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**Number 37**

## **APPLICATION NOTE**

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### **Use of Stabilant 22/22A vs. Environmentally Unsafe Solvents**

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#### **Introducing Stabilant 22**

Stabilant 22 is an initially non-conductive block polymer that when used in a thin film within contacts switches to a conductive state under the effect of the electrical field. The field gradient at which this occurs is set such that the material will remain non-conductive between adjacent contacts in a multiple pin connector environment.

*Thus, Stabilant 22 provides the connection reliability of a soldered joint without bonding the contacting surfaces together!*

Contacts are generally the weakest link in any piece of electrical/electronic equipment whether it be in low current devices found in computers or higher current circuits found in automotive and aviation applications, to name only a few. The use of Stabilant 22 or its isopropanol diluted form, Stabilant 22A, will make contacts up to 100 times more reliable, eliminating costly service call-backs and ensuring customer satisfaction.

Stabilant products (Stabilant 22 / 22A / 22E) are used on contacts to provide a resident, long-life, contact enhancement treatment which does not involve the use of any CFCs. or any other ozone-depleting solvents.

Because Stabilant 22 is environmentally safe, and serves as a one-application, resident treatment, a small amount can replace many times the volume of cleaning solvents with a consequent major improvement in the environmental burden of manufacturing and service.

Stabilant 22 itself, being non-volatile, is not an ODC (Ozone Depleting Chemical) , nor are any ODCs (such as CFCs, and to a lesser degree, HCFCs) used in the manufacture of Stabilant products. We do not supply Stabilant products diluted by or propelled using any CFCs or HCFC's - they are not available in pressurized spray cans.

Having a very low vapor pressure and a resistance to crosslinking effects caused by the presence of curing agents or accelerants in both elastomers and thermoset plastics used in electronics, Stabilant-treated contacts often last longer than the design life of the electronic equipment on which they are used.

## **How safe are Stabilant products?**

The concentrate, Stabilant 22, has extremely low toxicity. The isopropanol diluted form, Stabilant 22A and the ethanol diluted form, 22E have, very low toxicity - mostly due to the choice of alcohol.

In the quantities used in electronics manufacture and/or service in a space having normal ventilation, it is doubtful that the concentration of isopropanol could reach even a minor irritant level - unless very large quantities of the material were spilled. As Stabilant 22A is usually applied from a 15 or 50 mL dropper bottle, the amount of isopropyl alcohol available for vaporization is so small as to be a non-hazard.

## **What other desirable attributes does Stabilant 22 possess?**

Stabilant 22 has excellent lubricating properties making it ideal for use in such applications as switches, potentiometers, slip rings, and tunable microwave cavities.

When applied, a Stabilant film retains an ability to keep contaminants (including corrosion byproducts) in suspension, away from the metal contact surfaces. This effectively makes small signal electronic connections much less susceptible to thin film rectification effects (which can produce R.F. demodulation in poorly shielded circuits).

Because of its broad temperature tolerance (from -70°C to near +200°C) Stabilant 22 has found wide application in electronic equipment used in severe temperature environments.

## **How long have Stabilant products been in use?**

Stabilant 22 was developed by William Michael Wright at D.W. Electrochemicals Ltd. in 1977. The product went through several years of experimental use before being adopted by the Canadian Armed Forces in 1983 after which NATO reference numbers were issued (see end notes).

It was also introduced into the consumer (non-military) market in 1983, initially licensed for use in the consumer audio market as *Tweek*<sup>™</sup>. After several successful years in the consumer field, Stabilant products were introduced in biomedical electronics and commercial computing applications and are now employed in electronic equipment ranging from air traffic control applications to agricultural machinery – too many industries to list here!

In modern times, Stabilant products are available through D.W. Electrochemicals and our international network of distributors.

[We note here that Stabilant 22A supercedes the older Sumiko audio product, *Tweek*<sup>™</sup>]

## **Is Stabilant 22 cost effective in typical use cases?**

Yes. Customers have told us that a small amount of Stabilant has saved expenses of thousands of dollars. A single application often suffices, with a long lasting reduction of corrosion/wear of electronic contacts. This is more reliable and much less expensive than the practice of repeated disconnection and cleaning – a very significant way the user saves on the use of volatile solvents.

Stabilant products are very simple to use, allowing the bulk of connector-related problems to be cured in the field. This has allowed customers to significantly reduce the service time and the inventory of replacement modules and wiring harness units needed to keep systems functioning.

In numerous instances, Stabilant treatment has enabled the restoration of electronic equipment/systems, which were considered unserviceable, to many additional years of useful life. Finally, the broad range of applications of Stabilant 22/22A has relieved many service organizations of the need to stock multiple varieties of contact treatment chemicals.

NATO CAGE/Supplier Code 38948

5mL Stabilant 22 (Concentrate), NATO Stock Number 5999-20-002-1112

15mL Stabilant 22 (Concentrate), NATO Stock Number 5999-21-909-9981

15mL Stabilant 22A (Isopropanol Diluted), NATO Stock Number 5999-21-900-6937

15mL Stabilant 22E (Ethanol Diluted), NATO Stock Number 5999-21-909-9984

Stabilant products 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**

This data has been supplied for information purposes only. While to our knowledge it is accurate, users should determine the suitability of the material for their application by running their own tests. Neither D.W. Electrochemicals Ltd., their distributors, or their dealers assume any responsibility or liability for damages to equipment and/or consequent damages, howsoever caused, based on the use of this information.

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