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Number 18

## APPLICATION NOTE

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### Precautions when using Stabilant 22 on Card-edge Connectors

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- *What precautions have to be taken when using Stabilant 22 on card edge connectors?*

When using **Stabilant 22** or **Stabilant 22a** on card-edge connectors some precautions should be used to ensure that the material can work to best advantage. On equipment that has been in use for some time, and which may have had its card-edge connectors cleaned previously using conventional cleaners or by using an eraser, it is important to ensure that the female receptacle in which the card edge is inserted is cleaned out thoroughly. Because of the design of most of these connectors, they have a tendency to accumulate particulate contamination within the connector body itself, especially is used in a dusty environment or in the field.

If **Stabilant 22a** is used on the card edge connector without removing this accumulation of contamination the detergency of the Stabilant will loosen the dirt and it may accumulate, in the case of vertically mounted units, at the bottom of the connector. We have encountered some isolated cases where this has caused erratic operation of the bottom contacts in the card edge row.

We would suggest that under similar circumstances, the female connector be cleaned out using isopropyl alcohol or one of the numerous spray cleaners to be sure that all particulate material is removed.

In rare instances, there may be a small residue of solder-flux which has been trapped between the connector and the circuit-board. This is not a major problem with production equipment unless a connector has been replaced. Once again, the surfactant action of the **Stabilant** could soften this hardened flux and cause it to migrate further into the connector. Usually this will take place within the first week to ten days after the connector has been treated.

If erratic operation is noted on card edge connectors treated with **Stabilant 22** or **Stabilant 22a**, we would suggest removing the card, re-cleaning both the male card-edge component as well as the female receptacle, re-applying the **Stabilant**, and re-inserting the card once again.

If silicones have been used in the past, there is a small probability that they may have cross-linked to form a layer of cured material a few molecules thick on the contact's surface. This may be removed from the card-edge component with vigorous cleaning but in some isolated cases replacement of the female part may be the only way to eliminate the problem.

The greases used in electronics are basically the same as other greases, being composed of a volatile oil mixed with a soap. Sometimes the soap is a metal, hence the term lithium-grease, or sodium-grease. Problems occur when the oil evaporates; the residue, besides being a physical contaminant, can often cause leakage between pins, especially if it is hygroscopic. Once again, it is sometimes difficult to remove in this state, but to ensure connector reliability all traces of it must be cleaned out of the female connector.

Because some of the oil treatments used on connectors employ non-saturated oils, users should be aware, that under the proper conditions, these oils may cross link, leading to a scummy, almost varnished appearance to the contacts. Cross linking agents include sulphur, which is often found in cutting-oils, and in free machining metals. Elastomers (rubber) and thermoset plastic components of the connectors also contain cross-linking promoters and accelerants which can make a non-saturated oil cross-link. This would suggest that the use of rubber erasers can sometimes create a problem when used to clean card-edge connectors.

The "varnishing" problem is sometimes countered through the inclusion of cross-linking inhibiting chemicals in the non-saturated oils. These, however, are usually volatile enough so that within six-to-nine months most of their efficiency has gone.

Service personnel should **never** use the penetrating oils designed for loosening bolts and nuts, to treat connectors. Not only are some of the solvents that are often added to the material a hazard to many elastomers and plastics, but some of the oils themselves may be very-light non-saturated types. If the type of penetrant oil is also suggested for use when threading metal parts, it may be based on a "sour" or high sulphur crude.

**Stabilants** are not subject to the problem of cross-linkage.

NATO Supply Code 38948 - 15 mL of S22a has NATO Part # 5999-21-900-6937

The **Stabilants** are patented in Canada - 1987; US Patent number 4696832. World-wide patents applied for. Because the patents cover contacts treated with the material, a Point-of-sale License is granted with each sale of the material.

**MATERIAL SAFETY DATA SHEETS ARE AVAILABLE ON REQUEST**

#### **NOTICE**

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