

# Stabilant 22 Contact Enhancer Technical Notes

## Tech. Note 2 - General Information

### What is Stabilant 22?

**Stabilant 22** is an *initially non-conductive* amorphous-semiconductive block polymer that when used in thin films within contacts acts under the effect of the electrical field and switches to a *conductive* state. The electric field gradient at which this occurs is established during its manufacture so that the material will remain non-conductive

*Thus, when applied to electromechanical contacts, Stabilant 22 provides the connection reliability of a soldered joint without bonding the contacting surfaces together!*

Its switching speed is too slow to allow it to be used in the more traditional semiconductor applications, however this means that signals of frequencies substantially above five cycles per hour will not be modulated by the switching characteristics of **Stabilant 22**.

Chemically, **Stabilant 22** is a polyoxyethylene-polyoxypropylene block polymer with a molecular weight of about 2800. It has a very low vapor pressure and therefore there is no appreciable loss of material from evaporation. It has been in some applications for more than fifteen years without renewal, and it is probably safe to say that in the majority of cases, the equipment on which it is used will be retired for obsolescence before the **Stabilant** must be renewed.

In its undiluted form at room temperature **Stabilant 22** has the viscosity of medium weight motor oil, although it thins out with increasing temperature, starting to decompose into the two polymers it is formed from about 240° Celsius,

### What is its use?

**Stabilant 22** is used to increase the reliability of contacts. Tenfold to one hundred- fold increases are not unusual. At the present time it is used in many different type of contacts, including card-edge connectors, D-Type connectors, MIL-spec connectors, signal switches etc.

### Are the Stabilants reliable?

**Stabilant 22**, **Stabilant 22A**, and **Stabilant 22E** are used in electronics where equipment failure can cost lives; equipment such as biomedical electronics in hospitals, as well as aircraft navigation and instrument landing systems.

In one test we performed in public at trade shows, we ran a computer mother-board immersed in a clear plexiglas case, partially filled with **Stabilant 22**. This demonstration was quite effective in dispelling doubts about the efficiency of the material in NOT shorting out between adjacent contacts.

Because of **Stabilant's** exceptionally long shelf life, and their proven effectiveness in the prevention of system malfunctions, many more manufacturers are now specifying the use of the material in preventive maintenance programs. They are being used to solve, as well as prevent problems in such diverse fields as pulp-and-paper mills, oil-fields, mining, railway operations, diving, marine-electronics, and air-traffic-control.

Does all of this help to answer your questions?

### In what forms is it available?

The **Stabilants** are packaged in 15 ml, 50 mL, 100 mL, 250 mL and 500 mL containers for both the Concentrate (**Stabilant 22**), isopropanol diluted (**Stabilant 22A**) and ethanol diluted (**Stabilant 22E**) versions.

Because of the 4:1 dilution of the **Stabilant 22A** and **Stabilant 22E**, they will generally cost about 1/4 the amount of the concentrate, although, obviously, it is the concentrate that that remains after the alcohol evaporates which accomplishes the job. The alcohol is just there as a solvent to "carry" the concentrate into place. These versions can be applied to socketed IC's without removing them from the sockets. The concentrate on the other hand is often used as an insertion aid when inserting multiple pin IC's because of its lubricating properties.

In addition, **Stabilant 22A** is available through distributors in a 5 mL size. Many other customers pack **Stabilant 22A** with their own products where it is used on such items as the card-edge connectors.

### Is Stabilant just another contact cleaner?



No, **Stabilant 22** is an *electrically active* material which stays *resident* within a contact-pair, there enhancing conductivity without causing electrical leakage between adjacent contacts. Thus large quantities of the material do not have to be "hosed on" as is the case with cleaners. While **Stabilant 22** does have a detergent action it is not sold as a cleaner, just as it has a good lubricant action but is not sold as a lubricant.

### **Just how much should be used?**

Normally, a film thickness of about 0.5 to 1 mils of the concentrate is more than enough. In other words, you want just enough to fill up the minute gaps within the contacts. Where **Stabilant 22A** or **Stabilant 22E** is used, be sure to allow for the evaporation of the alcohol which forms 4/5th's of the volume.

### **Is the material hazardous?**

No, it has very low external toxicity although ingestion should be avoided. No skin reactions have ever been observed, and the undiluted form **Stabilant 22** is of low flammability. In the United States Stabilants are not subject to the Toxic Substance Control Act (TSCA) nor are they reportable under SARA Title III

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### **D. W. Electrochemicals Ltd. has NSCM - Cage Code / NATO Suppler Code 38948**

- 15 mL of S22A has NATO Part # 5999-21-900-6937
- 15 mL of S22E has NATO Part # 5999-21-909-9984
- 15 mL of S22 has NATO Part # 5999-21-909-9981

The Stabilants are patented. Canada - 1987: & U.S. Patent number 4696832. World-wide patents have been applied for. Because the patents also cover contacts treated with the material, a Point-of-sale License is granted with each purchase of the material.

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

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**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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