



STEVEN SEPVEST CORPORATION

CVD Diamond for Thermal Management Data Sheet

We provide large size wafers of polycrystalline CVD diamond by DC arc plasma jet approaches. One of the remarkable properties of diamond is its unsurpassed thermal conductivity, which is five times higher than that of copper. As we all know, heat is conducted by electrons in metal, lattice vibrations are the key factor for the high thermal conductivity of diamond. Our CVD diamond wafers are used as mounts for high-power integrated circuits, laser diodes, GaN on Diamond and heat spreader for satellite.

We also provide optical grade CVD Polycrystalline Diamond, and high purity Single Crystal CVD Diamond. Contact us for details.

Unique properties of CVD Diamond:

- Unsurpassed hardness
- Extremely high thermal conductivity (>1800 W/m K, five times that of copper)
- Broad band optical transparency
- Chemically inert: Not affected by any acid or other chemicals
- Graphitization only at very high temperatures (700°C in oxygen, 1500°C in inert atmosphere)

Specifications

- Tolerance of Thickness: $\pm 25\mu\text{m}$
- Flatness: $< 4\mu\text{m/cm}$
- Thermal conductivity: Up to 2000 W/m K (1000 - 1800 W/m K selectable)
- Dielectric Constant: 5.7
- Electrical Resistivity: $> 10^{14} \text{ ohm-cm}$
- Thermal expansion coefficient $1.0 \times 10^{-6}/\text{K}$ @300K
- Debye temperature $1860 \pm 10\text{K}$
- Bandgap 5.45 eV
- Density: 3.5g/cm³
- Young's modulus: 1000-1100Gpa
- Growth side surface finish: $< 100 \text{ nm Ra}$
- Nucleation side surface finish: $< 30 \text{ nm Ra}$
- Color: Clear or Yellow

Standard Sizes

Double sides polished: 66 mm, and 100 mm in diameter

Raw thickness: Between 0.3 mm and 1.5 mm

Polished thickness: Between 0.2 mm and 1.0 mm

Customize

Holes Drilling: Yes

Sizes and Shapes: Yes

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