Entegris

ST-200 SERIES SOLUTIONS

Plasma residue remover

Overview

The Entegris series of ST-200 Solutions has been formulated to remove heavily oxidized plasma etch residues from small geometry devices. The products contain no SARA-reportable components such as ethylene glycol ether based solvents, N-Methylpyrrolidone, or highly reactive materials such as hydroxylamine.

Benefits

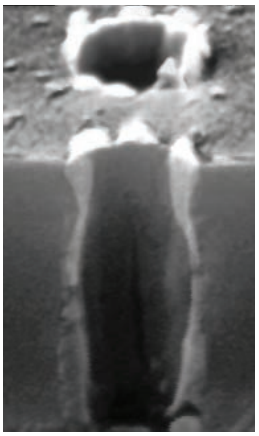
- Strip heavily oxidized plasma deposited residues
- Especially effective for high density residues in sub-0.5 micron vias
- Reduce mobile ion concentrations in oxide surface layers
- Formulated to operate at near-ambient bath temperatures
- Non-corrosive to metals, adhesion layer materials, and low-k dielectrics
- Contain no SARA-reportable materials, hydroxylamines, or catechol
- Require only DI water for post-strip rinse in most applications

Usage

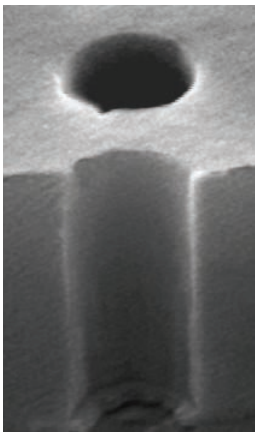
ST-200 Solutions are formulated as ready-to-use solutions. They are recommended for use on post-ash plasma residues in one-bath hood systems as well as in automatic strip equipment.

Process

The ST-200 series is intended for removal of post-plasma etch residues from via and metal wafers which have been subjected to full oxygen ashing. For removal of unashed or partially ashed residues, consult Entegris' engineering staff.



TEOS oxide/TiN/AlCu via (0.35 µm) after in-situ O_2 ashing.



TEOS oxide/TiN/AlCu via after in-situ O_2 ashing and processing with Entegris' ST-200 for 45 minutes at 35°C (95°F), DI water rinse, and nitrogen dry.

Set-up for Immersion Processing

1. Heat the ST-200 product to 21.5°C–35°C (70.7°F–95°F).
2. Immerse dry wafers into the ST-200 solution for 10–45 minutes.
3. Transfer wafers to an empty DI water dump rinser. Cascade or spray wafers with DI water for 15–20 minutes.
4. Spin dry wafers.

Corrosion Data

Substrate	Etch Rate Of ST-200 Product at 30°C (86°F)
Al (100%):	2.1 Å/min
AlCu (0.5%):	2.1 Å/min
Copper (100%):	0.2 Å/min
Silicon nitride:	0.3 Å/min
Thermal oxide:	0.03 Å/min
TiN:	0.85 Å/min
Titanium:	0.1 Å/min
Titanium silicide:	<0.1 Å/min
TiW:	0.64 Å/min
W:	0.05 Å/min

Post-Strip Rinsing

In most applications, wafers may be rinsed directly in DI water after stripping with any of the ST-200 products. If an intermediate solvent rinse is required, Entegris' specially-formulated PSR 200 Post Stripper Rinse is recommended. IPA (isopropyl alcohol), acetone, NMP, butyl carbitol, and butyrolactone are not suitable because of immiscibility and/or particulate formation with ST-200 series products.

Bath Life

ST-200 solutions will clean a minimum of 1,200 8-inch post ashed wafers utilizing an immersion process. Typical bath life is 24 hours. However, actual bath life and wafer capacity is dependent upon process temperature and configuration.

Quality Control

ST-200 solutions are manufactured utilizing strict quality controls to maintain Entegris' high standards and to ensure batch-to-batch consistency.

Storage and Handling

Each ST-200 product has a shelf life of 12 months from date of manufacture if stored in its original, unopened container at 15°C–32°C (60°F–90°F), out of direct sunlight. Refer to Entegris' Material Safety Data Sheet for additional precautions on storage and handling.

Product Appearance

The color of ST-200 products may vary from nearly water-white to pale yellow to orange-brown. Colors normally vary from batch to batch and may darken over time due to extremely minor amounts of highly colored oxidation by-products. These color differences and/or changes have no effect on functional performance of the products.

Equipment Compatibility

ST-200 products will attack some plastic materials used in piping and other process equipment. The chart below should serve as a guide for selecting materials compatible with their use. For information on materials not listed, contact Entegris' technical staff.

MATERIAL COMPATIBILITY

	@ 25°C (77°F)	@ 35°C (95°F)
BUNA-N rubber:	I	I
EPR o-rings:	M	M
FEP:	C	C
HDPE:	C	C
Hypalon®:	I	I
Kalrez®:	C	C
Neoprene:	I	I
Nylon:	C	C
PFA:	C	C
Polycarbonate:	I	I
Polypropylene:	C	C
Polyurethane:	I	I
PTFE:	C	C
PVC (grey):	M	M
PVC (white):	C	M
PVDF:	C	C
Pyrex®:	I	I
Quartz:	I	I
Stainless steel, 304:	NT	NT
Stainless steel, 316:	C	C
Viton® o-rings:	M	I

C = Compatible I = Incompatible NT = Not Tested
M = Color change and/or slight weight change (<0.5%)

Disposal

All waste materials must be disposed of in accordance with local, state, and federal regulations. Refer to Entegris' material safety data sheet for additional data. Do not mix ST-200 series products with acid waste.

For More Information

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit *www.entegris.com* and select the Customer Service link for the center nearest you.

Terms and Conditions of Sale

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