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# Determination of Phosphite in Electroless Nickel Plating Bath

Electroless nickel plating relies on a reducing agent, such as sodium hypophosphite, to deposit nickel phosphorous on the surface of an item. Over time, the hypophosphite in the bath will oxidize to phosphite. Ion chromatography (IC) can easily determine the concentration of hypophosphite and phosphite in an electroless nickel plating bath. Two publications support the IonPac® AS17 column as an ideal choice for determining these ions.<sup>1,2</sup> The IonPac AS17 column uses hydroxide eluents and, therefore, can be paired with a Reagent-Free™ IC (RFIC™) system to eliminate eluent preparation and the error associated with eluent preparation for maximum simplicity, reproducibility, and accuracy. Figure 1 shows the determination of phosphite in an electroless nickel plating bath using an IonPac AS17 column and a RFIC system. Although determination of hypophosphite was not an objective for this analysis, it is possible that the peak at approximately 2.2 min is hypophosphite. However, it is more likely a combination of hypophosphite, fluoride, and other early eluting anions. If determination of hypophosphite is needed, weaker eluent conditions (as those reported in references 1 and 2) can be used.

## CONDITIONS:

System: ICS-2100 or any other Dionex RFIC system.

See Figure 1 for chromatography conditions.

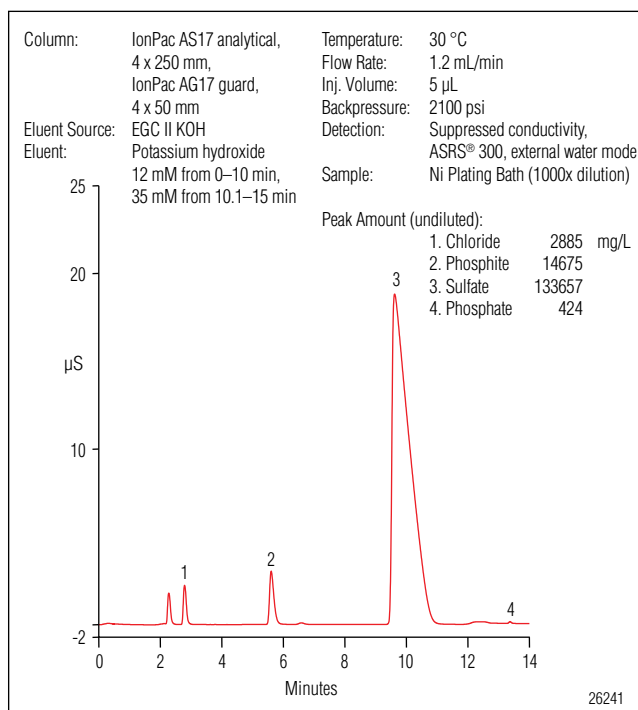


Figure 1. Determination of phosphite in an electroless nickel plating bath.

## REFERENCES:

1. McDowell, M.M.; Ivey, M. M.; Lee, M. E.; Firpo, V.V.V.D.; Salmassi, T. M.; Khachikian, C. S.; Foster, K. L. *J. Chromatogr., A* **2004**, *1039*, 105–111.
2. Ivey, M. M.; and Foster, K. L. *J. Chromatogr., A* **2005**, *1098*, 95–103.

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