



# Diamond-On-Silicon Wafers

The sp3 Model 600 Hot Filament diamond deposition system provides for uniform diamond growth over areas exceeding 350mm by 375mm. Using this unique system, sp3 is now offering diamond-on-silicon wafers, coated to a variety of specifications.

**General specifications:**

Wafer diameters of 50mm, 75mm, 100mm, 150mm, 200mm and 300mm.

Film thickness from 0.5um to 3.0um (Thicker films available as a special order)

Wafer flatness: Diameter / thickness dependent typically +/- 50 microns on 200-mm wafer with a 1.0-micron film

Film thickness uniformity across specified diameter: (+/- 10%)

Grain size down to 100 nano meters

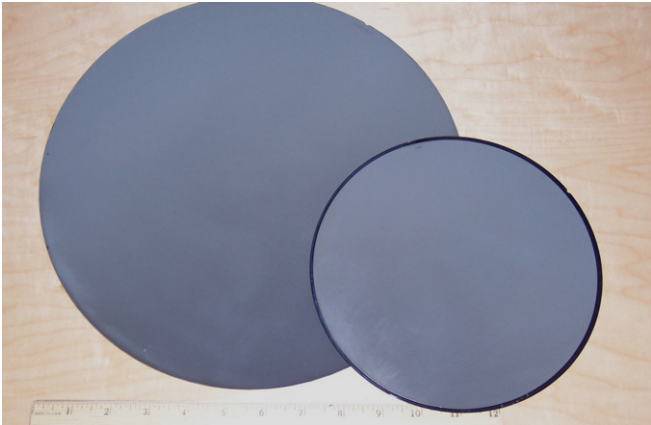
Young's modulus greater than 1000 GigaPascals on larger grain films

**Film types:**

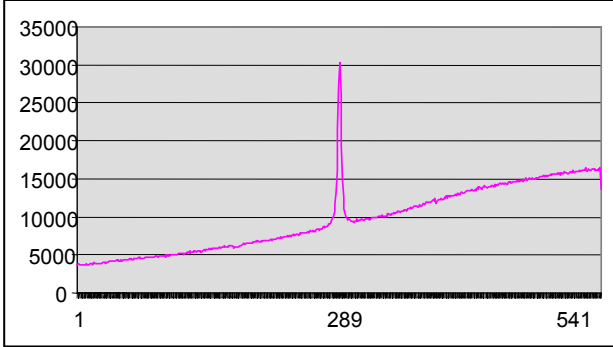
Standard diamond films: grain size typically 50% of film thickness with a strong Raman peak.

Very smooth films with grains as small as 100nm and 20nm Ra. roughness can also be grown.

Conductive boron doped films



**20 to 25 micron thick diamond on 200 and 300 mm wafers**



Pricing:

Diameter - mm	100	150	200	300
Film – 1 micron	\$350	\$750	\$1500	\$4,500
Film – 20 micron	\$2,000	\$4200	\$8,000	\$15,000

For more information call 877-773-9940  
[www.sp3inc.com](http://www.sp3inc.com)

# sp3 Inc. Company Profile

## A brief history

### **Pioneering development of thin-film tools**

sp3 started in Mountain View, CA, in 1993, as a specialist in the development and manufacture of diamond thin-film tools, using proprietary manufacturing processes and sp3-designed CVD reactors. This development effort evolved into the current product line of DIAbide™ tools.

### **Addition of thick-film diamond tools**

In 2000 sp3 acquired the diamond manufacturing facilities of Crystalline Manufacturing Ltd. (CML) of Calgary, Alberta, Canada, now named sp3 Ltd. The acquisition provided sp3 with thick-film polycrystalline diamond manufacturing capability to complement its existing DIAbide thin-film diamond capability. The state-of-the-art facilities include multiple DC torch deposition reactors, and laser cutting, polishing and metrology equipment.

Using both thin-film and thick-film deposition technology, sp3 Diamond Technologies' products include heat spreaders for high power laser diodes, grinding logs, coated silicon wafers to 12" (300mm) diameter, wear surfaces and seals. sp3 Diamond technologies also manufactures CVD deposition reactors and provides diamond deposition consulting services.



## Model 600 Diamond Deposition Reactor

- **Computer-controlled deposition**—consistent film thickness and grain size for production; flexible control of deposition for R&D
- **Excellent film uniformity**— $\pm 20\%$  run-to-run,  $\pm 10\%$  within a run
- **Large usable deposition area**—144 square inches (93,000 square mm)
- **High production capacity**—example: nine 100mm wafers or one 300mm wafer per run
- **Low cost operation**—less than 0.4 kWh power consumption per cubic mm of diamond deposited
- **Data collection and analysis**—SPC control and links to multiple network protocols for remote monitoring and analysis
- **Safe**—no operator exposure to aromatic hydrocarbons; personnel and equipment protected by hardware and software interlocks
- **Reliable**—MTBF greater than 500 hours
- **Proprietary technology**—protected by U.S. patent no. 5,833,753 and 5,997,650



## Corporate headquarters Thin-film and thick-film diamond deposition and segment services

### **sp3 Inc.**

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