Aluminium-Copolymer

Hermetic moisture barrier and mechanical protection for power and telecom cables

Descripción

The aluminium-copolymer tape (AL/PE) combines an aluminium foil with a heat-activated copolymer coating on one or both sides. This structure delivers a hermetic barrier against moisture and chemical agents, while the copolymer bonds directly to the cable jacket during the extrusion process, forming a composite protection layer that integrates shield and jacket in a single sealed system.

In power and fibre-optic cables, aluminium-copolymer acts simultaneously as a moisture barrier, an electromagnetic shield and — depending on aluminium thickness — as a return path for short-circuit currents. The copolymer forms a chemical bond with the most common jacket resins — LDPE, LLDPE, MDPE, HDPE and halogen-free polyolefins (HFPO) — providing a permanent bond that eliminates moisture migration between layers.

Aluminium thicknesses range from 0.08 to 0.30 mm with a 50 µm copolymer coating per side. Aluminium thickness is selected based on mechanical-protection requirements and short-circuit capacity, while the copolymer keeps a constant thickness optimised for bonding without unnecessarily increasing cable diameter.

Mechanical properties

Propiedad	Método	Value
Tensile strength	YD/T 723-2007	≥75 MPa
Elongation at break	YD/T 723-2007	≥25%
Peel strength (copolymer-aluminium)	YD/T 723-2007	≥0.45 N/mm
Shear strength	YD/T 723-2007	The tape fails in tension before the copolymer-aluminium bond
Kinetic friction coefficient	YD/T 723-2007	≤0.65

Copolymer properties

Propiedad	Método	Value
Melt flow index	ASTM D1238 (190/2.16)	10 g/10 min
Melting point	ASTM D3418 (DSC)	100°C

Guía de selección

The aluminium thickness depends on the balance between barrier requirements, short-circuit protection capacity and finished-cable flexibility. The copolymer thickness (50 µm) is common to all references and optimised for bonding with the most common jacket materials.

Reference	Al thickness	Copolymer thickness	Total thickness	Typical application	When to choose
AL/PE 80/50	0.08 mm ±6%	0.050 ±0.005 mm	0.13 mm	Fibre-optic cables, telecoms	Maximum flexibility, basic barrier
AL/PE 150/50	0.15 mm ±6%	0.050 ±0.005 mm	0.20 mm	Communication cables, LV power	Barrier/flexibility balance
AL/PE 200/50	0.20 mm ±6%	0.050 ±0.005 mm	0.25 mm	MV power cables	Reinforced mechanical protection
AL/PE 300/50	0.30 mm ±6%	0.050 ±0.005 mm	0.35 mm	Submarine cables, HV power	Maximum protection, short-circuit capacity

Variantes disponibles

Coating configuration
– One side — copolymer on the inner side (in contact with the jacket)
– Two sides — copolymer on both sides, for double-bond applications

Alternative aluminium thicknesses
– Other thicknesses available on request, per specific protection requirements

Formatos de entrega

Aluminium-copolymer is supplied in jumbo reels optimised for continuous feed in cable manufacturing lines. The formats are designed to minimise splices and maximise productivity.

Jumbo reel

Core ID:	103 mm, 151 mm, 206 mm, 406 mm
Jumbo reel width:	516 mm, 556 mm, 850 mm
Standard length:	2,050 – 4,100 m
Slit width:	20 – 510 mm

The values shown below come from tests run to international standards and characterise the material's behaviour both during processing and in service.

Los valores indicados son típicos y no constituyen especificaciones vinculantes.