



# Applications of Dry Process Dicing™

Being on the forefront of dry process dicing technology, Dynatex has extensive experience in providing solutions to many different types of manufacturers. Dynatex sees each customer's scribe and break application as unique and below are several applications.

## Goal #1: Eliminating Deionized (DI) Water from Wafer Die Separation

As an alternative to wet saw wafer die separation, dry dicing does not require the use of deionized water. This is an advantage to any manufacturer that produces wafers with delicate top side structures. Biochip companies providing point of care with clinical diagnostic chips utilize dry process dicing. Device types like those used in Optical ImmunoAssay (OIA®) "can only be processed in this way".

MEMS device manufacturers also prefer dry process dicing for devices such as infrared focal plane arrays, silicon microphones, inertial sensors and bolometers. These devices would all perish in the harsh environment of the dicing saw.

## Goal #2: Decreasing Street Sizes of Existing Wafers

The scribe and break process is virtually kerf free, when compared to the saw dicing process. Conventional wafer layout has to allow for the loss of material during the sawing process by reserving space between die for the saw cut. These "streets" are typically 100 microns in width and use up 18% of the available space of the wafer. The scribe and break process can accommodate much narrower streets, 50 microns for example. In this case only 10% of the wafer is lost, thereby yielding an extra 1,300 die per wafer for a 150 mm wafer with 1 mm die.

## Goal #3: Dicing Difficult-to-Manage Substrates

Gallium arsenide (GaAs), lithium niobate, gallium nitride on sapphire, gallium antimonide, germanium, silicon carbide, and indium phosphide are all examples of materials that can be challenging when dicing. The Dynatex International scribe and break process has been successfully deployed for all of these material and many other semiconductor compounds.

## Goal #4: Dicing in High Volume to Increase Throughput

Processors of III-V compounds find an advantage in the Dynatex production-quality dry process dicing systems. For up to 8" (200mm) wafer capacity, the equipment is fully programmable and designed for increased yield and high processing speeds. The Scriber/Breaker can scribe up to 4" per second (100mm/s) and is capable of meeting the yield demands of extremely high speed production environments. The world's only 8" (200mm) alternative to saw dicing for silicon and GaAs applications, the DTX-200, With a Windows® XP™ operating environment provides a fully programmable software and a user-friendly operator interface.

Hi volume manufacturers of RFICs often thin their wafers to improve efficiency of the final product. This makes the wafer delicate to handle and the dicing process

even more difficult. "Our wafers are difficult to process because of the thinning process. The Dynatex process was our best solution", is a quote from one customer.

The high volume manufacturing environment also requires robust equipment with consistently good uptime. Dynatex International equipment is used throughout the world wherever semiconductors are being produced. Our Scriber/Breaker has met these needs and demonstrated a high degree of reliability by consistently performing 24 hours a day in this brutal production environment.

### **Goal #5: Solar**

As the burgeoning solar industry develops and expands, many new processes challenges find solutions in existing technology. The Dynatex International scribe and break process is one such technology. It has been used to isolate adjoining conductors, trim wafers for packaging and even dice wafers for use in photovoltaic concentrators. Undoubtedly, this technology will be pressed into service in many more unusual solar applications well before the solar industry matures.



5577 Skylane Boulevard  
Santa Rosa, CA 95403  
Phone: 707.542.4227  
Fax: 707.579.8599  
[www.dynatex.com](http://www.dynatex.com)  
[sales@dynatex.com](mailto:sales@dynatex.com)