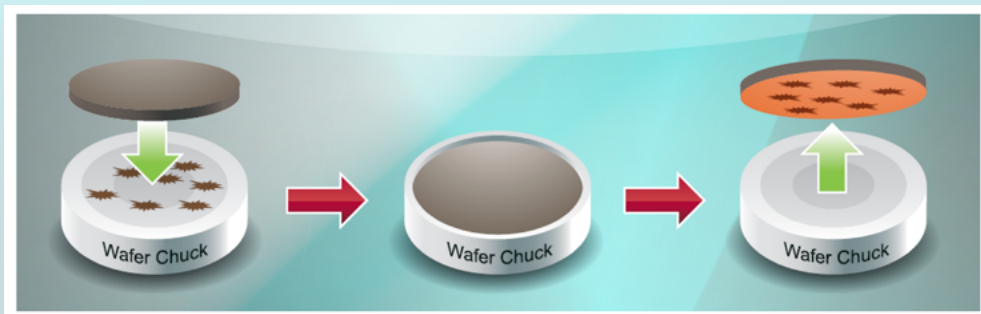


Method to Eliminate ESC flow faults without opening chamber

Advanced semiconductor processes are very sensitive to contamination so etch chambers used for fabricating semiconductor devices have scheduled wet cleans to minimize contamination. These wet cleans always result in extended tool downtime, therefore device manufacturers try to maximize the time between wet cleans. However, particles on the electrostatic chuck (ESC) may cause high back-side helium leaks, forcing early wet cleans and unplanned downtime. Typical wet clean recovery time is eight hours or more.

The **Etch Clean** product was developed to remove and trap the loose debris that accumulates on the wafer chuck. **Etch Clean** is a highly cross-linked, very sticky polymeric material mounted on wafers that are cycled through the process tool. This unique cleaning material does not out-gas as measured per the ASTM E595 standard, nor is it observed to transfer any metallic or organic material as tested by ICP-MS and XPS analysis. The **Etch Clean** product can be used at temperatures up to 300° C.

In a typical application, when a helium leak occurs, the **Etch Clean** wafer is processed through the chamber and clamped onto the electrostatic chuck. The compliant polymer removes defects from the top surface of the chuck which can cause a poor seal between the product wafer and the chuck. The process to transfer the wafer through the tool typically takes 5 minutes or less. The illustration below shows how this cleaning process works.



Low Cost of Ownership - The **Etch Clean** product can typically be used up to 20 times before it becomes saturated. **International Test Solutions** has developed a cleaning kit to recover the **Etch Clean** product, extending the typical life to more than 100 chamber cycles. ITS does not recommend the use of any organic solvents - including alcohol - for cleaning the **Etch Clean** wafers. Use of alcohol or other organic solvents may shorten **Etch Clean** product life. For more details on the recommended procedure for cleaning, please contact **International Test Solutions**.

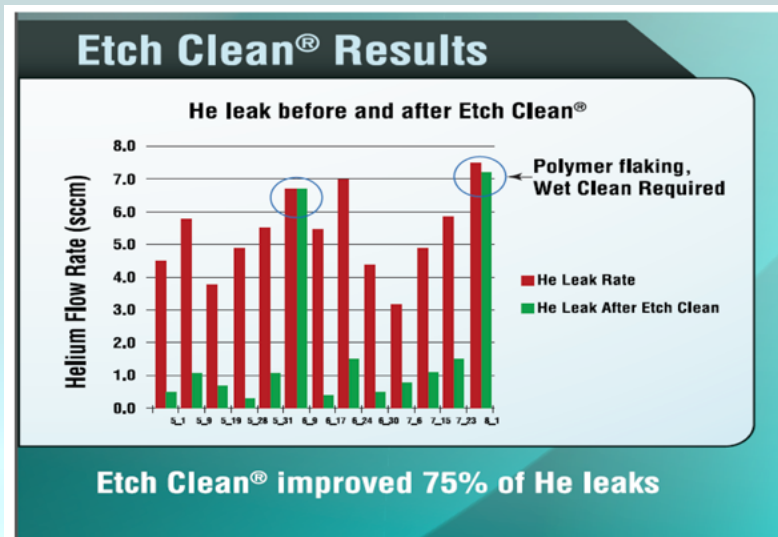
Etch Clean® is registered trademark of International Test Solutions.

For more information, please contact:

International Test Solutions - 1595 Meadow Wood Lane - Reno, NV 89502 (USA)
www.inttest.net - mail: sales@inttest.net - Phone: +1 775-284-9220



Customer Data – A customer evaluated **Etch Clean** over a three-month period on multiple etch chambers. **Etch Clean** was cycled through the tool whenever the ESC helium flow rate exceeded specification. In the graph below, the red bars show the helium leak rate prior to **Etch Clean** and the green bars are post **Etch Clean**. More than 75% of the time, the helium leak was fixed without opening the chamber and the tool was put back into production immediately.



The maximum benefit from **Etch Clean** can be achieved when the wafer is cycled regularly as a preventative maintenance procedure. This can be scheduled after wet clean or during other routine test procedures.

Etch Clean is available on wafer substrates with 100mm, 125mm, 150mm, 200mm, and 300mm diameters.

Contact International Test Solutions (ITS) directly at +1 775-284-9220, or contact a local ITS distributor with your specific requirements to evaluate this product for your specific etch applications.

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