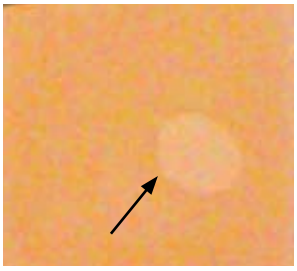
Integrated
Surface
Technologies

Repellix™ Cupric Acid Immersion Test

Corrosion of copper circuitry has plagued the electronics industry for decades. There are several vectors of water induced corrosion: airborne water vapor (humidity), raindrops or splashing, and immersion. Thin chemical coatings exist that prevent airborne moisture from attaching to copper and initiating corrosion and dendrite formation, but these coatings are extremely fragile, even washing off by water droplet contact. An example of this is seen in the picture on the left, where a simple drop of water has perforated the thin coating and left a large area unprotected. Repellix™ from IST™ is a novel superhydrophic coating that provides an effective guard against the entire spectrum of corrosion agents. It repels macro sources of corrosion through its superb anti-wetting characteristic, and can also provide a barrier to molecular vapors with its corrosion inhibitor function.



Test Description

Copper Chip Partially Immersed in Cupric Acid

Test Results

A: Uncoated Copper
Failed

C: Repellix Coating
No Corrosion

B: Corrosion Inhibitor Coating
Failed

D: Repellix with Corrosion Inhibitor
No Corrosion

A molar solution of cupric acid was prepared at IST, into which four copper test chips were immersed for one minute to test for corrosion resistance. This test showed that a corrosion inhibitor coating by itself (B) would perform no better than an uncoated copper element (A). Both samples were rapidly destroyed by the acid solution. In contrast, the Repellix-coated samples (C, D) were not noticeably attacked. Contact was prevented between the copper and the acid. Also apparent was the possibility of combining a vapor corrosion inhibitor with Repellix without impairing its repellency.