Steel wire for drop optical cables

Overview

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Key Takeaways

Steel wire in drop optical cables serves as a strength member, providing mechanical support and enabling self-supporting installation for both indoor and outdoor fiber optic networks.Purpose of Steel Wire

The steel wire in drop cables acts as a mechanical reinforcement, allowing the cable to withstand tension, bending, and environmental stress during installation and operation. It is particularly important in self-supporting drop cables, where the cable is suspended between poles or buildings without additional support structures . The steel wire ensures the optical fibers remain protected from stretching or crushing, maintaining signal integrity.

Construction

Drop cables typically feature a central optical fiber unit surrounded by reinforcements such as steel wires or Fiber Reinforced Plastic (FRP) rods. In some designs, the steel wire is placed inside the cable core or as an external messenger wire for hanging applications . The cable is then sheathed with LSZH (Low Smoke Zero Halogen) or PE jackets, which provide fire resistance, UV protection, and environmental durability . Common configurations include:

• 2-fiber drop cable: One 1.0 mm and two 0.5 mm steel strength members, LSZH jacket, single-mode G.657A1/A2 or G.652D fibers .

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• 4-fiber drop cable: Similar reinforcement with higher mechanical strength for longer spans .
Applications

Steel wire-reinforced drop cables are used in FTTH (Fiber to the Home) and GPON networks for the last mile connection between the distribution point and the end user . They are suitable for:

• Outdoor self-supporting installations between buildings or poles

• Indoor cable tray distribution networks

• Direct burial or pipeline installations in some cases
Testing and Quality Assurance

Drop cables with steel wire are tested for mechanical and optical performance using devices like OTDR (Optical Time Domain Reflectometer) to detect faults, measure splice loss, and verify fiber integrity . This ensures the cable can handle installation stresses without compromising signal quality.

Summary

In essence, the steel wire in drop optical cables provides essential tensile strength, enabling self-supporting deployment and protecting delicate optical fibers. Combined with FRP rods and protective jackets, it ensures durability, flexibility, and reliable performance in both indoor and outdoor FTTH applications .

Article Content

FTTH Drop Cable — Flat, Round, Self-Supporting | TTI Fiber

Our portfolio includes flat (butterfly) drop cables for indoor wall routing and stapling, round drop cables for duct installation, and figure

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