



Don Baudrand, Don Baudrand Consulting, e-mail: donwb@tscnet.com

Maintaining and Replenishing Electroless Nickel Solutions

Most electroplating solutions maintain metal by dissolving anodes. There are a few exceptions. Electroless nickel requires additions of many chemicals to keep it in correct balance and nickel metal in the correct range. Electroless nickel plating solutions require frequent, or better still, continuous additions of all the critical components. Nickel and sodium hypophosphite are continuously consumed, and the pH changes unless additions are made. If additions are not made, the pH changes, the amount of critical materials are lowered altering the plating rate.

Automatic controllers can help maintain a more constant plating rate, by keeping pH, nickel, hypophosphite and other critical components at their optimum concentration. By keeping the deposit rate constant, more precise thickness control is achieved, reducing waste and preventing under or over thickness of deposits. It also is the most economical way to operate. In my experience, automatic controllers pay for themselves.

Good temperature control is equally important. Plating deposit rate rides up or down with higher or lower temperature. A constant temperature is essential to maintain good quality of deposit. Bath temperature above 190F () causes instability of the solution resulting in extraneous deposit of plate out. Temperatures below 180F () cause slow deposition rate. Too slow to be practical and the quality of the deposit may be compromised. The phosphorus content of the EN deposit controls many properties, such as Hardness, corrosion protection, electrical conductivity.

The bonus of using an accurate controller is a lower cost, better, and quality plating. It also helps record needed information for proving that quality standards are met. Controllers will benefit both small and large plating shops.

Good quality is essential is required for good quality results. Deionized is preferred. Deionizers need attention to be sure of good quality water for use in electroless nickel solutions. One of the things often over looked in the deionizing system is lack of protection from algae, microbes, and other organic components of typical city water supplies. A carbon filter is required before the water enters the ion exchange beds to prevent deleterious organic contamination. Sterilizing of the DI system is often required. By using a carbon filter prior the resin beds keeps them free of organic contamination and prevents contaminants from entering your electroless nickel plating solution. Algae growing on the resin beds allow growth in the piping system to the EN solution. Look at your rinse tanks that receive DI water. If there is a green rim at the water surface you have algae in the water system. Pitting in the En deposit is one of the many problems due to contaminated water from the deionizer system. Happy electroless nickel plating is possible using the right care of your plating solutions, and pre plating processes and rinse water.

You may download this article FREE in .pdf form, save it or share it with a colleague. [Click here.](#)

