

Reactive Ion Etcher



The RIE 2000 Reactive Ion Etcher

The RIE 2000 Reactive Ion Etcher is specifically designed for anisotropic etching of microelectronic devices. This R&D sized instrument is designed to simulate the operation of larger production instruments in process development and pilot production applications. The RIE 2000 is a turbo pumped system capable of reaching a base pressure of 10^{-6} torr. This low base pressure provides a clean etch environment and highly anisotropic etch without undercutting by eliminating residual species within the chamber prior to starting the etch process.

Wafers up to 6" diameter as well as irregular shaped substrates can be accommodated in the 200mm diameter vacuum chamber. A fully manual control system coupled

with digital readouts on the RIE 2000 offer a wide range of experimental etch parameters, and is not limited by routine, automated processing ranges.

Specifications

Vacuum Pump:	70 l/sec Turbomolecular Pump
Gas Delivery:	Two channel, all stainless steel construction with integral gas shower.
System Vent:	Independent interlocked solenoid with connection for dry nitrogen.
RF Power:	User variable 0-200 watt; 13.56 MHz frequency, manual tune; air cooled; solid state design.
Process Timer:	Auto-termination of etch up to 99:99:59
Input Power:	115/230 VA, 50/60 Hz, 10/5 amps.
Dimensions:	20.25" W x 16" D x 15" H
Vacuum Chamber:	quartz, 8" OD x 4" high.
Vacuum Readout:	Capacitance Manometer with digital front panel display.
Gas Control:	Dual independent needle valves with safety interlocked solenoid.
Sample Table:	6" diameter; water cooled.
RF Readouts:	Digital front panel LCD meters for Forward and Reflected power.
DC Bias:	LED display on front panel.
System Weight:	60 pounds (without rotary pump).
Warranty:	1 year on parts and labor.
Options:	Stainless steel chamber with viewports; Mass Flow Controller System up to four channels; Cold Cathode Gauge.

Special Features

- Manual controls make it possible to process in a wide range of vacuum pressure levels using an unlimited combination of reactive species.
- A stainless steel gas system with integral over the sample shower gas ring provides maximum etch uniformity and the best possible utilization of the reactive species.
- High etch rates at moderate power levels of 100 watts forward power can be achieved - greater than 200 Å/minute for oxide and 500Å/minute for nitride.
- System is supplied with two manual gas channels, but up to four mass flow channels can be added.
- Gas lines, fittings, and stage assembly are all stainless steel construction and designed for corrosive applications. Ceramic bearing turbomolecular pump and corrosive series rotary vane pump both are minimal maintenance, long life vacuum components.
- Safety interlocks prevent mis-operation thereby protecting the user and the system.



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