

Fire Resistance Time of Fireproof Cable Trays in Asia



Overview

Fire protection for cables & cable trays | FlamroFire protection solutions to protect cables, cable trays and cable systems. Discover our tested cable Fire.

Key Takeaways

Fireproof cable trays in Asia, particularly under Chinese standards, are rated for fire endurance from 30 minutes up to 120 minutes depending on the F1-F4 classification. Fire Resistance Classification

In China, the GB 29415-2013 standard governs fire-resistant cable trays. The fire rating is primarily defined by fire endurance, which measures how long the tray can maintain structural integrity and electrical circuit continuity under standard fire exposure. The standard classifies trough-type fireproof cable trays into F1, F2, F3, and F4 grades, with higher grades corresponding to longer fire resistance times. Typical fire endurance durations are:

- F1: 30-60 minutes
 - F2: 60 minutes
 - F3: 90 minutes
 - F4: 120 minutes
- These ratings ensure that the cable tray system remains functional during a fire, allowing for safe evacuation and fire-fighting operations.
- Key Testing Criteria

Fireproof cable trays are tested under continuous heating following a standard time-temperature curve (~950°C). The evaluation focuses on three main aspects:

- Structural integrity: No collapse, no through-cracks, deflection $\leq L/100$
 - Circuit integrity: Internal cable circuits remain uninterrupted (3A fuse does not blow)
 - Thermal insulation: Average backside temperature rise $\leq 180^{\circ}\text{C}$, single-point temperature rise $\leq 220^{\circ}\text{C}$ These criteria ensure that both the tray and the cables it supports maintain functionality during fire exposure.
- International and Regional Considerations

While China uses GB 29415-2013, other Asian countries may adopt international standards such as DIN 4102-12, BS EN, or IEC fire performance standards. For example, some cable trays are tested to maintain circuit integrity for up to 90 minutes under DIN 4102-12 . Fire resistance testing also evaluates flame spread, smoke production, and toxic gas emissions, which are critical for safety in high-rise buildings, hospitals, and industrial facilities .

Practical Installation Notes

To achieve the rated fire resistance, cable trays must be fully enclosed with covers and integrated with fireproof sealing at wall or slab penetrations. Firestopping materials such as fire-rated boards, mineral wool, or firestop mastic are used to seal gaps, ensuring the system forms a complete fireproof barrier . Proper installation is essential to maintain the tray's fire endurance and circuit integrity.

Summary

Fireproof cable trays in Asia are designed to maintain structural and circuit integrity for 30–120 minutes, depending on the classification (F1–F4) and compliance with standards like GB 29415-2013. Testing ensures they withstand high temperatures, prevent flame propagation, and allow safe operation of critical electrical systems during a fire. Proper installation with firestopping measures is crucial to achieve the rated fire resistance .

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Fire resistance

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A Fireproof Cable Tray is designed to reduce this risk by supporting both cable management and passive fire protection. Unlike a

Understand the Importance of Cable Tray Fire Stopping

To form a barrier between the cable trays and the surrounding area, fire-stopping materials are frequently utilized.

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