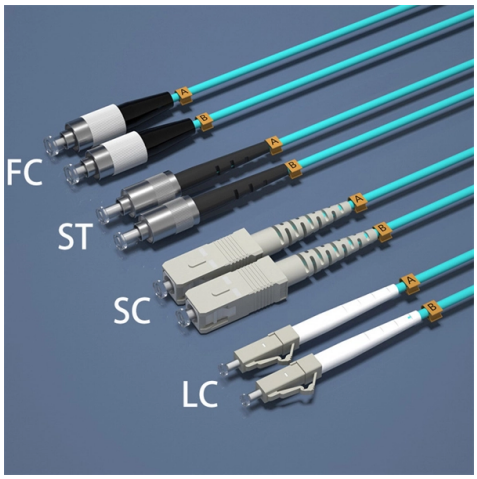
What is the appropriate heat resistance temperature for pigtail fiber



Overview

Extreme Temperature Resistance: Operates reliably in temperatures up to 700℃, as well as extremely low temperatures.

Key Takeaways

Optical pigtail fibers typically withstand temperatures up to 85°C for standard polymer coatings, with high-temperature variants tolerating up to 200°C or more.

Core and Coating Considerations

The core of a pigtail fiber is usually made of silica glass (SiO_2), which has an extremely low thermal expansion coefficient and can tolerate very high temperatures without structural damage. However, the heat resistance of the fiber is primarily limited by the polymer coatings and jackets, such as acrylate, PVC, or LSZH materials, which soften, degrade, or burn at lower temperatures. Standard pigtail fibers with acrylate coatings generally operate safely up to 85°C, while specialized high-temperature coatings (e.g., polyimide) can withstand up to 200–300°C.

Thermal Effects on PerformanceExceeding the recommended temperature range can cause: Signal attenuation due to microbending from differential thermal expansion between the silica core and polymer coating. Mechanical degradation such as coating cracking, jacket softening, or delamination. Permanent damage if temperatures approach the decomposition or burning point of the polymer layers.

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Practical Guidelines

Standard pigtail fibers (PVC or acrylate jacket) are suitable for environments up to 85°C. High-temperature pigtails with polyimide or other heat-resistant coatings can be used in industrial or aerospace applications up to 200°C or higher. Always consult the manufacturer's datasheet for exact thermal limits, as they vary by fiber type, coating, and jacket material.

In summary, while the silica core can tolerate extreme heat, the operational heat resistance of pigtail fibers is determined by the coating and jacket, with standard fibers rated around 85°C and high-temperature variants capable of 200°C or more. Proper selection ensures signal integrity and longevity in high-temperature environments.

Article Content

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How to choose fiber optic pigtails?

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Fiber pigtail specification shows fiber type, connector type, polishing type, ferrule material, insertion loss, return loss, tensile strength, operation temperature and

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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