

# Elevate® Ni 5950

## Boric Acid Free Nickel Plating



## Exceptionally Stable and Versatile, Sulfamate Plating

The semiconductor industry utilizes nickel as a barrier layer and a hard mask. Nickel is crucial for metal stacks that include copper-like Cu/Ni/Au, Cu/Ni/Sn to prevent the migration of copper into the rest of the stack, and thereby contaminating the deposits. For hard-to etch substrates like SiC and LiNbO<sub>3</sub>, nickel is used as a hard mask, because of its high selectivity.

Traditional nickel plating solutions utilize boric acid as a buffering agent. New regulations and guidelines identify boric acid as problem in two essential areas:

**Toxicity:** Boric acid is classified as a toxin for reproduction (May impair fertility or cause harm to an unborn child.)

**Low Water Solubility:** Boric acid concentration in a nickel solution is typically 40 g/l. Because of boric acid's low solubility in water, an effective liquid replenisher can be challenging. Additions have to be made by dissolving boric acid powder in heated water before adding it to the tank. This method has caused incomplete dissolution of the boric acid resulting in redeposit on the wafers.

Technic Elevate® Ni 5950 eliminates both of these problems by being boric acid free and by being comprised of all liquid components, thereby eliminating any solubility issues.

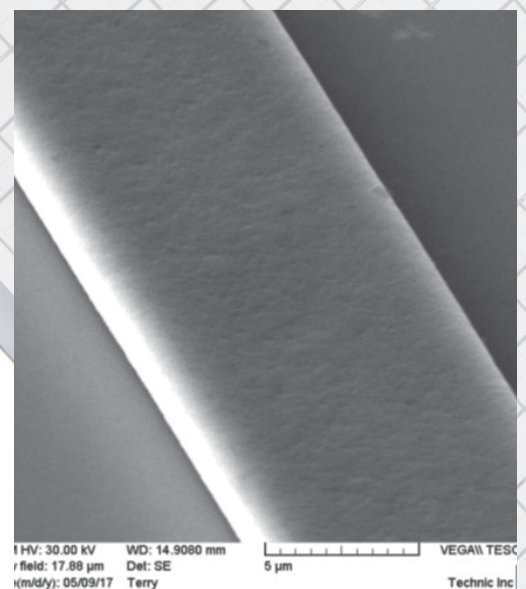
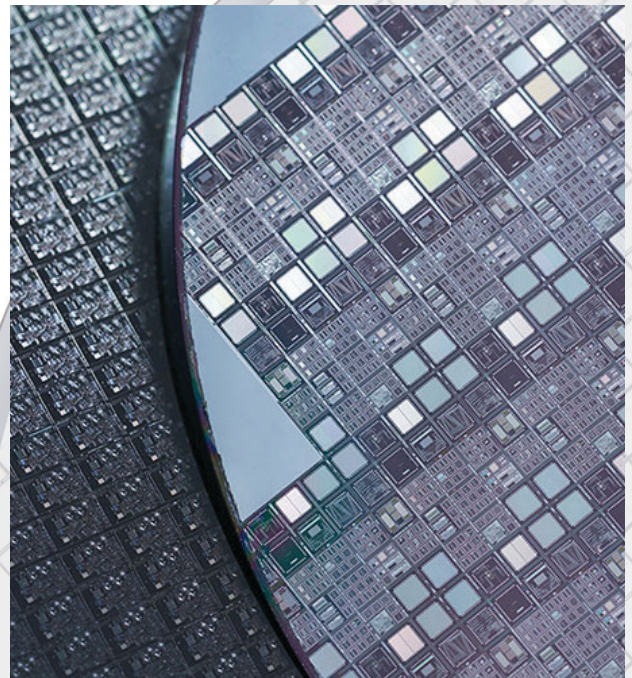
Elevate® Ni 5950 produces nickel deposits equal to or better than deposits utilizing boric acid.

### Features

- Boric acid free
- All liquid components
- Very stable electrolyte
- Improved coplanarity compared to typical nickel solution
- Low-stress semi-bright deposit
- Optimum deposit up to 10 ASD
- Versatile - can be used in all types of applications requiring nickel

### Benefits

- Safer for production environment for operators
- Easy implementation/replenishment of the buffer component.
- Cost effective - eliminates downtime associated dissolving boric acid in the working bath
- Can be used in a standard plating tool without any modifications

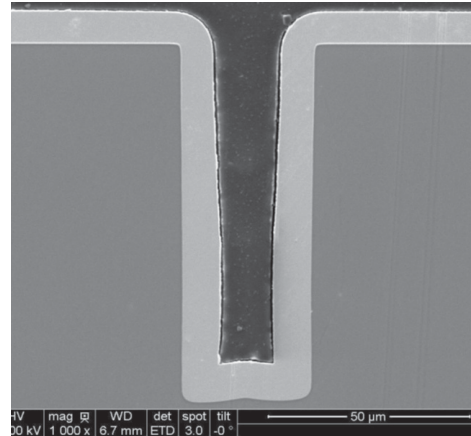


10 micron line with 2 microns of Elevate® Ni 5950 Ra of 7 nm

# Elevate<sup>®</sup> Ni 5950 - Boric Acid Free Nickel Plating

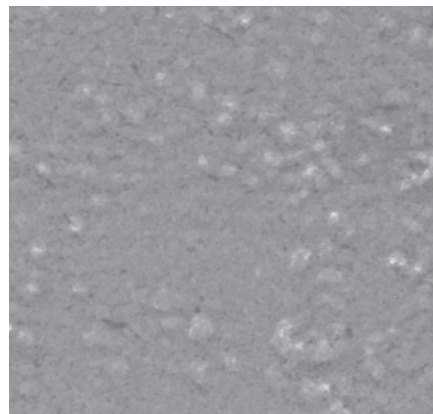
## Hard Mask

Because of its dense coverage, good adhesion, and excellent selectivity Elevate<sup>®</sup> Ni 5950 can be used successfully as a hard mask for hard to etch substrates like SiC and LiNbO<sub>3</sub>

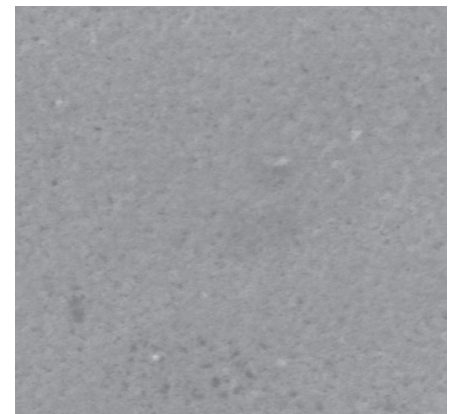


## Grain Structure

The grain structure of Elevate<sup>®</sup> Ni 5950 is smoother and more consistent than a standard nickel plating solution.



Standard Nickel Plating Solution



Elevate<sup>®</sup> Ni 5950

## Versatile Plating

Elevate Ni 5950 can produce good results on a variety of feature types.

