

## MISCELLANEOUS TOPICS

**4.3 DETECTION OF PORES IN PLATED SURFACES.** The substantial use of noble metal that are applied by plating techniques coupled with their tendency to be porous, makes it necessary to be able to detect pores in plated surfaces. The detection is invaluable for both trouble shooting of malfunctioning contacts and in-process quality control.

**4.3.1 Rhodium on Nickel.** Nickel atoms can migrate through porous layers of rhodium and form a hard, non-conductive oxide layer on the surface. A simple test which will yield a record of the nickel on the surface is as follows:

1. Apply one or two drops of 50%  $\text{HNO}_3$  to a strip of filter paper. Just enough acid to thoroughly dampen the area of the filter paper to be used is desirable.
2. Place the acid-dampened filter paper over the area to be tested. Immediately place three or four layers of dry paper towels over the strip and apply finger pressure for about 1/2 minute, using glass or polyester wrap to protect fingers from the acid.
3. Remove the test strip and expose it to ammonium hydroxide vapors until completely neutralized or ammoniacal (an ammonia odor on the strip is a verification), taking care that only vapors strike the paper.
4. Apply one or two drops of 5% dimethylglyoxime in alcohol to the test strip. A red or pink discoloration of the paper reveals the areas that have nickel at the surface.

**4.3.2 Gold Plated Surfaces.** At this writing ASTM Committee B-4 has drafted methods for detecting and counting pores in gold plating. These method will most likely be published soon in the ASTM Book of Standards, to which the reader is referred.