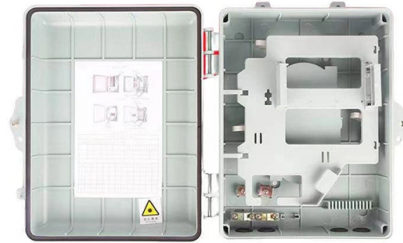


Fiber Optic Cable Risk Level Classification



Overview

Choose fiber-optic devices and HMI hardware that are certified for the site's hazardous classification.

Key Takeaways

Fiber optic cables are classified under the EU Construction Products Regulation (CPR) into Euroclasses based on fire performance, ranging from non-combustible (Aca) to highly flammable (Fca), with additional considerations for smoke, heat, and droplet emissions. CPR Classification Overview

The Construction Products Regulation (CPR) governs the fire safety of cables installed in buildings across the EU, including fiber optic cables (). Cables are assessed for:

- Flame spread
 - Heat release
 - Smoke production
 - Droplets of flaming material
- Based on these parameters, cables are assigned a Euroclass rating with the suffix “ca” to indicate compliance. The main classes are:
- Aca: Non-combustible, no polymeric sheathing can achieve this; highest fire safety.
 - B1ca: Very low flame propagation, high fire performance.
 - B2ca: Low flame propagation, good fire performance.

- Cca: Moderate fire performance, acceptable flame propagation.
- Dca: Lower fire performance, still meets vertical flame test.
- Eca: Minimal fire performance, basic compliance.
- Fca: Flammable, does not meet vertical flame test (). Additional classifications may include smoke production (s1, s2, s3), droplet formation (d0, d1, d2), and acidity or corrosivity (a1, a2, a3), which provide more granular risk assessment for specific installations ().

Fiber Optic Cables in Hazardous Areas

Fiber optic cables are inherently safer in explosive or electrically sensitive environments because they transmit data as light rather than electrical current. This eliminates:

- Spark or arc generation
- Short-circuit risks
- Static discharge hazards As a result, fiber optics are preferred in Class I Division 1 / Zone 1 areas, petrochemical plants, paint spray booths, grain mills, and other combustible atmospheres (). Their dielectric nature also provides immunity to electromagnetic interference (EMI) and lightning surges, making them suitable for long-distance and high-reliability installations.

Practical Implications

- Compliance: Fiber optic cables must carry a Declaration of Performance (DoP) and CE marking to be legally installed in EU buildings ().
- Installation: The required Euroclass depends on building type, occupancy, and escape routes. For example, cables over fire exits may require Cca or higher.
- Risk Assessment: Countries may adopt tiered classifications based on installation type, fire suppression systems, and local regulations ().

Summary

Fiber optic cables are classified by CPR Euroclasses to indicate their fire risk level, with higher classes representing better fire performance. Their non-conductive nature makes them ideal for hazardous environments, while compliance with CPR ensures safety in building installations. Selecting the correct Euroclass and verifying the DoP is essential for both legal compliance and operational safety.

Article Content

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Fiber-optic cable

A fiber-optic cable, also known as an optical-fiber cable, is an assembly similar to an electrical cable but

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OFC: Optical Fiber Conductive General Purpose The higher the fire resistance level, the more resistant the cable is to heat and

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