

# Materials for the outer sheath of optical cables

## Article Overview

The outer sheath of optical cables is typically made from materials like PVC, PE, LSZH, or specialized compounds, chosen for protection, durability, and environmental resistance.

## Purpose of the Outer Sheath

The outer sheath serves as the primary protective layer for optical fibers, shielding them from mechanical damage, moisture, chemical corrosion, UV radiation, and fire hazards. It also contributes to the cable's tensile strength, flexibility, and abrasion resistance during installation and operation .

## Common Outer Sheath Materials

- o PVC (Polyvinyl Chloride): Widely used due to its low cost, chemical resistance, weathering resistance, and moderate flame retardancy. PVC is suitable for general indoor and outdoor applications but produces dense smoke and toxic gases when burned .
- o PE (Polyethylene): Known for excellent low-temperature performance, UV resistance, chemical stability, and electrical insulation. PE is often used in outdoor environments, with variations like MDPE (medium density) and HDPE (high density) for added toughness .
- o LSZH (Low Smoke Zero Halogen): Flame-retardant material that produces minimal smoke and no toxic halogen gases during combustion. LSZH is ideal for indoor installations, especially in confined spaces like data centers, where fire safety is critical .
- o Other specialized materials:
  - o AT (Armored or Rodent-Proof Sheaths) for protection against physical damage or pests.
  - o PVDF, Plenum, Riser, and Polyurethane (PU) for specific applications such as high chemical resistance, underwater use, or compliance with building fire codes .

## Selection Considerations

Choosing the right sheath material depends on installation environment and safety requirements:

- o Outdoor: PE or HDPE for UV, moisture, and temperature resistance.
- o Indoor: LSZH for low smoke and non-toxic emissions.
- o Industrial: PVC or TPE for chemical and oil resistance.
- o Submarine or wet environments: PU for water and abrasion resistance .

## Summary

# Materials for the outer sheath of optical cables

The outer sheath material is a critical factor in cable longevity, safety, and performance. PVC, PE, and LSZH are the most common, each offering distinct advantages depending on environmental exposure, fire safety requirements, and mechanical protection needs .

Choosing the correct outer jacket material for a fiber optic patch cable is more than a cosmetic or cost decision--it

The engineering deep dive into cable outer sheaths, covering material science, environmental adaptation, and quality

A TOSLINK optical fiber cable with a clear jacket. These cables are used mainly for digital audio connections between devices. A

Choosing the wrong sheath material may not cause immediate failure, but it often leads to accelerated aging,

A layer is formed by tightly wrapping individual steel wires around the inner sheath and finally applying an outer

0.2 This standard was originally published in 1970 with view to bring under a single cover the various requirements for

The document outlines important notices and disclaimers related to the National Fire Protection

Its structure is mainly composed of cable core, longitudinal covering a layer of two-sided synthetic mica tape outside cable core,

The cable sheath is key to safety and longevity. Discover its dual function, material science, and how environmental

For injection-molded cable products such as optical cables, surface defects are a common product quality problem.

A complete guide to the raw materials of fiber optic cables--optical fibers, PBT tubes, FRP rods, aramid yarn, steel

Sheath of the cables are used to protect the cables from damage. Instrument Cables Sheath

keybank.com

## Materials for the outer sheath of optical cables

A submarine power cable is a transmission cable for carrying electric power below the surface of the water.

Optical fiber cables are generally composed of optical fiber cores, cladding, coatings, reinforcing elements, and outer

Choose the sheath material based on the specific environmental, mechanical, and safety requirements of your

Web: <https://www.supremeacademicresearch.co.za>

