



ADVANCED CHEMICAL SOLUTIONS LLC

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LATTICE ETCH™ FACT SHEET

Lattice Etch is a non-aqueous hydrofluoric acid based solution. Its chemical properties allow for a very even dissolution of quartz with minimal to no opening up of etch channels. The wet-ability of Lattice Etch is far superior to that of any of the typical HF based chemistries such as Buffered Oxide Etch or ABF (Ammonium Bi-Fluoride) with or without surfactants.

Temperature

Since Lattice Etch is best used at room temperature, the etching process does not induce any “twinning” of the quartz due to thermal-shock unlike the hot caustic etch processes or heated ABF.

It is strongly recommended that the etch bath be circulated (optimally through a filter) in order to prevent localized heating and to ensure a consistent etch rate throughout the bath.

Etch Rate

The initial etch rate of Lattice Etch is about 0.058 mils/hr (24.5 nm/min). The etch rate reduces as the HF is depleted from the solution during the etching or chemical polishing process. The volume of etch baths should be sized such that the etch-rate reduction is not significant to the users’ process parameters. Advanced Chemical Solutions can assist in making a calculation for the minimum volume required for an etch bath.

The etch rate is primarily determined by the concentration of HF and the temperature of the solution. The mechanism for the dissolution is an activation process as opposed to a diffusion process and therefore the movement of quartz in the etch solution is not necessary and will have no direct effect on the etch rate.

Chemical Compatibility

Metals – Lattice Etch is not compatible with most metals and will form various fluorides when coming into contact with metals. Some exceptions are gold and platinum where the reaction is typically insignificant.

Plastics – PTFE, PFE, PFA, PVDF (natural), Polyethylene, Polypropylene (natural) are recommended and are listed in order of least reaction. No “glass-filled” plastics should ever be used. Plastics should be virgin or natural and as pure a grade as possible; as the Lattice Etch can react with color pigments, additives and impurities.

Elastomers – Viton is recommended though seals made from PTFE or PVDF would be preferred whenever possible.

Life Expectancy

To date neither ACS nor previous manufacturers of Lattice Etch have been able to determine an expiration date for a sealed bottle of Lattice Etch. Baths may be a different matter, and would have a lot to do with two primary variables, the relative humidity of the environment around the bath and the amount of time the bath was open to the ambient air. It is recommended that the baths be covered at all times and that they only be opened for periods of time needed to insert or remove fixtures. This significantly increases the life of an etch bath. Some baths have lasted many years without a complete replacement.

Neutralization

Lattice Etch is best neutralized with Sodium Carbonate, Calcium Carbonate or dilute Sodium Hydroxide.

For any additional information please contact us at info@adv-chem.com