matrix for your specific application.

Blade Dimensions

Hub blades for low-k wafer dicing are offered in thicknesses and exposures to suit a range of narrow street widths and required cut depths. The first two digits of each four-digit dimension code represent the maximum blade thickness in tenths of mils. The last two digits represent the minimum blade exposure in mils. Therefore, in the example above, the blade dimension code “1435” designates a blade with a maximum thickness of 1.4 mil (1.2 mil minimum) and a minimum exposure of 35 mils (40 mil maximum).

Hub Configuration

Blades for low-k wafer dicing are available only in the AccuCut hub configuration, designated by the ‘00’ code.