



ST-250™ Cu RESIDUE REMOVER

The industry standard for removing plasma etch residues

Overview

ST-250™ Cu residue remover solution is specifically formulated for maximum compatibility with copper, advanced barrier layer and etch-stop materials.

An intermediate rinse solvent is not required for most applications. If corrosion sensitivity or other factors dictate the use of an intermediate rinse, PSR-200 is recommended. Do not use isopropyl alcohol as an intermediate rinse.

ST-250 can be used in automated batch spray equipment and single wafer tools. For process details appropriate to the equipment used in your facility, contact Entegris Applications Engineering or Sales staff for specific process recommendations.

Bath life of ST-250 is typically greater than 24 hours and is dependent upon the rate of water evaporation from the product. Closed systems provide longer bath lives than open systems due to lower rates of water evaporation. Shelf life is generally 12 months from date of manufacture if properly stored. Refer to ST-250 Safety Data Sheet for specific handling and storage information.

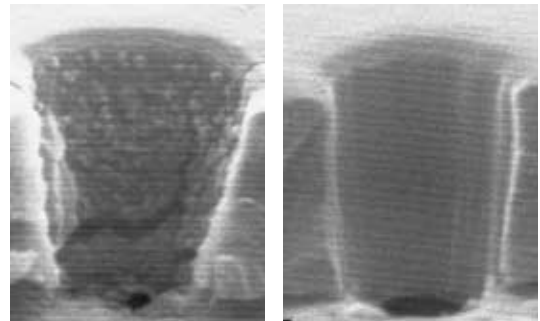
ST-250 is compatible with a wide variety of processing materials. See table on page 2 for selecting materials compatible with its use. For information on materials not listed, contact Entegris Applications Engineering or Sales staff.

Applications

- Copper dual Damascene

Benefits

- Removes difficult plasma etch residues
- Highest compatibility with low- κ dielectrics, copper and advanced barriers
- Requires no post-solvent rinse
- Non-combustible
- Contains **no hydroxylamines**, Catechol or other SARA-reportable ingredients



FLARE/Si₃N₄/Copper 0.5 μm via

After processing with ST-250 @ 30°C (86°F) for 15 minutes with DI water rinse

Aggressive cleaning of copper-oxide residues

Performance Highlights

Copper Processing

- Etch rate: $\leq 1 \text{ \AA}/\text{min}$ @ 25°C (77°F) on blanket copper film
- Post-treatment AFM results: Area Ra/Area RMS decreased 13–14%
- No replating of copper onto Si surfaces
- No increase in fluorine or carbon content on copper surfaces

Tantalum/Tantalum Nitride Processing

- Etch rate: $\leq 0.1 \text{ \AA}/\text{min}$ @ 25°C (77°F) for 15 minutes

Low- κ Dielectrics Processing

- HSQ (FOX): less than $1 \text{ \AA}/\text{min}$ @ 25°C (77°F)
- Black Diamond™, Coral™, HOSP: zero thickness loss after 15 min @ 30°C (86°F); greater than 95% Si-H retention
- FSG: 100% Si-F retention after 15 min @ 35°C (95°F)

Material Compatibility

MATERIAL COMPATIBILITY @ 30°C (86°F)

Material	Result
BUNA-N rubber	Not tested
EPR o-rings	*
FEP	Not tested
HDPE	Not tested
Hypalon®	Not tested
Kalrez®	Compatible
Neoprene	*
Nylon	Not tested
PFA	Compatible
Polycarbonate	Compatible
Polyethylene	Compatible
Polypropylene	Compatible
Polyurethane	*
PTFE	Compatible
PVC (grey)	Compatible
PVC (white)	Compatible
PVDF	Compatible
Pyrex®	Compatible
Quartz	Compatible
Stainless steel, 304	Compatible
Stainless steel, 316	Compatible
Viton® o-rings	Compatible

*Color change and/or slight weight change (less than 0.5%)

For More Information

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