Select Conformal Coat Formulation for PCB Environment

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Temperature and Humidity on Selective Conformal Coating

It is well known that selective conformal coating on printed circuit board (PCB) assemblies provides unparallel protection for PCB's. Nevertheless, concentrated conditions of humidity, water, and high temperatures can have negative effects on the conformal coating itself causing it to fail and become inapt for its intended purpose.

Taking this into consideration, it is prudent to choose the right type of conformal coating that best suits the application and environmental conditions under which an assembly is likely to undergo in use. The proper conformal coating will significantly reduce the likelihood of failure/rejection, saving both valuable time and money for any manufacturing process.

Selecting Conformal Coating for High Humidity and Temperature

Acrylic based conformal coatings make up the vast majority of coatings used in the global marketplace. Most quality acrylic conformal coatings will be able to withstand humid conditions. However, the characteristics of polyurethane and silicone based products will hold up better under conditions were humidity is a constant environmental factor. Both polyurethane and silicone possess hydrophobic (water repelling) traits which makes it difficult for moisture to collect and penetrate into these types of selective conformal coatings. In environments where humidity is a constant factor, the angle or position of where a PCB will be used is also worth considering. It is important to note that a horizontally positioned PCB will collect and pool water making it easier for moisture to penetrate a coating on its surface. Moisture on a more vertically positioned PCB will simply run off making it harder for this to occur.

For high temperature applications, both acrylic and silicone based conformal coatings are well suited to endure high temperatures. Silicone does have a clear advantage, it has a natural ability to withstand heat over an extended period of time. Epoxy and polyurethane are not recommended for environments high or extremely low in temperature, they do not hold up well under these conditions over prolonged periods of time.

For more information about Selective Conformal Coating workcells visit ETSMax.com