

What kind of wires are best for distribution boxes



Article Overview

High-temperature resistant copper wires with appropriate cross-sectional area are recommended for safe and reliable distribution box wiring.

Wire Material and Type

For distribution boxes, copper conductors are preferred due to their excellent electrical conductivity, durability, and heat resistance. Aluminum wires are less common in small-scale distribution boxes because they require special connectors and are more prone to oxidation. High-temperature resistant insulation (such as PVC, XLPE, or heat-resistant thermoplastic) is essential to prevent melting or degradation under load.

Cross-Sectional Area and Load Considerations

The wire gauge or cross-sectional area must match the load current of each circuit. Undersized wires can overheat, causing fire hazards, while oversized wires are unnecessarily costly and difficult to manage. Typical guidelines include:

- Lighting circuits: 1.5–2.5 mm² copper wire
- Socket outlets: 2.5–4 mm² copper wire
- High-power appliances or industrial loads: 6 mm² or higher, depending on current rating and distance from the distribution box...

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