

Coordination of Wiring Accessories, Low-voltage Switchgear and Controlgear assemblies with conductors operating at a temperature exceeding 70 °C e.g. XLPE

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Overview

BS7671 regulation 512.1.2 requires that “Switchgear, protective devices, accessories and other types of equipment shall not be connected to conductors intended to operate at a temperature exceeding 70 °C at the equipment in normal service, unless the equipment manufacturer has confirmed that the equipment is suitable for such conditions”.

BS 7671 regulation; 523.1 (note b) requires that “Where a conductor operates at a temperature exceeding 70 °C, it shall be ascertained that the equipment connected to the conductor is suitable for the resulting temperature at the connection”.

BS 7671 90 °C cable tables e.g. Table 4E4, state that; “Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70 °C, the current ratings given in the equivalent table for 70 °C thermoplastic insulated cables (Table 4D4A) must be used (see also Regulation 523.1)”.

Low-voltage switchgear and controlgear assemblies include switchboards, panelboards, distribution boards, busbar trunking systems and consumer units.

Wiring accessories include wall switches, socket-outlets, fused spurs and plugs.

The British (BS) and harmonized standards (BS EN) for these products contain test limits that apply to thermoplastic insulation i.e. PVC, and specifically to low -voltage assemblies, where the terminals of the built-in component e.g. MCCBs / MCBs also contain the terminals for external insulated conductors.

Conclusion

Unless specified by the manufacturer, conductors operating at a temperature exceeding 70 °C are not suitable or safe for use with wiring accessories, low-voltage switchgear and controlgear assemblies. However, 90 °C rated cable can be used for external wiring provided the conductor operating temperature does not exceed 70 °C i.e. where the electrical design is based on current ratings given in the equivalent table for 70 °C thermoplastic insulated cables.

Specifically for a low-voltage switchgear and controlgear assemblies, whenever a declaration states that **built-in components (e.g. MCBs / MCCBs) which also contain the terminals for external insulated conductors**, are suitable for conductors operating at a temperature exceeding 70 °C, then the **components must have been tested in the assembly as part of the appropriate assembly standard**.