

Fiber Optic Cable Characteristic Data

Article Overview

Fiber optic cables are characterized by optical, mechanical, and transmission attributes that determine their performance, durability, and suitability for specific applications.

Core and Cladding Attributes

Fiber optic cables consist of a core and cladding, designed for total internal reflection. The core is made of highly transparent glass or plastic, allowing light to travel with minimal attenuation, while the cladding has a slightly lower refractive index to reflect light back into the core. Key fiber attributes include mode field diameter, cladding diameter, core concentricity error, cladding non-circularity, cut-off wavelength, macrobending loss, refractive index profile, and chromatic dispersion. These parameters are critical for maintaining signal integrity over long distances.

Transmission and Optical Attributes

Fiber optic cables are designed to minimize attenuation (signal loss) and dispersion. Attenuation is measured in decibels per kilometer (dB/km), with typical values for modern multimode fibers around 3 dB/km at 850 nm and 1 dB/km at 1300 nm. Chromatic dispersion affects pulse broadening and is specified for single-mode fibers, such as G.652.D, to ensure high-speed data transmission over long distances. Polarization mode dispersion (PMD) is another important factor for high-speed networks, influencing signal quality.

Mechanical and Environmental Attributes

Cables are protected by multiple layers, including coatings, buffer layers, and outer sheaths, which provide mechanical strength and environmental protection. Attributes include tensile strength, crush resistance, bend radius, and flexibility, ensuring the fiber can withstand installation stresses and environmental conditions. Outdoor cables may include water-blocking materials and UV-resistant jackets, while indoor cables focus on fire safety and flexibility.

Cable Construction

Fiber optic cables can be single-mode (SMF) for long-distance, high-speed transmission or multi-mode (MMF) for shorter distances. Fibers may be arranged individually, in ribbons, or bundles, with protective layers to prevent crosstalk and p...

Article Content

Apr 29, 2026

Fiber Optic Cable Buying Guide

Fiber Optic Cable Buying Guide Understand how to choose fiber optic cable by comparing single-mode vs. multimode, network

Apr 16, 2026

Fiber Optic Cables

Armoured and Flame retardant optical fibre cable, AICI - code F104 NEK TS 606:2016 (available also in MUD protected version).

Feb 23, 2026

Optical Fiber Product Information Sheets

An all inclusive list of the various optical fiber specification sheets.

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G.652 : Characteristics of a single-mode optical fibre and cable

Recently posted - Search Recommendations G.652 : Characteristics of a single-mode optical fibre and cable

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Fiber Optic Cables | Corning

With 2 billion kilometers of fiber optic cables installed around the globe, Corning continues to lead the

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Fiber-Optic Cable Bandwidth: Complete Guide

Fiber-optic cable bandwidth determines how much data your network can handle, directly impacting business

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The FOA Reference For Fiber Optics

The core of step index multimode fiber is made completely of one type of optical material and the cladding is another type with

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Fiber Optic Cable

Belden's extensive line of indoor and outdoor cable products is offered in tight buffer and loose tube designs. Learn more about each

Mar 13, 2026

Fiber Optic Cables Technical Data

Many glass fiber optic cables are available with different glass fiber bundle diameters. Larger diameter bundles contain more fibers to

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Fiber-optic cable

A fiber-optic cable, also known as an optical-fiber cable, is an assembly similar to an electrical cable but containing one or more

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FIBRE OPTIC CABLES GENERAL SPECIFICATIONS

FIBRE OPTIC CABLES GENERAL SPECIFICATIONS ... * All attenuation values are valid for cabled fibres ** Zero Water Peak

Feb 10, 2026

Opti-Core™ Fibre Optic Indoor-Outdoor Armoured Cable 48 to

f i c a t i o n s The fibre cable shall contain 48 to 144 fibres and have an armoured loose tube construction. It shall be suitable for

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Basics of Fiber Optics

Lower loss: Optical fiber has lower attenuation (loss of signal intensity) than copper conductors, allowing longer cable runs and fewer

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

This document outlines the specifications for a single-mode optical fiber and cable designed for use around the 1310 nm zero

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Fiber Optic Technology 101 Principles and Advantages

Introduction Fiber optic cable is one of the fastest-growing transmission mediums for both new cabling installations and upgrades,

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Fiber Optic Cable: A Comprehensive Guide

This guide will provide an in-depth look at fiber optic cables, their types, applications, and best practices for installation

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Single-mode optical fiber

In fiber optics, a quadruply clad fiber is a single-mode optical fiber that has four claddings. Each cladding has a refractive index

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What Is Fiber Optics? A Guide

Fiber optics technology uses light pulses to transmit data, resulting in quicker, more reliable data transfers between

Dec 12, 2025

Optical Fibre Cable

Strength and protection are increased by an exterior protective layer. Due to their high-speed and low-loss

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Characteristics of Fiber Optic Cable

Fiber optic cables consist of multiple strands of optic fibers, hairlike strands of pure glass designed to transmit light. When hundreds

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Data Sheet DS-206A: Fiber Optic Cables

In analysis, the quality of the signal is ultimately the most important parameter. Applied Analytics manufactures all of our fiber optic

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Fiber Optics Fundamentals: Construction, Transmission, and

Fiber optic cables are essential components in modern data transmission infrastructure. They support high-speed, interference

Dec 26, 2025

Fiber Optic Cabling: Characteristics, Cable Types and Connectors

The fiber optic cable is, without a doubt, the standard of use for telecommunication and data communication. Fiber

Aug 01, 2025

Multi-mode optical fiber

Multi-mode optical fiber is a type of optical fiber mostly used for communication over short distances, such as within a building or on a

May 03, 2026

The Fiber Optic Association

Other groups may have fiber optic standards also: ANSI is the governing bodies for standards in the US, NIST provides primary

Nov 01, 2025

Fiber Optic Cables

APPLICATION Optical cable for industrial environments. The cable is suitable for both indoor and outdoor installation. The outer

Contact Us

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