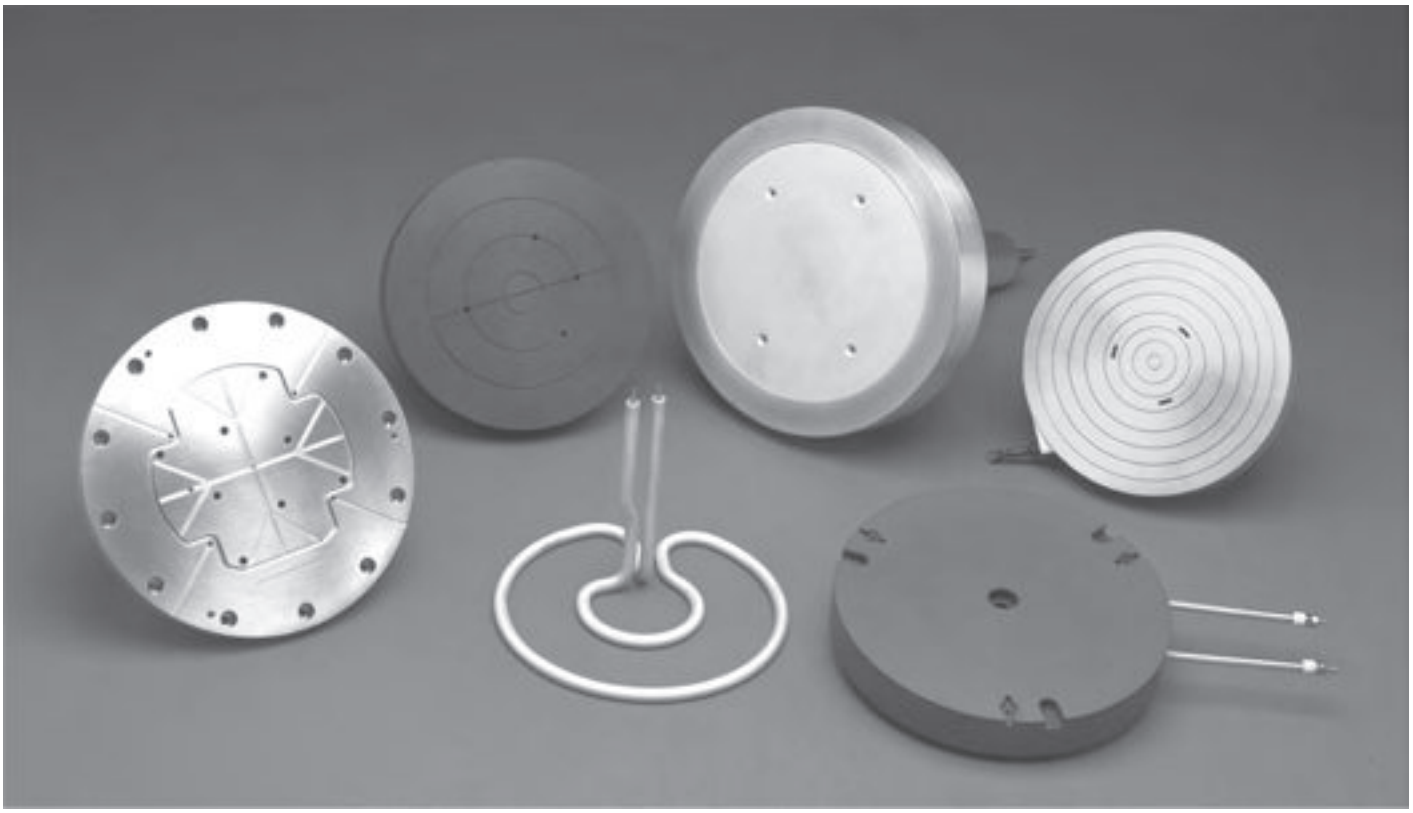
ADVANCED THERMAL SOLUTIONS FOR SEMICONDUCTOR PROCESSING



- CVD
- Photolithography
- Stripping
- PVD
- Etching
- Probing
- Wafer Annealing
- Plasma Ashing
- Flat Panel

High-performance electric platen heaters and related products are available from Durex for all aspects of the semiconductor production process.

Durex engineers are specialists in designing and building thermal processing solutions for the machinery and equipment OEM's in service to the semiconductor industry, as well as contract fab shops, sub-assemblers and others who work in this high-precision market. All our capabilities described previously are utilized in this market, in which Durex is an acknowledged leader.

The products shown here have been produced for specific customer applications, but all are available in the same or modified forms for your uses.

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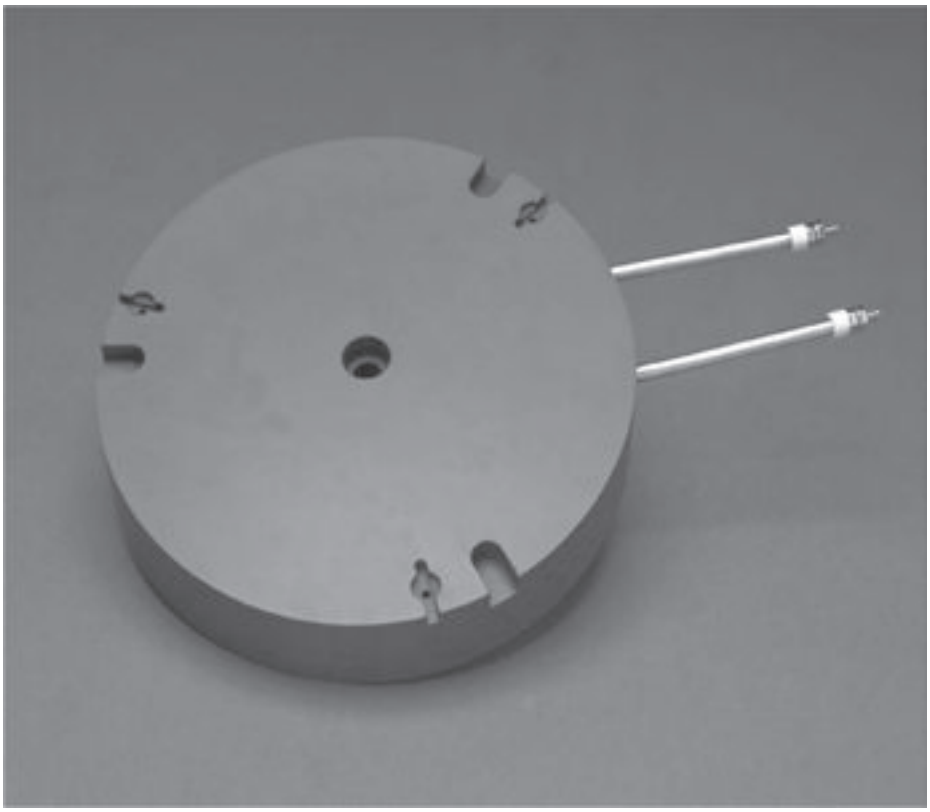

BAKE PLATENS

Utilizing state-of-the-art heater technology, Durex manufactures precision bake platens specifically for processing 200mm and 300mm wafers. These platens are cast from pure aluminum (99.7%) to ensure maximum operating temperatures of 450°C (842°F) with minimum risk of process contamination. The casting process is controlled to eliminate any defects in the machined surface or casting body caused by porosity.

A mineral-insulated heating element distributed throughout the casting provides surface temperature uniformity to ± 1% or better of the process operating temperature.

A hard-anodized finish provides an abrasion-resistant dielectric barrier on the working surface.

BAKE/CHILL PLATENS

Durex bake/chill platens have essentially the same operating specifications as our bake platens, with the addition of a cooling function. A precision formed cooling tube is added as an integral component to the heater assembly in the body of the casting. This function can be used to rapidly cool the working surface of the platen or to act as a heat exchanger for liquids and gases. A pressure test on the finished part assures the integrity of the cooling tube after the casting process. The platen can also include an integral temperature sensor as part of the assembly.

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PEDESTAL HEATERS

These pedestals comprise a bake or chill platen with an aluminum "shaft" attached to the underside of the platen by electron beam welding. A helium leak test insures a vacuum tight assembly. The surface of the pedestal is precision machined with a flatness of ± 0.0005" and includes lift pin holes and proximity pins to customer specifications. Various termination options are available to customize the cooling tube exits for new or existing applications.

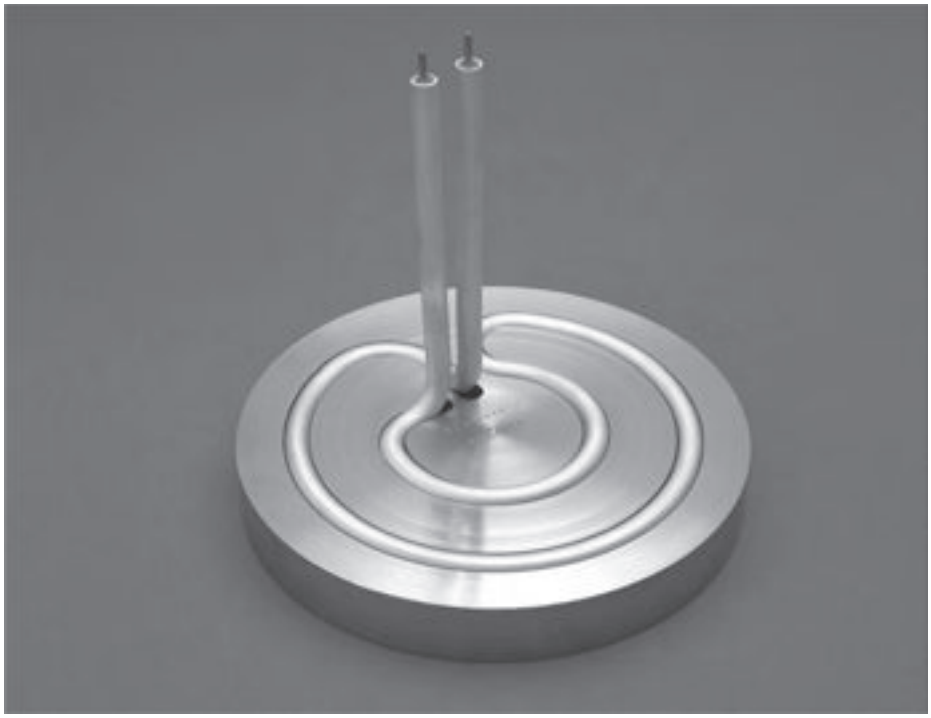
HOT CHUCKS

Hot chucks or "heated tools" deliver precise heat to wafers during the manufacturing process. These platens are individually customized with vacuum channels on the working surface, as well as specific pin hole locations and other surface or backside mounting holes. Manufactured from pure aluminum (99.7%), these hot chucks have a temperature uniformity of better than ± 1% of the process temperature and a flatness tolerance of ± 0.0005" across the entire surface. A precision lapped surface is standard, with a hardcoat anodized finish available.

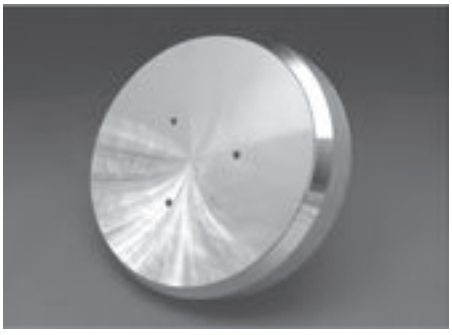
ADVANCED THERMAL SOLUTIONS FOR SEMICONDUCTOR PROCESSING

HIGH-TEMPERATURE PLATENS

When temperatures exceed the 450°C (842°F) range provided by aluminum platen heaters, Durex offers a unique high-temperature platen heater to extend the range available for a machined heater. The heater body is typically constructed of stainless steel, with other materials such as Nickel, Inconel®, or Copper available, as needed.
The assembly is provided as a single component. A precise groove is machined into the heater body, as determined by the heat profile requirements of the surface. A mineral-insulated heating element is press-fit into the groove to guarantee intimate contact with the heater body, which optimizes heater life and temperature uniformity on the working surface. In addition to high-temperature platens, these units can be manufactured as pedestals and welded vacuum tight.



STANDARD PEDESTAL HEATERS



The standard pedestal heaters manufactured by Durex are designed to provide a quick solution for wafer processing applications. These heaters are designed specifically for 200mm and 300mm wafers. This standard design usually eliminates the need for costly tooling and mold design associated with newly designed custom heaters. Ideal for R&D, rapid prototyping and emergency repair. Made from 356 aluminum standard, cleaned and packaged to cleanroom specification, shipped ready to use. A variety of options can be incorporated into the final product with no additional tooling or engineering cost, including 170.1 aluminum (99.7% pure), hard-coat anodized surface, lift pin holes, vacuum channels, sapphire balls for wafer proximity spacing and several electrical termination styles.

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