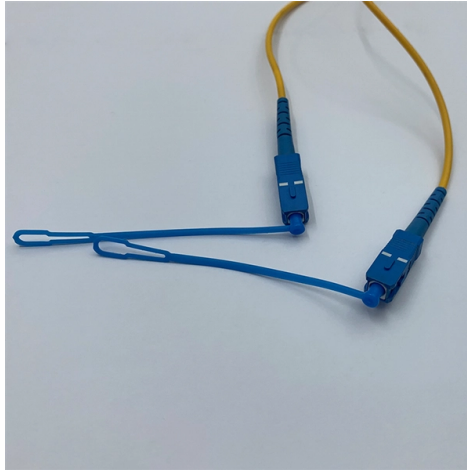


Production of 4-core single-mode optical cables



Overview

Start of mass production of 13824 count optical fiber cable featuring. Furukawa Electric Group company Lightera has started mass production of 13824 coun.

Key Takeaways

Four-core single-mode optical cables are manufactured with precise fiber drawing, protective layering, and rigorous quality testing to ensure high-speed, low-loss communication for FTTH and GPON networks. Cable Structure

A typical four-core single-mode fiber optic cable consists of four main components:

- Core: The central transparent glass fiber that transmits light signals with minimal loss.
- Cladding: Surrounds the core and reflects light internally to maintain signal integrity.
- Buffer Coating: A protective layer that resists scratches and mechanical damage.



- **Outer Jacket:** Provides environmental insulation and mechanical protection. Additional reinforcement includes multi-strand aramid yarn for tensile strength and PBT loose tubes filled with jelly compound to protect fibers from moisture and mechanical stress ().

Materials and Standards

- **Core and Cladding:** High-purity silica glass, designed to meet ITU-T G.652 single-mode specifications, ensuring low attenuation (≤ 0.2 dB/km at 1310 nm) and minimal chromatic dispersion ().

- **Buffer and Jacket:** PE or similar polymers for durability and environmental resistance.

- **Reinforcement:** Aramid yarn for tensile strength and flexibility. The cable is suitable for FTTH (Fiber to the Home) and GPON networks, providing high-speed, reliable connections ().

Manufacturing Process

- **Fiber Drawing:** Silica preforms are heated above 2000°C and drawn into fibers with a precise diameter of 125 microns ± 1 micron ().

- **Coating Application:** Fibers are coated with protective layers to reduce microbending and mechanical stress.

- **Assembly:** Four fibers are inserted into PBT loose tubes, filled with jelly compound, and wrapped with aramid yarn.

- **Jacket Extrusion:** The outer PE jacket is extruded over the assembly to provide environmental protection.

- **Spooling and Storage:** Finished cables are wound onto reels for transport and installation.

Quality Control

- **Optical Testing:** Each cable undergoes OTDR (Optical Time Domain Reflectometer) testing to verify splice loss, fiber length, and detect faults ().

- **Wavelength Testing:** Performance is checked at 1310, 1550, and 1625 nm to ensure compliance with single-mode standards.

- **Mechanical Testing:** Tensile strength, bend radius, and environmental resistance are evaluated to guarantee durability.

Applications

Four-core single-mode cables are primarily used for:

- FTTH and GPON networks connecting end-users to optical networks.
- Telecommunication backbones requiring low-loss, high-speed transmission.

- Data centers and enterprise networks where multiple fibers are needed in a compact cable design. By combining high-purity glass, precise manufacturing, and rigorous testing, four-core single-mode optical cables provide reliable, long-term performance for modern optical communication systems ().

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Single mode fiber (SMF) is a type of fiber optic cable that only allows one light mode to transmit at a time. Generally,

Specifications of 4-C Single mode fiber cable Model Type: GYFZY

Loose tube construction, tubes jelly filled, elements (tubes and filler rods) and water blocking yarns laid up around non-metallic

Recommendation ITU-T G.652 (08/2024)

This document outlines the specifications for a single-mode optical fiber and cable designed for use around

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