

# ESC T794

## *Effective post-CMP cleaning solution*

ESC T794 is a cost-effective cleaning product specially developed for cleaning hydrophobic surfaces in copper integration processing. This cleaning solution utilizes a high pH formulation that removes contaminants generated by CMP processing, while preventing corrosion of copper substrates. ESC T794 excels at organic residue removal, and also prevents watermark defects.

Because ESC T794 is formulated as an aqueous solution, it is easily diluted for use, which contributes to an overall low cost of ownership, and offers versatility. While ESC T794 has demonstrated excellent capability for CMP cleans, it is also effective for a variety of other cleans applications for copper integration.

ESC T794 is available in 5-gallon and 55-gallon HDPE drums. Small sizes may be available upon request.

### ESC T794 Cleaning Mechanisms

- Produces a unique detergency-like action that results in exceptional cleaning of organic residue
- Incorporates metal complexing capability for effective removal of copper contamination and trace metals
- High pH chemistry creates zeta potential characteristics that enhance cleaning action and prevent brush loading
- Removes and prevents watermarks

ESC T794 is also effective at removing copper and copper oxide contamination from CMP pads. Use of ESC T794 extends the lifetime of CMP pads by removing the residue built up during volume manufacturing. ESC T794 helps to ensure consistent pad performance over the life of the pad.



### APPLICATIONS

Primary Application: ESC T794

- Post-Cu CMP cleans

Other Applications: ESC T700 Series

- Dielectric CMP cleans
- Backside metal and particle removal

- OSG film cleans
- Pre-deposition cleans
- Polysilicon CMP cleans
- Cu and barrier CMP pad cleaning and conditioning

### FEATURES & BENEFITS

- Effective for organic residue removal
- Cleans hydrophobic dielectrics without watermarks
- Removes copper contamination from dielectric surfaces
- Prevents brush loading
- Low copper surface roughness
- Compatible with low- $\kappa$  films including porous dielectrics
- Effective at ambient temperatures
- Demonstrated improvements in TDDb and electromigration
- Global technical applications support

## SPECIFICATIONS

ESC T794 is typically used in a single-pass mode at ambient temperature, with on-wafer dilution of  $\geq 50:1$  as follows:

Equipment*	ESC T794	DI WATER RINSE
Single-wafer, no contact	30–60 sec**	15–20 sec**
Single-wafer contact (scrubber)	30–40 sec	15–20 sec
Batch immersion	2–5 min	3–5 min

\*Chemical delivery system requires pressurized inert gas (N2) blanketing.

\*\*Megasonics recommended.

## Material Compatibility

High-density polyethylene (HDPE), PFA, polypropylene, 316L stainless steel, quartz, and Teflon® (PTFE), are normally suitable materials of construction. Diluted ESC T794 is compatible with PVA brushes.

## Handling and Storage

Before using this product, read the MSDS, as well as the ESC T794 Instructions for Use and Evaluation document.

For ESC T794 applications, customized recipes may be needed to meet application-specific requirements. Contact Entegris' technical personnel for assistance in adjusting process variables (time, pressure, rpm, dilution, etc.). Adjusting these variables can optimize performance and cost of ownership.

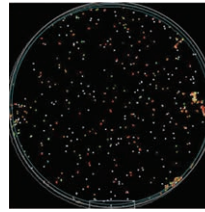
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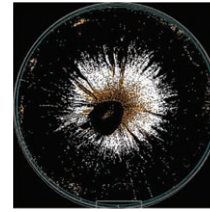
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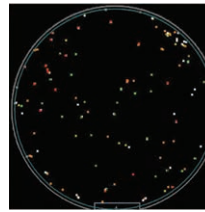
## PERFORMANCE DATA



Blanket coral wafer before polishing:  
1100 defects  $\geq 0.16 \mu\text{m}$

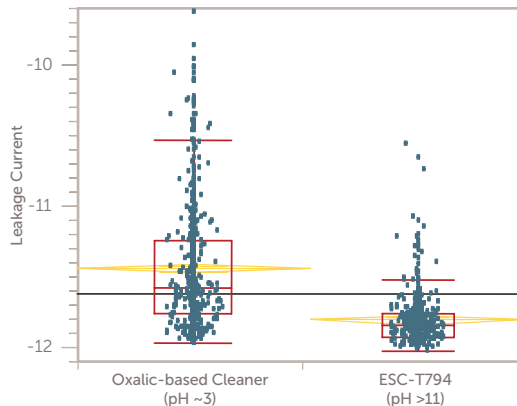


Post-polish and cleaning with commercial solution:  
14,675 defects  $\geq 0.16 \mu\text{m}$



Post-polish and cleaning with ESC T794 solution:  
172 defects  $\geq 0.16 \mu\text{m}$

## Leakage Current vs. Post-Cu CMP Clean Cu/Coral Structure



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