

Stabilant 22 Contact Enhancer

A unique liquid semiconductor that eliminates contact and connector problems.

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Connectors and movable contacts are the Achilles Heel of electronic equipment, having reliability far below that of the components they serve. The demands put on connectors are severe: they're expected to provide a zero-resistance path forever, despite contamination, oxidation, temperature, humidity, physical impacts, and of course, plugging and unplugging by the user.

The most obvious problem is the open circuit; the contacts are either physically separated by mechanical failure, or coated with non-conductive corrosion products. A more insidious and frustrating case occurs when the contacts become partially conductive because of a thin oxidation layer. Sometimes they work and sometimes they don't. The trouble can sometimes be cleared by removal and reinsertion of the connector, but this only buys time until the oxide layer reforms. In the worst case, the layer becomes conductive only when the signal voltage is high enough to break it down; some of your signal gets through and some of it doesn't. This adds audible distortion to sound

equipment, unpredictable behaviour to computers, and erroneous readings to test equipment, not to mention a loss of temper to the person trying to track down the fault.

Stabilant 22 is a liquid polymer that becomes conductive in the presence of an electrical field, minimizing contact resistance. It's nonconductive away from the contacts, so you can safely apply it to edge connectors. It's stable and lasts for years, and stops erratic behaviour in audio, medical, computer, military, industrial and test equipment. If it sounds like a magic elixir that's too good to be true, here's how it works and how it was developed.

Serendipity

Many inventions are the result of an accidental discovery while something else was being investigated, and Stabilant 22 is one of these. William "Mike" Wright, of the famed Dayton-Wright speaker firm, was looking for some sort of coating that would conduct the required electric charge in an electrostatic speaker. One promising chemical was a block polymer of the glycol family. During trials, it exhibited

an odd behaviour: its resistance never measured the same value twice, and would even change as you measured it.

It turned out that the variables affecting the resistance were the applied electric field and the distance between the probes. Mike Wright realized that this had great potential in curing the woes of connectors and contacts, and after much research time and investment, the result was Stabilant 22. D.W. Electrochemicals was formed to package and sell the new creation.

How It Works

The polymer, which is dissolved in isopropyl alcohol, is applied to connector pins, card edge contacts, etc. The liquid causes no trouble if it bridges across pins or card fingers because it's normally non-conductive. However, when metallic contact is made and current flows, the Stabilant 22 in the microscopic gaps will switch on in the area of the contact, reducing the resistance. It remains conductive for some time, so its resistance value doesn't follow the signal variations. Since the liquid is very stable and has low vapour

pressure, there is no appreciable loss due to evaporation. It doesn't form compounds with other plastics or cause "varnishing".

Applications

Stabilant 22 is now being used by NATO, hospitals, audio console manufacturers, video switcher users and others who require very high reliability. It is also sold to audio and computer enthusiasts in the US as *Tweek*.

If corroded contacts in an audio system are causing low-level rectification of the audio signal, then audible distortion is created in much the same manner as crossover distortion in Class B power amplifiers, though at a much lower level. Stabilant 22 eliminates this effect, even when the voltage is at the microvolt level (as it would be with some phono cartridges).

Computers, with their many edge connectors and IC sockets, are a natural for conductivity problems, and the worst of them would be the intermittent types that crash a program at unpredictable times. Stabilant 22 on the edge fingers and

sockets is said to greatly improve operational reliability.

I tried Stabilant 22 on two problems that had plagued me. The first was a noisy 1/4" phone jack in an electric guitar, and the second was a hum from my phono cartridge because the ground pin in the cartridge shell kept going high-resistance. A tiny amount of Stabilant applied with a toothpick cured both problems, and despite plugging and unplugging the guitar, it's remained noise-free for three months now.

There are two cases where Stabilant is not recommended: contacts which may arc, which would cause loss of the Stabilant, and contact groups where the voltage exceeds 100 volts.

Stabilant 22 is not inexpensive, with the 15ml service kit retailing for \$51.20, but a little goes a very long way (not to mention the saving in time and temper). There's the added benefit that the alcohol (which is only a carrier) will provide a certain amount of cleaning effect, and the Stabilant itself also acts as a lubricant. For further information, contact D.W.

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