

Method for fusing 2-core sheath fiber and pigtail fiber



Overview

Strip, clean, and cleave the field fiber to a 10mm cleave length per standard fiber optic stripping practices.

Key Takeaways

Fusion splicing is the recommended method to join a two-core sheath fiber to a pigtail fiber, ensuring minimal signal loss and a durable connection.

- **Gather Tools and Materials:** You will need a fusion splicer, precision fiber cleaver, fiber strippers, lint-free wipes, 99% isopropyl alcohol, and heat-shrink splice protection sleeves .

- **Strip the Fibers:** Carefully remove the outer jacket and coating from both the two-core sheath fiber and the pigtail fiber to expose the bare glass cores. Avoid nicking or scratching the fibers .

- **Clean the Fibers:** Wipe the exposed cores with IPA-soaked lint-free wipes until they are free of debris and oils .

Cleaving

- **Use a Precision Cleaver:** Cleave each fiber end to produce a flat, perpendicular surface. A clean cleave is critical for low-loss fusion .

- **Inspect the Cleave:** Under a microscope, ensure the fiber ends are smooth and mirror-like. Any chips or angled surfaces can increase insertion loss .

Fusion Splicing

- **Align the Fibers:** Place each fiber in the fusion splicer's V-groove. For a two-core sheath fiber, you may need to splice each core individually to the corresponding pigtail fiber, depending on the splicer's capabilities .
- **Set Splicing Parameters:** Use the manufacturer-recommended settings for the fiber type. Multi-core fibers may require adjustments for core spacing and arc intensity .
- **Perform the Fusion:** Activate the splicer to generate an electric arc that melts and fuses the fiber ends together. The result should be a continuous glass path with minimal reflection and low insertion loss (typically 0.01–0.05 dB for single-mode fibers), .
- **Inspect the Splice:** Most splicers provide a visual or automated inspection to confirm alignment and splice quality .

Protection

- **Apply a Splice Sleeve:** Slide a heat-shrink splice protection sleeve over the joint before splicing. After fusion, move the sleeve over the splice and heat it in the splicer's oven to create a rigid, waterproof shield .
- **Handle Carefully:** Avoid bending the fiber sharply near the splice. Maintain a bending radius greater than 30 mm to prevent breakage .

Tips for Success

- **Work in a Clean Environment:** Dust and oils can compromise splice quality .
- **Practice on Test Fibers:** Especially for multi-core fibers, practice ensures proper alignment and reduces the risk of high-loss splices .
- **Follow Manufacturer Guidelines:** Each fusion splicer may have specific procedures for multi-core or specialty fibers . By following these steps, you can achieve a reliable, low-loss fusion splice between a two-core sheath fiber and a pigtail fiber suitable for high-performance optical networks .

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