



SY, YY and CY Flexible Cables - Should They Be Used in Electrical Installations?

Categories:

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Introduction

Prysmian often get enquiries about the use of SY, CY and YY cable. Prysmian do not manufacture such cable types as they do not comply with any manufacturing standard. With the kind permission of NAPIT, an approval organisation for professional electricians, we have published below their paper which lays out the arguments against their use.

SY, YY and CY cables are flexible cables which are being widely used in industrial installations in the UK and they are also being used increasingly in domestic installations. This is due, in part, to their being more robust than standard flexible cables. In addition, no special tools are required, which is an obvious advantage.

However, they are non-standard cables and the question must be asked - Are these types of cable acceptable for use in electrical installations in the UK?

This article will deal with this question.

SY, YY and CY cables

An obvious disadvantage of these cables is that cable data, such as the current-carrying capacity of conductors, is not readily available and reference must be made direct to the cable manufacturer. These cables are described in some manufacturers' literature as 'control' cables. The letters indicate:

S - steel wire braid

Y - PVC

C - copper braid

These letters do not indicate adherence to a particular standard. In the case of SY cables for example, they indicate only that these cables have a steel wire braid with a thermoplastic (PVC) oversheath.

SY, YY and CY cables are claimed by some cable manufacturers to comply with the German standard, 'VDE 0250'.

VDE 0250

The VDE Institute is a national and internationally accredited institution in the field of testing and certification of electrotechnical devices, components and systems. (VDE stands for *Verband der Elektrotechnik, Elektronik und Informationstechnik*)

VDE publish a series of standards covering, among other things, various cable types. However, simply quoting the term, 'VDE 0250' is meaningless because it is not a specification and the '0250' is just one part of a complete standard number. In order to be meaningful, the full standard number must be quoted. For example, the German NYM type of cable is defined in VDE 0250-204:2000.

The full VDE standard to which these cables might conform is unclear.

VDE standards are German national standards. They are neither Harmonised European (EN) nor International (IEC) standards. Therefore their use under BS 7671 is not automatic and they would be subject to the required engineering assessment regarding safety, etc.

NAPIT understands that the VDE Institute has issued certification to a small number of cable manufacturers for some SY, CY, and YY cables and that this certification is based on individual cable manufacturer specifications which are confidential to both VDE and the manufacturer. As these specifications have not been published, we are unable to determine which material and construction specifications or tests have been applied. Consequently, authoritative literature is not available to assist in making engineering judgements.

BS EN 50525-2-11

The UK standard for PVC insulated and sheathed flexible cables is BS EN 50525-2-11 and some manufacturers of SY, CY and YY cables claim conformity with this standard.

However, they have different constructions. There is no provision in BS EN 50525-2-11 for any braid and hence a braided cable, such as SY cable, cannot conform to this standard.

BS EN 50525-2-11 specifies various types of PVC flexible cable, such as H05VV-F.

The Approved Cables Initiative (ACI) reported last year that cables designated SY, YY or CY often have lower insulation and sheath thicknesses by comparison with the BS EN flexible cables.

The use of foreign standards

Regulation 133.1.1 requires that every item of equipment (including cable) must comply with the appropriate British or Harmonized Standard. In the absence of such a standard, reference can be made to the appropriate IEC standard or the appropriate standard of another country.

As the VDE 2050 standard is neither a Harmonised European (EN) standard nor an IEC standard, it is doubtful whether it could be called, 'appropriate'.

If Regulation 133.1.1 is not complied with, Regulation 133.1.3 requires that the designer or the person responsible for specifying the cable must confirm that it provides at least the same degree of safety as that afforded by compliance with the Regulations.

A similar requirement for the designer or specifier to confirm the safety of non-standard equipment is given in Regulation Group 511.

This leads to the question - can a designer or a specifier, who has specified the use of SY, CY or YY cables, give such an assurance? And on what basis would it be given?

Flexible cables in fixed installation

The fact that SY, CY and YY cables are flexible brings up a general point on the use of flexible cables in fixed installations.

An obvious use for flexible cables in fixed installations is for the final connection to equipment which may need to be adjusted, such as floodlights or motors. Flexible cables may also be used for overhead wiring between buildings.

Regulation 521.9.1 permits the use of flexible cables for fixed wiring if they are of the heavy duty type or the risk of damage is low or protection against mechanical protection is provided.

However, NAPIT does not advise the use of flexible cables in fixed electrical installations generally.

Several of the manufacturers data sheets state that SY cables are not suitable for fixed wiring applications requiring compliance with the regulations as set out in BS 7671.

Conclusion

There is no doubt that SY, CY and YY cables have their supporters within the industry but the fact remains that they are non-standard cables and the general industry guidance is to discourage their use.

In order to be certain that cables comply with BS 7671, only those cables which are recognised in BS 7671 should be selected.

Cable manufacturers sometimes claim that their cables 'generally' comply with a British or Harmonized Standard. All such claims should be treated with scepticism unless they can be verified.

When buying cables, it is important to ensure that they have the manufacturer's name and the standard or reference number for that cable clearly indicated on the sheath.

It is advisable to look for a third party mark of approval such as BASEC or LPCB.

For more information, please contact **NAPIT** (<http://www.napit.org.uk/>).

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