STABILANT 22

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APPLICATION NOTE

Stabilant 22 on Connectors with Fluorosilicone Seals

Introducing Stabilant 22

Stabilant 22 is an initially nonconductive block polymer which when used in a thin film between metal contacts becomes conductive under the effect of an electrical field. This occurs at an electric field gradient such that the material will remain nonconductive between adjacent contacts in a multiple pin environment. In addition, Stabilant 22 exhibits surfactant, lubricating and corrosion prevention qualities, providing a single component solution to virtually all contact problems.

Stabilant 22A (which is diluted 25% concentrate to 75% isopropyl alcohol) is preferred for ease of application with multipin connectors and good penetration of socket pins. In this Application Note, we focus on precautions when using this product on connectors with fluorosilicone seals (e.g., ITT-Cannon connectors, aka 'Cannon plugs').

Aircraft and Automotive Applications of Cannon Plugs

These connectors, with pin counts from two up to several dozen, are ubiquitous in aviation and other industries - notably their increasing use for automotive, truck other transportation and heavy machinery. Computerized systems and other electric systems are becoming more complex, especially in the Electric Vehicle industry.

Cannon plugs with fluorosilicone elastomer O-ring seals are vulnerable to swelling due to solvents, including isopropanol. A connector which is sealed immediately after treating with Stabilant 22A would retain enough isopropyl alcohol to swell the seal, up to 6%. Reassembly would then put extra force on the seal, distorting it. Once the solvent dissipates and the elastomer shrinks, leaks can result.

The need to avoid this suggests that Stabilant 22 concentrate is preferred when reassembly of connectors must be done on a tight schedule – not allowing the drying time required (30+ minutes). This time vs. convenience trade-off also applies when alcohol is used for initial cleaning of the connectors.

In order to provide a solution that avoids this, testing was done to determine a level of isopropanol dilution which would *not cause a swelling problem*, while retaining the application convenience of a thinned mixture.

It was determined that a 7% by volume dilution was satisfactory. This can be achieved by adding 7 parts of isopropanol (99% isopropyl alcohol is readily available) to 93 parts of Stabilant 22 concentrate. There is sufficient air space in a bottle of the concentrate to permit this. For example, if you have a 15mL bottle of Stabilant 22 on hand, just add 1.1mL of the isopropanol and mix well.

Alternately, by special order, we can supply a 7% isopropanol-diluted material under the designation Stabilant 22P. The Safety Data Sheets for Stabilant 22 & 22A will cover this type of material with regard to applicable precautions. Data such as viscosity and specific gravity naturally vary with the dilution as well as temperature, and users should conduct their own tests for all such products.

Please note that when doing this in-house, the bottle should be over-labelled as containing 7% isopropanol. Service departments, whether in aviation, auto service, or other industries, will need to adhere to their own set of regulations and manufacturers' specifications for the equipment at hand.

NATO CAGE/Supplier Code 38948

15ml Stabilant 22 (Concentrate), NATO Part # 5999-21-909-9981

15ml Stabilant 22A (Isopropanol Diluted), NATO Part # 5999-21-900-6937

15ml Stabilant 22E (Ethanol Diluted), NATO Part # 5999-21-909-9984

The Stabilants 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. This note is based on the original work of William Michael Dayton-Wright and includes updates by D.W.E. staff.