Application Note:

Fiber Cleaning – Wet to dry

This application note provides information on fiber end face cleaning.

Application Note ID:
NSAN-15-0021-08-09-16

Date:
8-9-16

Product Line:
Fiber Optics

Using isopropyl alcohol (IPA) can remove contaminants that dry wiping alone may not. However, failing to completely dry the end face can result in network issues. Whilst IPA does evaporate, the evaporation is not quick enough, or often incomplete before the connection is made. In the example below, the test cord was cleaned with IPA and inserted into the installed connector. As a result, the IPA was transferred onto the installed connector, creating a halo type effect.

Installed connector

Test cord cleaned with IPA, but not dried

Installed connector after test cord inserted

Part Numbers Affected:
Opt-X Standard, E2XHD, Opt-X HDX and Unity Cassettes FastCAM, FastCure, Threadlock and Secure Keyed LC connectors All pre-terminated fiber optic cable assemblies and patch cords

To avoid the halo effect, the connector must also be wiped dry using a lint free wipe.

Options for cleaning patch cord end faces

Dry cleaning using click style cleaning pens avoids this halo effect. They are extremely popular for their ease of use, suitable for cleaning both patch cords and connectors in bulkheads. For removing dust on an end faces, they are very effective. But if the contaminant contains oils which have been allowed to “bake” on the end face, dry cleaning alone will not be effective. If the use of a click style pen does not remove the contaminant, you will need to use a wet to dry cleaning method.

LC Cleaning Tool #49886-LCT
SC Cleaning Tool #49886-SCT

Whilst the use of 99% isopropyl alcohol (IPA) for cleaning is common, the use of a “solvent pen” is often found to be more effective. A dry lint free wipe is moistened with the solvent pen, then the connector placed gently on the moistened part of the lint free wipe and moved to a dry part of the lint free wipe. This avoids the so called “halo effect” seen above.

Solvent pens are far more aggressive at removing contaminants than IPA. The solution also evaporates quicker and contains anti-static properties. That’s a useful feature, as dry wipes can put a static charge on the end face, attracting dust.

CAUTION: *Never place the tip of the solvent pen in direct contact with the connector. Doing so will contaminate the solvent pen tip.*

Leviton Manufacturing Co., Inc.
2222 222nd Street SE
Bothell, WA 98021

tech line 800 824-3005
fax 800 832-9538
www.leviton.com

Where did your IPA come from?

If you are using IPA, it must be 99%. Replacing IPA could mean running to the local drugstore. Whilst some drugstores may have 99% IPA, most do not. Anything less than 99% can result in contamination of the fiber end face, having an adverse effect on the application. This will be particularly noticeable if an OTDR test is required.

Additionally, IPA is anhydrous. It will absorb moisture over time. It is critical that the solution be stored in an airtight container and exposure to air be minimized as much as possible. This is not an issue with solvent pens as the fluid is only released when pressure is applied to the tip of the pen.

Options for cleaning connectors in a panel

For cleaning connectors already installed in a bulkhead/panel, there are several options. You could remove the connector from the panel, but that increases the risk of damaging the fiber and adjacent links. Just as with patch cord cleaning, the use of a click pen is very popular as the connectors can be left in place. If the contaminant cannot be removed, despite repeated cleaning with the click pen, 99% IPA or a solvent pen is going to be required.

For simplex style connectors such as SC, LC, FC and ST, moisten a lint free wipe with the solvent pen. Using a foam Q-tip, gently press on the moistened area, insert into the connector bulkhead and rotate three times, remove and discard. Then using a clean dry Q-tip, insert and rotate three times, remove and discard. Inspect to ensure the end face is now clean. Foam Q-tips come in different sizes to accommodate the smaller 1.25 mm LC connector.

CAUTION: *Never touch the lint free wipe. Doing so will transfer the oils from your skin to the material and consequently, onto the fiber end face when you clean it.*

MTP connectors

These type of connectors can be more of a challenge to clean since they can contain up to 24 fibers. The two most common cleaning devices are:

Cleaning Cassette
#49886-UFT (Female cleaning)
#49886-UMT (Pinned cleaning)

Cleaning Pen
#49886-MCT

Leviton Manufacturing Co., Inc.
2222 222nd Street SE
Bothell, WA 98021
tech line 800 824-3005
fax 800 832-9538
www.leviton.com

Whilst the #49886-UFT and #49886-UMT are ideal for cleaning MTP cords, they are not suitable for cleaning installed MTP cords in a panel or cassette. For cleaning installed MTP connectors, the #49886-MCT is preferred. This cleaning pen not only allows you to clean MTP connectors in a panel, it also has an adapter that permits the cleaning of MTP patch cords too. Both are dry cleaning solutions.

If dry cleaning does not work, moisten a lint free wipe with either IPA or a solvent pen. Gently press the MTP click pen onto the moistened area of the lint free wipe, then insert into the MTP bulkhead. Pull back on the wheel two to three times. Inspect to ensure the end face is clean and free of contaminants.

CAUTION: *Do not place the IPA or solvent pen in direct contact with the #49886-MCT click cleaner. Doing so will contaminate the solvent pen tip.*

Inspection

You must inspect, even with a click style pen. There is no guarantee that your first attempt at cleaning worked. In harsh environments, several attempts may be needed. Only after the end face has been inspected can you be assured it is clean. The type of inspection equipment available varies from simple inspection scopes to video scopes.

200x Inspection Scope
#49886-FSP

MTP Scope Adapter
#49886-MCS

LC Scope Adapter
#49886-LCS

Duplex LC Scope Adapter
#49886-LCD

Whilst video microscopes initially cost more, there are significant advantages compared to inspection scopes. As shown in the picture (right), connectors can be inspected in the panel without having to remove them. Extreme care must be taken when removing connectors from panels, as this can result in broken fibers.

Some video microscopes have the ability to save the end face image too. Being able to prove the connector was clean when you left it can avoid costly disputes in the future. Additionally, some can produce an automated PASS/FAIL based on IEC 61300-3-35.

Summary

There will be occasions when dry cleaning alone will not work. It is essential that your fiber cleaning kit also contains 99% IPA (or a solvent pen) with lint free wipes and foam Q-tips. If using a wet cleaner, the end face must be wiped dry with a lint free wipe to avoid cross contamination.

For more information or assistance with fiber optic solutions, please contact Leviton Technical Support or go to: www.leviton.com/clic

Leviton Manufacturing Co., Inc.
2222 222nd Street SE
Bothell, WA 98021
tech line 800 824-3005
fax 800 832-9538
www.leviton.com

Application Note
Document # NSAN-15-0021-08-09-16