

**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 22

# APPLICATION NOTE

---

## High Humidity Condition use of Stabilant 22 on High-Z Circuits

---

- *Are Stabilants being used in high-humidity conditions?*

Yes, the **Stabilants** have been used extensively in high humidity conditions with excellent performance. These applications range from Oceanographic and Sonar equipment to their use on airborne connectors under tropical and/or engine-mounted-equipment conditions. In addition, **Stabilants** are used extensively in computer and communications applications in tropical countries. All of these were done without special pre-treatment.

- *What are the high-humidity conditions where special precautions must be taken?*

Whenever the **Stabilants** are used on connectors used in high-impedance circuits (typically circuits of 2 Megohms or higher), in an environment where the humidity was in excess of 98% relative humidity and/or in an environment where there was the possibility, because of thermal cycling under humid conditions, such that there could be moisture condensation on the surface of a circuit board.

- *What precautions have to be taken before using Stabilant 22 in these conditions?*

This note applies to those applications where it is important to maintain high surface resistance ( $> 10^8$  ohms/square), such as high impedance circuitry, or where there are very tight specifications on circuit board operations under conditions of high humidity.

When using **Stabilant 22** or **Stabilant 22a** in very-high humidity conditions on applications such as card-edge connectors involving high-impedance circuitry, some precautions should be used to ensure that the material can work to best advantage. Because **Stabilants** have a surface-active property (necessary to remove and hold corrosion by-products in suspension) they could also hold enough moisture such that under very high humidity conditions surface resistances could drop to a resistance value as low as  $2 \times 10^6$  ohms/square.

If this is unacceptable, pre-treatment of the circuit-board surface should be done in order to provide a hydrophobic (water repellent) surface between the contacts and/or traces. This can be done by using one of the common fluorocarbon-oil based sprays (such as Scotchguard™- 3M Corp.) to spray the critical area. Then buff off the material from the card-edge connector contacts and apply the **Stabilant** as usual.

The **Stabilant** will now be confined to the actual contact area, and the board surface will be sufficiently hydrophobic so as to maintain the required insulation resistance.

Under these conditions we would recommend that the **Stabilants** be applied only to the male portion of the connector,

An alternative treatment would be to apply the **Stabilant** material only to the actual metal contact, using only enough to coat the major portion of each contact.

- **Field considerations necessitating this treatment.**

Normally, the impedance of most circuitry encountered in TTL or even Cmos circuits is such that this specialized treatment will not be necessary. However, where electrometer or photo-multiplier or similar circuitry is encountered, or where very low leakage is a requirement (such as on teflon insulated stay-alive batteries for computer memories) the extra time required to apply the hydrophobic fluorocarbon can substantially reduce any leakage under high humidity conditions.

NATO Supply Code 38948 - 15 mL of S22A has NATO Part # 5999-21-900-6937

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.

Stabilant, Stabilant 22, and product type variations thereof are Trade Marks of D.W. Electrochemicals Ltd.  
© Copyright 1989, '90, '91 - D.W. Electrochemicals Ltd. Printed in Canada