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Number 37

APPLICATION NOTE

Use of Stabilants to replace Environmentally Unsafe Solvents

- *What are the Stabilants?*

The **Stabilants** are used on contacts to provide a resident, long-life, contact-enhancement treatment which does not involve the use of any CFC's, or any other ozone-depleting solvents. Classed as "Z-axis conductors", they conduct by quantum-tunneling effects when used in thin films on electro-mechanical contacts. This generally results in the reliability of a soldered joint without formation of a physical bond. Because they themselves are environmentally safe, and are a one-application, *resident* treatment, a small amount can replace many, many times their volume of cleaning solvents with a consequent major improvement in a manufacturer's environmental burden.

Stabilant 22 itself is not an ODC (Ozone Depleting Chemical as are CFC's, and to a lesser degree, HCFC's), nor are any ODC's used in the manufacture of **Stabilants**. We do not supply Stabilants diluted by or propelled using any CFC's or HCFC's and they are not available in pressurized spray cans.

- *What is their life expectancy?*

Having a very low vapor pressure and a resistance to cross-linking effects caused by the presence of curing agents or accelerants in both elastomers and thermoset plastics used in electronics, the **Stabilants** will generally last longer than the design life of the electronic equipment on which they are used.

- *How safe are they?*

The concentrate, **Stabilant 22**, is considered as non-toxic; the isopropanol-diluted form, **Stabilant 22A**, has a very low toxicity. In the quantities used in electronics manufacture and/or servicing within a room having normal ventilation it is extremely doubtful that even an minor-irritant concentration of the isopropanol could be reached unless very large quantities of the material were spilled. As it 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 do the Stabilants possess?*

They have excellent lubricating properties making them ideal for use in such applications as switches, potentiometers, slip-rings, and tunable-microwave-cavities. The **Stabilants**, when applied, retain an ability to lift both corrosion by-products as well as contaminant materials off the metal contact surfaces. Thus they make low-level

electronic connectors much less susceptible to thin-film rectification effects and can significantly cut RF demodulation in poorly shielded contacts.

Because of their broad temperature tolerance (from -70° C to +220° C) they have found wide application in electronic equipment used in severe temperature environments.

- **What has been their history of use?**

The **Stabilants** were developed in 1977 and went several years of experimental use before being adopted by the Canadian Armed Forces in 1983 after which they were issued with a NATO reference. They were also introduced into the non-military market in 1983, and were initially employed in consumer-electronics. After several successful years in the consumer field they were used in bio-medical electronics and commercial computing applications, and are now employed in electronic equipment ranging from Air-traffic Control applications to Agricultural Machinery.

- **Is their apparent cost justified in actual use?**

Yes, many times we have been told of how a small amount of **Stabilant** has saved a customer thousands of dollars. Because they only have to be used once, they provide a long-term limit on the degradation of an electronic contact that is far-more reliable and much less expensive than that provided by repeated disconnection and cleaning. And because they do not short out between adjacent contacts, they can be used without regards for wetting-down of the connector's insulation. **Stabilant 22** does not affect plastics used in electronics.

Because **Stabilants** are very simple to use in the field, the bulk of connector-related problems can be cured *in-situ*, and this ability has significantly reduced the "board-float" needed to keep systems functioning.

In numerous instances, **Stabilants** have been able to restore electronic equipment/systems, which were considered unservicable, to many additional years of useful life.

NATO/CAGE Supplier Code 38948 - 15 mL sizes - Stabilant 22A = NATO Part # 5999-21-900-6937
Stabilant 22E = NATO Part # 5999-21-909-9984 - Stabilant 22 = NATO Part # 5999-21-909-9981

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

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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