

Contact Cleaner Replacement

Thanks to the Calibration Lab (Perry LaRosa, Dale Smejkal, and Tom Somsak), we've found a successful replacement for the ozone-depleting contact cleaners previously used. It's Techspray Contact Cleaner G3 and should be able to replace the following:

- Crown Electronic Component Cleaner
 - CRC PF Precision Cleaner
 - Techspray Envirotech 1677 Cleaner/degreaser
 - Contact Re-Nu & Lube (not sure on this one) - please let me know if you still stock it.
 - Techspray Contact Cleaner II
 - Sprayon Hitech 2002 TF Electrical Contact Cleaner
- Also – It should work to replace any defluxers.

The above cleaners contained CFCs and HCFCs that deplete the ozone layer, and are now banned by the Montreal Protocol. The Montreal Protocol is an agreement among all developed countries (including the U.S.) to phase out ozone depleters according to a schedule.

The MSDS is here: <http://www.techspray.com/newmsds/English/ms1632aEng.pdf>
Techspray G3 is non-ODC, nonflammable, doesn't attack any plastics, quick drying, and low or no residue. The Calibration Lab tested several products and was very pleased with this one.

It is now available from stock, but here is the order information:

Tech Spray, LP
PO Box 949
Amarillo, Texas 79105-0949
Fax: 806-372-8750
Contact: Russ Perkins 800-858-4043
(Orders can be faxed)

Any questions, please call/email Linda Sekura X 3-5693, Linda.Sekura@grc.nasa.gov.

Further background on this project:

The main goal of the P2 (Pollution Prevention) Committee's Affirmative Procurement/ Environmentally Preferable Purchasing (AP/EPP) project was to replace hazardous toxic chemicals with safer, healthier alternatives. But, an additional goal, also impacting the environment, was to replace ozone depleting substances (ODS). The Montreal Protocol specifies that all developed countries, including the U.S. must phase out ODS chemicals according to a time schedule. As the more damaging Class 1 ODS chemicals were phased out, they were replaced with Class 2 HCFCs. But, as of January 1, 2003, even the HCFCs were being phased out.

HCFC-141b (1,1-dichloro-1-fluoroethane) was (and is still) a widely used propellant and solvent that dried quickly and left no residue. When HCFC-141b was banned in 2003, it was

banned only from manufacture, not from distribution and sale. Many chemical product companies have stocks of products containing this ODS, and actively market these products. HCFC-141b was an ingredient in many of our electrical contact cleaners at NASA Glenn Research Center (GRC), including as a much-demanded stock item. The P2 Committee's goal was to implement a substitute for the contact cleaners that contain HCFC-141b.

Finding a good AP/EPP electrical contact cleaner replacement was one of the most difficult application replacements. The concerns when choosing a contact cleaner are that it must be: non-ODS, non-flammable, low global warming potential, low in hazardous chemicals (needed for corrosion inhibition), plastic-friendly, quick drying, and low residue. Some of these were competing goals, with quick-drying chemicals possibly being flammable.

GRC had its own equipment-related problems to add to the mix. Many of the electrical units at GRC are older, and some do not have the safety features of newer units, making flammability a major concern. Since most of the workers at GRC get their cleaners from stock, we could not take the chance of stocking a flammable and non-flammable version of the cleaners. So, we had to come up with a wide-application, non-flammable contact cleaner that performed many tasks well.

The Calibration Lab tested five products, with Techspray G3 performing the best. It is non-ODS, non-flammable, safe for most plastics, quick dry, low residue, and average global warming potential when compared with similar products. It does contain a high amount of Trans-1,2-Dichloroethylene (t-DCE) (30-90%), but this is most likely what enabled the product to perform as well as it did. Above exposure limits, t-DCE can cause liver, circulatory, and central nervous system effects. But the products targeted for replacement also have health effects, e.g., one product contains a carcinogen (methylene chloride), and above limits can cause liver and urinary system effects and permanent brain damage.

The stock area is now purchasing Techspray G3 instead of the many other ODS-containing contact cleaners, defluxers, and precision cleaners they had stocked in the past.

Another remaining concern is that the replacements for HCFCs, especially in contact cleaners, are PFCs (perfluorocarbons), that have a high global warming potential. For chemical companies or the Environmental Protection Agency to come up with another alternative is the next major step.