Modified Polyethylene Optical Cable Sheath Material



Overview

In order to overcome at least one defect of the above-mentioned prior art, the present invention provides a low-shrinkage polyethylene optical cable sheath material, and the sheath...

Key Takeaways

Modified polyethylene (PE) blends, including HDPE, LDPE, LLDPE, and UHMWPE, are widely used for optical cable sheaths due to their low shrinkage, high tensile strength, and environmental stress resistance.

Composition and Modification

Modified polyethylene sheath materials are typically blends of multiple PE types to optimize mechanical and thermal properties. A common formulation includes: High-Density Polyethylene (HDPE): Provides rigidity, weather resistance, and long-term outdoor durability.

Low-

Density Polyethylene (LDPE): Adds flexibility and ease of processing.

Linear Low-

Density Polyethylene (LLDPE): Enhances tensile strength and elongation, improving overall mechanical performance.

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Ultra-

High Molecular Weight Polyethylene (UHMWPE): Improves wear resistance and toughness. Elastomers (e.g., SEBS): Reduce brittleness and improve impact resistance. Additives: Carbon black for UV protection, antioxidants, lubricants, and light stabilizers to enhance durability and processing stability.

These blends are engineered to achieve low shrinkage (≤2. 5%), high tensile strength (≥27 MPa), elongation over 600%, and excellent environmental stress cracking resistance (≥1500 hours), making them suitable for aramid-reinforced optical cables and air-blown micro-cables.

Performance Characteristics

Low Shrinkage: Modified PE sheaths minimize dimensional changes during temperature cycling, preventing fiber attenuation and maintaining cable integrity. Mechanical Strength: High tensile strength and elongation ensure the sheath can withstand installation stresses and environmental loads. Environmental Resistance: Carbon black and stabilizers protect against UV degradation, oxidation, and long-term outdoor exposure.

Processing Advantages: Blended PE compounds allow smooth extrusion, high-speed processing, and compatibility with modern optical cable manufacturing equipment.

Applications

Modified polyethylene sheaths are used in: Outdoor FTTH networks: HDPE-based blends provide weather resistance and long service life. Specialty optical cables: Aramid-reinforced or air-blown micro-cables require low-shrinkage, high-strength sheaths. High-performance environments: Cables exposed to UV, temperature fluctuations, or mechanical stress benefit from modified PE compounds.

Summary

Modified polyethylene optical cable sheaths combine HDPE, LDPE, LLDPE, UHMWPE, elastomers, and stabilizers to achieve a balance of low shrinkage, mechanical strength, flexibility, and environmental resistance. These materials are critical for ensuring long-term reliability, fiber protection, and ease of installation in both standard and specialized optical cable applications.

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Article Content

Low-shrinkage polyethylene optical cable sheath material, preparation ...

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The present application discloses a polyethylene optical cable sheath tube and a preparation method thereof, and relates to the technical field of sheath tubes.

Preparation process and insulation performance analysis of new

To further improve the performance of composite films, a new type of optical cable sheath material, magnesium oxide/polyethylene composite film, was prepared by combining high thermal

Analysis Of Optical Cable Sheath Materials: All-round

Medium-density polyethylene sheath material is made by blending high-density polyethylene and low-density polyethylene in an appropriate proportion, or by

YD/T 1485-2023: (Polyethylene material for ... (PDF English)

This standard applies to the manufacturing, use and acceptance of linear low-density polyethylene, medium-density polyethylene and high-density polyethylene materials for

LOW SHRINKAGE POLYETHYLENE SHEATH MATERIAL,

The low-shrinkage polyethylene sheathing material provided by the present invention overcomes the problem of high cable shrinkage rate of commonly used polyethylene sheathing

Recycled PE Sheathing Compound LLDPE

Description: PE virgin sheathing material is made of virgin high molecular polyethylene as the main raw material, adding various additives, modified by

18 Cable Sheath Materials Explained

We will look into the 18 common and specialized sheath materials in this section, exploring their features, such as advantages, disadvantages, and situations for use.

Modified lignin-based intumescent flame Retardant''s effect on flame ...

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In this paper, HDPE composite flame retardant materials are prepared for cable sheathing by using APP and Lig as intumescent flame retardants and POE as toughening agent.

Virgin black HDPE jacket material

Used for the outer sheath of high standard and high requirement optical cable, it has the advantages of stable testing performance, excellent processing performance,

Hubei Kepuda Polymer Materials Co., Ltd.-Polyethylene cable

Sheath suitable for communication cables, control cables, signal cables, and optical cables. A high-tech enterprise specializing in the modification and processing of polymer materials. Founded in January

Cable Sheath Materials

CSP (Chloro-sulphanated Polyethylene) – similar properties to neoprene, though superior in resistance to heat, oxidizing chemicals, ozone and moisture, and has better dielectric properties. However CSP

Low-shrinkage polyethylene optical cable sheath material, preparation ...

The sheath material has a low shrinkage of within 2.5%, the tensile strength is greater than or equal to 27 MPa, the elongation is greater than 600%, the environmental stress cracking resistance is greater

Application Notes

Abstract The cable jacket provides the first line of defense against the surrounding environment. It resists water entry while remaining inert to gases and liquids that the cable may be exposed to

Fiber optic cable outer sheath material

Fiber optic cable with sleeve material. Select fiber optic cables of different materials according to the layout area Generally speaking, Plenum fiber optic cables are suitable for use in

A Guide to Cable Sheaths and Jacket Types

There are a wide variety of different cable sheaths and jackets which all serve a different purpose. Understanding the difference helps you make an informed decision when it comes to

Recommendation ITU-T L.100 (01/2024)

This document provides comprehensive guidelines for single-mode optical fiber cables installed via the pulling method in ducts and tunnels, primarily for telecommunication networks. It outlines the

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Cable Sheathing Material Guide

With a wide range of cable sheathing options available, it''s hard to know which is best for your installation. A range of factors from population

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

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