

Measurement of Inorganic Contaminant Extraction from Fluid Handling Components by Dynamic Extraction

Donald C. Grant, CT Associates, Inc.
Travis Lemke, FSI International
Greg Duepner and Donna Wilkes, Ashland Chemical
Norm Powell, Motorola

Abstract

This paper addresses extraction of inorganic contamination from fluid handling components into semiconductor process chemicals. It presents a novel method, dynamic extraction, which measures the rate at which inorganic contaminants are extracted from components as a function of time. The method overcomes many of the shortcomings of conventional techniques. It allows prediction of the amount of contamination added to chemical in a process tool with time. Examples of its use to measure extraction from all-Teflon 0.05 μm microporous membrane filters in 49% HF are included. Extraction from five different types of filters was measured. Each filter was tested for two to eight weeks with multiple samples taken during the course of the extraction for metal analysis. Filters of the same type had similar extraction rates and similar contaminant "fingerprints." There were large differences between filter types. Use of an inappropriate o-ring on a filter cartridge was identified. The decrease in the rate of extraction from the filters was similar to theoretical predictions.