Tapes, binders and fillers

Additional elements

Often considered incidental in the design of a cable there are many reasons, both production and performance based for applying fillers, foils and tape binders. A binder is not a suitable insulating layer as binders can move when the cable is flexed. This means that screens may come into contact with one another. If isolation of the screen is required, an inner sheath or a sintered tape must be used. Many binders can be applied during the cabling and braiding, meaning little added cost for the inclusion of a binder.

Available tapes

The two primary tapes and foils used by Habia Cable are polyester (Mylar) and PTFE. Each is available in a hard 'foil' and soft 'tape' version. Polyester is used for general purpose and halogen free constructions whilst PTFE provides a high temperature option. Other tapes and foils include:

- Al/Polyimide: Polyester-backed, polyimide foil used for electrical screening at high temperatures.
- Al/Pr foil: Polyester-backed, aluminium foil used for electrical screening.
- Cu/Pr foil: Polyester-backed copper foil for electrical screening and improved fire performance over Al/Pr.
- Polyimide: Foil used for high temperatures and high radiation. Can be FEP coated for sintering.
- Low noise: Carbon-loaded tape that can reduce electrical noise and interference.
- Mica: A flame barrier used in Habiaflame^2 constructions.
- µ-metal: A metallic foil providing magnetic shielding.
- Water-swelling tape: Used to absorb water and prevent it from tracking through the interstices and into the connector.

Production

It is often necessary to add a foil or tape to physically hold a cable together as it moves between different stages in production. As a general rule any cable with 8 or more cores in the final layer of cabling or a cable with a filling compound to remove all air-spaces in the cable will require a foil or tape to be applied for this purpose. A typical overlap is from 25% to 50%.

Protection

Braided electrical screens and armours can be abrasive to the cores over which they are placed. The application of a foil or tape can often prevent wear and tear to the cores within the cable as it is flexed.

Flexibility

Some tapes such as PTFE are very soft and low friction. This can enable the elements within a cable to move past one another, improving both the overall flexibility and flex-life of the cable.

Roundness

A pressure-extruded outer sheath allows the cable to be made perfectly smooth and round, however this pressure also forces the sheath material into the interstices of the braid and/or cores which makes it difficult to remove the sheath by hand and virtually impossible to remove with automated cut-and-strip equipment. The addition of a binder gives a smooth surface over which to extrude, enabling the sheath to be removed with relative ease.

Available fillers

The two primary types of filler used by Habia Cable are HT and LT. As with tapes, there are a number of other variants that can offer specific performance advantages:

- HT: Fibrous, glass yarn, HT (High Temperature) fillers can meet the full temperature range of all Habia Cable's materials; they are also soft, allowing for deformation within the cable that is necessary for dynamic use.
- LT: Low temperature fillers are normally solid plastic and are used in the majority of cables and applications in the nominal to moderate temperature range.
- Polyester: Though more expensive than LT, polyester fillers have a softer, rope construction that improves flexibility and offer a better temperature range.
- PTFE: Some data cables require the use of PTFE fillers in order to provide better electrical stability.
- SW: Water-swelling fillers absorb and swell to prevent water from tracking through the interstices of the cable.