STABILANT 22

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APPLICATION NOTE

Contact Problems from Solder-flux and others Resinous Deposits

What problems can be caused by solder flux residue?

The removal of solder flux from printed circuit boards is essentially one of washing the board with either an organic solvent or water based cleaning solution. With the increasing limitations on organic solvent systems that are imposed by environmental considerations, water-based systems are starting to dominate flux removal processes. Whichever process is used, it generally involves a process of dissolving/dilution/ flushing, where the flux is dissolved and dispersed within the flushing solvent through the action of one or more surfactants (surface-active agents).

But so long as electrical connections are made with more than one part, there will be minute gaps between these constituent parts, or even between the component and the circuit board. These gaps often form traps for some of the flux-bearing cleaning agent, resulting in small residues of flux being left in place when the solvent evaporates.

It is not uncommon to find connectors and/or switches where these minute flux residues are either are waiting to migrate (the moment a vehicle for their movement is introduced) or have migrated onto the contact surfaces. The problem caused by this condition can be identified where the initial Stabilant treatment does not solve the problem, and the treatment must be repeated to get the contact to operate reliably.

The mechanism is clear where a treatment involves minimizing the amount of solvent; it may simply soften and mobilize some of the residual flux, redepositing it on the surface of the contact. Thus, some contact faults can be prevented by a thorough cleaning using an aggressive solvent or solvent/surfactant involving the massive dilution of any flux residues. Again, some solvents are environmentally unacceptable.

A similar mechanism can exist with airborne contaminants such as wood resins, or even the tar from cigarette smoke. The condition can be aggravated by the placement of the connectors in the path of the airflow used to cool the electronic equipment.

In addition, certain types of closed-back push-button switches have developed a bad reputation based on their "inhalation" of contaminants because of the air-pumping action that occurs with repeated press/release cycles.

Can the use of Stabilants solve these problems?

Yes. Once it is recognized that a contaminant-migration condition exists there are three alternatives that can be used.

The first (and easiest) involves use of Stabilant 22A, substantially more than would normally be required to flush the contamination from the contact area. This is limited, as it is wasteful in those cases where the flushing action is not needed. Furthermore, there are some resinous deposits which are very slow to dissolve.

The second alternative requires a repetition of the Stabilant treatment some hours or days later. The initial treatment with Stabilants will soften and lift or disperse contaminants which would not be removed except by the use of aggressive solvents or cleaners. The additional Stabilant 22A treatment will normally carry this softened residue away, resulting in reliable operation of the contacts as well as protection from further occurrence or airborne-contaminant-based problems.

The third alternative begins with a thorough pre-cleaning of the connector with an aggressive solvent to remove all traces of the flux or resinous contaminant. The use of Stabilant 22 will then provide long-term protection against contaminants as well as the other conditions which cause connector malfunction.

These connector failure modes are, fortunately, rather uncommon. Detailed record keeping can help to identify these anomalies; once a consistent pattern of failure is found involving this type of contamination, it is straight-forward to select of one of the alternatives as a preferred contact treatment.

NATO CAGE/Supplier Code 38948

15ml Stabilant 22 (Concentrate), NATO Part # 5999-21-909-9981

15ml Stabilant 22A (Isopropanol Diluted), NATO Part # 5999-21-900-6937

15ml Stabilant 22E (Ethanol Diluted), NATO Part # 5999-21-909-9984

The Stabilants are patented. Because the patents cover contacts treated with the material a Point-of-Sale license is granted with each sale of the material.

SAFETY DATA SHEETS ARE AVAILABLE ON REQUEST

NOTICE