

Technical Note

Excel Cable – Liquid Contamination



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This document covers the interaction of liquids (including water) with indoor Excel Copper and Fibre cable and connecting hardware. This document excludes product that is designed for external use.

Connecting Hardware

The connecting hardware consists of

- copper jacks & patch panels
- fibre optic pigtails, connectors and patch panels

These connecting hardware products are designed for indoor use as defined by ISO standards. This means that they are to be used in dry environments. Therefore if any of the mentioned Excel product has been in contact with any liquid they shall be replaced. This is because of the unknown composition of the liquid. Even water may contain impurities, for example from the salts that emanate from a concrete slab. These contaminants may have effects on the mechanical and/or the electrical/optical performance. In the case of the performance the effect of the connector 'drying out' may lead to altering performance during the process. The long term effects of the contaminate will also be unknown.

Cable

The cable consists of

- copper – LSOH & PVC cable
- fibre optic – LSOH & PVC cable

These indoor cables are also designed to be stored, installed and operated in an indoor environment. This excludes the immersion in liquids or having liquids in contact with the sheath. If any liquid comes into contact with the cable it shall be replaced. The jacket sheath is designed to ensure that the cable is mechanically secure and stable. Even in the case of water this can have a negative effect on the sheath due to the composite of the jacket material. For example the construction of LSOH indoor sheathed cable can absorb liquid over time. This is a factor of the compound manufacture and will be common with many manufacturers. Any liquid absorption will change the geometry of the cable therefore having an effect on the electrical or optical performance. Probably the worst case would be to get liquid in the end of a copper cable. The capillary action will draw the liquid a fair distance along the inside of the sheath. The liquid will have an effect on the Return Loss of the cable which will vary as the cable 'dries out' over a much extended timescale.

Mitigating Actions

Excel recommends that to mitigate the possibility of liquid contamination that installations are only undertaken once the building is 'water tight' and liquid systems (e.g. sprinklers, water, etc.) are installed and tested. Cables can be protected by containing them in basket or tray that is off the floor slab. In the case of spillages this will reduce the risk from indirect contamination.

On a pragmatic note If a cable is in constant contact with water for less than four hours it may be possible to lift and dry it completely and as long as it passes all subsequent testing we will accept these cables for warranty purposes with the following conditions:

- The total period of time involved is less than, i.e. either one period of 4 hours or a cumulative 4 hours following multiple instances.
- This is only acceptable if can be proved the period of time involved is less than 4 hours e.g. recorded time for a burst main or sprinkler etc. If the period of time is unknown, then it can only be assumed to be more than 4 hours. The onus is on the installer to provide evidence.
- At no point should the water have come in contact with the un-terminated end or the outlet of a terminated end. Any incident of this nature and the cables shall be replaced.

Summary

Liquid contamination of any kind requires the product that has come in contact to be replaced. After any change the affected link shall be re-tested.

This Technical Note has been produced by Simon Robinson, Product Manager, on behalf of Excel

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