

**D.W. ELECTROCHEMICALS LTD.**

97 Newkirk Road North, Unit 3
Richmond Hill, Ontario L4C 3G4
CANADA Phone: (905) 508-7500
Fax: (905) 508-7502

Number 20

APPLICATION NOTE

Use of Stabilant 22 in Automotive Service

- *What is 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, when applied to electromechanical contacts, 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 an electronic ignition module, an automotive computer, power door-locks, or even headlights. The use of **Stabilant 22** or its isopropanol-diluted form, **Stabilant 22a**, will make contacts from 10 to 100 times more reliable, eliminating costly call-backs and ensuring customer satisfaction.

- *Where can it be used on an automobile?*

Electronic Ignition Systems

Both the main power connectors as well as the individual sensor connections can be treated with the **Stabilants**. Often a "sensor malfunction" error message on a diagnostic computer occur because of a faulty connection to the sensor. We're sure that if you service this type of equipment then you've replaced sensors only to have the same error message re-occur. In cases where a heavy grease has been used to try and waterproof the connection this should be removed with kerosene, isopropyl alcohol and/or cleaner before applying the **Stabilant**.

Instrument Clusters

Malfunctioning lights or instruments on/in an instrument cluster are often caused by poor contacts, and this can be cured by the use of the **Stabilants**. Uncoupling the Tab™ type connectors sometimes breaks the wire where it is crimped to the connector, especially in older cars. You can use **Stabilant 22a** to penetrate the connector without having to uncouple it by applying a couple of drops to the coupled-up connector, it will 'wick' into the contacts by itself.

Fuses

While the new blade type fuses are more reliable than the older 3AG/AGC types, the use of the **Stabilants** will reduce the possibility of fuse contact heating which can cause an fuse to blow *below its rated current* on a circuit that is O.K.

Dome Lights and Courtesy Lights

Again its good practice to use **Stabilants** when replacing dome and courtesy lights. Ignition switch lights are often quite difficult to get to, and the time involved in changing a light in an older car often makes it a job where the cost of the work is not appreciated by the customer.

Heater & Air conditioning Controls, Thermostats and Electric motor Switches

Caution should be used when using Stabilants on any switch contacts which switch an inductive load. A good rule of thumb is, if there's enough inductive kick to make the switch spark, don't use the Stabilants as they would break down under the heat of the spark! However it is OK to use the Stabilants in the wiring harness connectors in these circuits.

Electric Rear-view Mirrors

The tab connectors inside the doors are susceptible to contamination from some of the oil/wax rust-preventative sprays. Usually a drop of **Stabilant 22a** per contact is all that's needed to restore reliability.

Solenoid Door & Trunk Locks, and Power Windows

The same problem as above occurs with solenoid-operated lock mechanisms. Some cars rely on the hinge/door latch to provide a ground return for these circuits (which is why on many older cars the power windows only work perfectly when the doors are open and on the "detent") and it may be necessary to run a separate ground wire to restore proper function.

Horn circuits

Nobody likes servicing these because of the possibility of recurring problems. Use **Stabilant 22** to prevent having to do the job all over a second time.

Tail Lights, Parking Lights and Headlights

Although the current through the contacts is usually high enough to burn-off the contamination on contacts in these circuits, there is often a voltage drop that causes the connectors to over-heat. A little salt contamination with this high-heat condition hastens the corrosion process. Use **Stabilant 22** to stop this and increase the lighting level by the elimination of these undesirable voltage drops. Don't forget to treat the external Tab™ connectors on the headlight relays. (Don't use it on the relay contacts if there's any sign of sparking when they open!)

Door Activated Switches

Everyone has run across automobiles where the dome-lights don't function when the doors are opened. **Stabilants** on the switch connectors will usually cure these problems.

Radios, Cassette Decks & Speakers

Its tough when stereo speakers start to go out of balance because often it's not the fault of the radio or power amplifier, but the interconnects or speaker leads. Several hundred thousand dollars of the **Stabilant** concentrate is used each year in the home audio industry just to ensure reliability and reduce distortion.

Battery Terminals and Starter Lugs & Terminals

While it is an unusual application, many automotive electricians prefer to "seat" the battery connections using **Stabilant 22** rather than petroleum jelly or electrical

grease. A much better contact results. They then apply grease over the coupled connections to prevent battery-acid corrosion.

Voltage Regulators and Alternators/Generators

Again, **Stabilant 22** is very useful on these devices contacts. Often alternators with bolt-on voltage regulators suffer because of their close proximity to the exhaust manifold, additional heating due to localized contact problems can lead to erratic regulation or premature failure of the voltage regulator. **Stabilant 22/22a** applied to the lug type and Tab™ connectors can result in better regulation and will help prevent dead or dying batteries due to insufficient charging current from the alternator or generator.

- *Isn't it expensive to use?*

Not when you consider the time it saves! How long does it take you to take off a door panel to get to the contacts inside, or pull an instrument cluster for that matter? Have you timed the removal and replacement of a headlight lately? There are about 900 drops in a 15mL Service kit of **Stabilant 22a** and each drop could save you 5 minutes.

- *In what forms is it available?*

The **Stabilants** are packaged in 15mL, 50mL, 100mL, 250mL and 500ml containers for both the Concentrate (**Stabilant 22**) and Isopropanol-diluted (**Stabilant 22a**) versions. Because of the 4:1 dilution of the latter, it will generally cost about 1/4 the amount of the concentrate, although, obviously, it is the concentrate that does the job. The isopropanol is just there as a solvent to "carry" the concentrate into place, once its there the isopropanol evaporates.

- *What is the difference in usage of the two forms?*

Remember, the isopropanol is only a carrier solvent, in either case about a 1/2 mil thick film of the concentrate on the metal connector is all that's required. Therefore, on open easily accessible contacts a small amount of concentrate applied with a swab is enough. For connected contacts, or faster application you can "flood" the connector with the dilute **Stabilant 22a** and actually use less of the concentrate that it contains.

- *Is it available in a spray can?*

No, for the reason that users found that they were wasting 60% to 70% of the material on overspray. And why mess around with chlorofluorocarbon propellants?

- *Is Stabilant just another contact cleaner?*

No, Stabilant 22 is an electrically active material which enhances conductivity within a contact 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. Stabilant 22 does have a detergent action but 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 1 to 2 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 22** is used, be sure to allow for the evaporation of the isopropanol which forms 4/5th's of the volume.

- *Is the material hazardous?*

No skin reactions have ever been observed. In the undiluted form at room temperature it is non-flammable, however if the temperature of the material is raised above 200°C the resulting decomposition products will support combustion.

In the United States, none of the **Stabilants** are subject to the TSCA (Toxic Substance Control Act) nor are they reportable under SARA Title III. Because even the use of **Stabilant 22a** will result in a factorial reduction in the Solvent Burden/Year over that of conventional electronic cleaning solvent treatments, the **Stabilants** are the treatment of choice for many environmentally conscious agencies!

- *Can it be used by untrained personnel?*

Many thousands of applications of the consumer audio version of **Stabilant 22** (as TWEEK™) have been made since 1983 without problems.

- *Does the action of the Stabilants deteriorate with age?*

It has been in use in field applications in excess of twelve years now without showing any sign of reduced effectiveness. The material has a high molecular weight and a very low vapor pressure. Thus it is not prone to losses to evaporation. Unlike some other contact protection oils, **Stabilant 22** will not cross-link when exposed to certain material such as high sulphur (free-machining) brass alloys or in contact with elastomers containing ultra-accelerators, curing agents or other cross-linking agents. Thus the phenomenon of "varnishing", so common with some of the oil-based protective films will *not* occur with the **Stabilants**.

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

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

NOTICE : Limited Warranty

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. The warranty is limited to the purchase price of the material. 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.

Stabilant, Stabilant 22, and product type variations thereof are Trade Marks of D.W. Electrochemicals Ltd.
© Copyright 1988, '89, '90, '91 - D.W. Electrochemicals Ltd. Printed in Canada