



## ELECTROLESS NICKEL '91 CONFERENCE

### "Electroless Nickel Utilization of Food Processing Equipment"

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## INTRODUCTION

In the food processing industries, the most common material chosen for food processing equipment has historically been stainless steel, principally due to its good corrosion resistance. Stainless steel as a material of construction, however, is not without its problems and is not always the best choice in all applications. For example, it has a tendency to gall under certain conditions and machinability and/or weldability can often be difficult and add additional fabrication costs. Recently, the rising cost of stainless steel, (along with reduced availability), have focused industry attention on alternatives such as lower grade stainless steels, carbon steels, and aluminum alloys.

Typically, these alternative materials need to be coated for additional corrosion resistance and wear protection from the wide variety of food corrodents and cleaning materials found in the various food processing industries. Electroless nickel coatings, (alloys of nickel and phosphorus), are one material that has been increasingly used on a wide variety of food processing equipment to provide better corrosion resistance, wear protection and cleanability similar to the performance of more expensive stainless steel. This paper will present a discussion on electroless nickel coating technology specific to food processing equipment, including new corrosion data.

High phosphorous electroless nickel (EN) coatings are alloys of nickel (88-90 wgt%) and phosphorous (10-12 wgt. %) which characteristically have an amorphous (glass-like) structure and can be applied to a wide range of substrates including steel, stainless steel, aluminum, copper alloys, titanium, powdered metals and more. The phosphorus content of EN

