

Freckle Etch

- FUJIFILM Freckle Etch is a specialty etchant formulated to remove residual silicon nodules left after etching aluminum-silicon and aluminum-silicon-copper films.
- Silicon is not soluble in aluminum etchants and tends to precipitate as amorphous silicon nodules or "freckles". These nodules occur at nucleation sites on both SiO₂ field oxides and adjacent to aluminum lines.
- Freckle Etch has minimal effect on poly and monocrystalline silicon, SiO₂, and aluminum films at room temperature, which allows for processing without photoresist.
- Freckle Etch is suitable for other substrates including titanium oxide and molybdenum oxide and silicides.
- Traditionally tungsten and titanium tungsten oxides are process sensitive and require heated etch steps with restricted process latitude.
- Freckle Etch is very effective on tungsten oxide substrates. A typical etch rate is 100Å/sec at ambient temperature.
- Following an Al/Si or Al/Si/Cu etch and a photoresist removal process, the typical Freckle Etch process is as follows:
 - Immerse in the etch bath at 21° - 25°C.
 - Etch for 3 - 5 minutes
 - Remove and rinse
- Elevated temperatures may adversely affect selectivity on Al, Si, and SiO₂ films.
- The etch bath materials of construction may be polypropylene, polyethylene, Teflon® or other fluorocarbon containers.

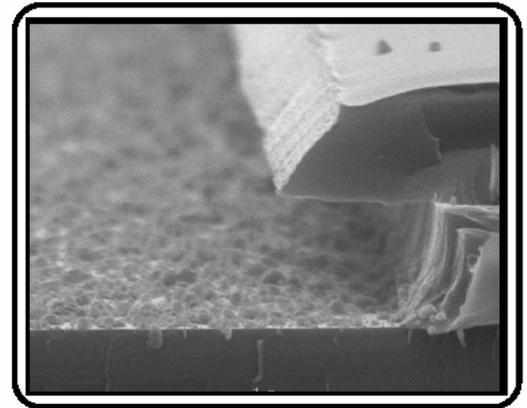


Fig. 1 PRE FRECKLE ETCH
SEM Photograph X20K
Etched layer - Al/Si/Cu

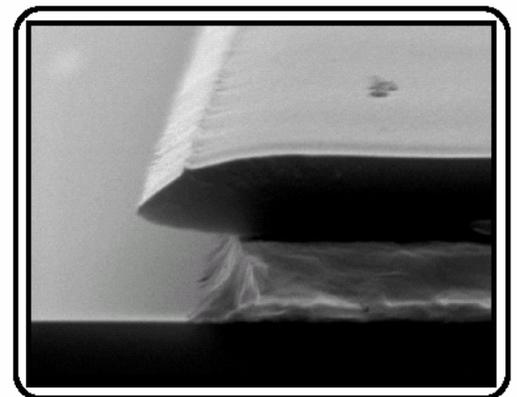


Fig. 2 POST FRECKLE ETCH
SEM Photograph X15K
Etched layer - Al/Si/Cu