

RIVO MULTITRADE OPTICAL SYSTEMS

Fiber Optic Cable Thermal Insulation Wrapping Tape Construction



Overview

CS Hyde Company is a supplier and converter of high temperature tapes for wrapping cable harnesses and wire looms.

Key Takeaways

Fiber optic cable thermal insulation tapes are constructed from high-temperature resistant materials like fiberglass, silica, or ceramic fibers, often reinforced and woven to provide flexibility, durability, and protection against extreme heat. Materials and Construction



Fiberglass Tape: Made from high-quality E-glass fiberglass yarns, these tapes are non-flammable and suitable for continuous temperatures up to 1000°F (540°C). They can be woven or knitted, and may be coated with high-temperature silicone elastomer to enhance heat resistance, chemical stability, and flexibility. Fiberglass tapes are resistant to acids, alkalis, bleaches, and solvents, making them ideal for protecting fiber optic cables in industrial environments .

Silica Tape: Constructed from amorphous silica yarns, silica tapes can withstand continuous temperatures up to 1800°F (980°C). They are available in plain or drop warp weaves and may include coatings such as PTFE, graphite, or vermiculite to improve thermal insulation and chemical resistance .

Ceramic Fiber Tape: Designed for extreme temperatures up to 2300°F (1260°C), ceramic fiber tapes are made from alumina-silica fibers and can be reinforced with fiberglass yarns or stainless steel wire for enhanced tensile strength and dimensional stability. The weave structure—tight for abrasion resistance or loose for flexibility—affects performance, and the tape conforms to irregular surfaces, joints, and gaps, providing effective thermal insulation and sealing .

Weave Types and Reinforcement

- **Plain Weave:** Standard weave providing uniform strength and thermal protection.
- **Drop Warp (Ladder) Weave:** Center longitudinal yarns are missing, offering flexibility and easier wrapping around cables.
- **Reinforcements:** Fiberglass yarns or stainless steel wire improve tensile strength, durability, and resistance to mechanical stress, especially in high-temperature or high-load applications .

Adhesive and Coating Options

- **Pressure-Sensitive Adhesive (PSA):** Facilitates placement and secure wrapping.
- **High-Temperature Coatings:** Silicone, PTFE, graphite, or vermiculite coatings enhance heat resistance, chemical stability, and reduce fiber degradation over time .

Applications

These tapes are used to wrap fiber optic cables, splices, and closures, providing thermal insulation, mechanical protection, and chemical resistance. They are essential in environments with high temperatures, thermal cycling, or exposure to acids and alkalis, ensuring the integrity and longevity of fiber optic networks .

Summary

Fiber optic cable thermal insulation tapes combine high-temperature resistant fibers, specialized weaves, and optional coatings or reinforcements to deliver flexible, durable, and chemically stable protection. Selection depends on the operating temperature, mechanical stress, and environmental conditions, with fiberglass suitable for moderate heat, silica for higher temperatures, and ceramic fiber for extreme thermal environments.

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Cable jacket | Cable sheath and cable insulation | Simply explained

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