

## Substrate Heaters



- Outgassing Temperatures up to 1700 C
- High Thermal Efficiency
- Single or Dual Filament Versions Available
- Robust, Reliable Design
- High Temperature Uniformity
- Non-Inductive Filament

### Product Description

E-science substrate heaters are highly robust and thermally efficient. High temperature uniformity is achieved through the incorporation of a serpentine flat filament. This design provides the maximum surface area to thermally couple with the substrate. The flat surface provides a higher emissivity towards the substrate for the same power applied to the heater. This allows users to operate at a lower power achieving similar or higher temperatures at the substrate.

To improve the thermal efficiency further, a densely packed heat shield surrounds the heater reducing the amount of thermal loss out the back of the heater. This also protects the substrate manipulator mechanism from overheating and damage.

Reliability is achieved by utilizing an advanced isolation design where the filament is held firmly in place within a pocket which is machined into a PBN plate. The filament is highly robust as the cross-sectional area is greater than that of wire which is found in many commercially available substrate heaters.

The dual filament configuration allows users to improve the temperature uniformity of the substrate. External influences, such as the substrate holder, can affect the uniformity of the substrate. To overcome this, a dual filament heater allows the grower to put more power into the outer edge of the substrate countering the effects of the holder.

E-Science has done extensive investigations of materials compatible with oxide environments. We have incorporated a number of novel materials that demonstrate excellent performance in MBE reactors with a high base pressure of oxygen. Customers have achieved longer lifetimes at elevated temperatures when compared to OEM supplied heaters.

Contact E-Science for more information on their replacement heaters for MBE systems.

## Heater Selection Chart

E-Science provides substrate heaters for all the major system manufacturers. In addition, E-Science can build heaters for other manufacturers systems and for custom reactors. Contact E-Science for more information.

### Varian / Intevac / EPI / Veeco MBE Reactors

3" Gen II			
VA-3SSH			

### Riber MBE Reactors

32P			
RB-3SSH			

### VG Semicon / Oxford MBE Reactors

V80			
VG-3SSH			

### Perkin Elmer Reactors

PE 3"			
PE-3SSH			

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Riber, 32P, Compact 21, and Epineat are trademarks of Riber, Inc.

V80, V90, V100, and V150 are trademarks of Oxford Instruments, Inc.

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