ECIA Launches New Component Test Standard for Resistance to Atmospheric Sulfur

There are many environments that contain significant amounts of sulfur in the atmosphere. These include automotive interiors and engine compartments, volcanic and hot springs areas, the pulp and paper industries, oil refineries and many others. When atmospheric sulfur comes into contact with silver, a compound of silver sulfide is formed which gradually replaces the silver. Unlike silver, silver sulfide is not electrically conductive. This is a problem for electronic components such as chip resistors that incorporate silver as a conductor. Sulfur corrodes the inner silver termination on chip resistors, causing the resistance to rise in value and eventually to open electrically.

Component producers developed several means to combat this effect using modified designs, processes and materials, however, there was no industry standard test to verify that a particular component design and materials resists the effects of atmospheric sulfur. Several major component users who had experienced failures devised their own tests based partly on sections of ASTM-B 809, "Standard Test Method for Porosity in Metallic Coatings by Humid Sulfur Vapor ('Flowers-of-Sulfur')", but the ASTM standard was not meant to be applied to electronic components and did not provide a complete and appropriate component test method. No documented test method was available that was suitable and standard across the industry. This meant that individual producers could test their products to different and possibly less stringent parameters, yet claim that their products are "anti-sulfur" without necessarily meeting the requirements of some of the more stringent environments those components may be exposed to.

For this reason, the P-1 (Resistor) sub-committee of the ECIA Standards Council assumed the task of creating a new test standard. The result is ANSI/EIA-977-2016, "Test Method – Passive Electronic Components Exposure to Atmospheric Sulfur." This standard provides two sets of parameters or methods for testing with, for instance, different exposure temperatures and durations. This allows the component user and the producer to agree on the method appropriate to the application and allows the producer to advertise the component as complying with that method of the industry standard. The two test options written into the standard are based on the two most commonly adopted methods that had become de facto standards. For this reason, it is anticipated that this new standard will be widely adopted and allow both users and producers to know with greater certainty that their products will survive their intended uses.

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