

# Armored Loose Tube Fiber

Single Armor · Single Jacket · OSP Rated · Direct Burial — 12 to 144 Strand

DIRECT BURIAL

OSP RATED

GEL-FREE DRY BLOCK

OS2 / OM4

CST / IAC

Armor Type

≥2,200 N/cm

Crush Rating

-40°C to 70°C

Temp Range

12-144F

Strand Range

## PRODUCT OVERVIEW

Mirabel Energy USA Armored Loose Tube fiber optic cable is designed for OSP installation in demanding environments requiring mechanical protection. Single interlocked aluminum (IAC) or corrugated steel tape (CST) armor provides crush resistance and rodent protection for direct burial, underground conduit, and exposed industrial raceway. Gel-free dry-block water-blocking eliminates gel cleanup at splice points. Available in OS2 single-mode and OM4 multimode with fiber counts from 12 to 144 strands.

## APPLICATIONS

- Direct burial inter-building campus runs
- Underground utility substation fiber
- Renewable energy site fiber infrastructure
- Industrial cable tray and raceway runs
- Mining facility communications fiber
- Data center OSP entry and campus backbone
- Exposed runs requiring rodent protection

## CONSTRUCTION DESCRIPTION

**Fiber Element:** 250µm coated OS2 or OM4, gel-free buffer tube

**Buffer Tube:** Loose tube, 6 or 12 fibers per tube

**Water Block:** Dry-block tape / super-absorbent yarn — no gel

**Strength Members:** Central FRP rod, aramid yarn

**Armor:** Interlocked Al (IAC) or corrugated steel tape (CST)

**Inner Jacket:** Polyethylene (PE) — black, UV-stable

**Outer Jacket:** HDPE — NEC/NESC direct burial rated

**Color Code:** TIA-598-C 12-color, sequential per tube

## TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION — OS2	SPECIFICATION — OM4
<b>Fiber Type</b>	OS2 9/125µm ITU-T G.652.D	OM4 50/125µm IEC 60793-2-10
<b>Attenuation @ 1310nm</b>	≤0.40 dB/km	—
<b>Attenuation @ 1550nm</b>	≤0.40 dB/km	—
<b>Attenuation @ 850nm</b>	—	≤3.0 dB/km
<b>Crush Resistance (IAC)</b>	≥2,200 N/cm	≥2,200 N/cm
<b>Crush Resistance (CST)</b>	≥3,000 N/cm	≥3,000 N/cm
<b>Min. Bend Radius</b>	20x cable OD (installation)	20x cable OD (installation)
<b>Tensile Strength</b>	2,700 N short-term	2,700 N short-term
<b>Operating Temperature</b>	-40°C to +70°C	-40°C to +70°C
<b>Jacket Material</b>	HDPE black, UV-stable	HDPE black, UV-stable
<b>Burial Rating</b>	Direct burial — no conduit req.	Direct burial — no conduit req.
<b>Standards</b>	Telcordia GR-20, IEC 60794-3	Telcordia GR-20, IEC 60794-3

## STRAND COUNT — ORDERING INFORMATION

FIBER COUNT	AVAILABILITY	OD (mm)	WEIGHT (kg/km)	MBR (mm)	ORDER CODE
12 Strand	IN STOCK — Reno/Houston	0.5	08	100	MR-ALT-012

# Armored Ribbon Fiber Optic

Single Armor · Rollable Ribbon · OSP Rated · Direct Burial — 12 to 144 Strands

DIRECT BURIAL

MASS-FUSION READY

GEL-FREE

OS2

CST / IAC

Armor Type

~30 sec/rib

Splice Time

-40°C to 70°C

Temp Range

12-144F

Strand Range

## PRODUCT OVERVIEW

Mirabel Energy USA Armored Ribbon Fiber combines the high-density mass-fusion splice advantage of rollable ribbon construction with full single-armor mechanical protection for OSP and direct burial deployment. Rollable ribbon units allow compact cable cross-section during installation while fanning flat for ultra-fast 12-fiber mass-fusion splicing (~30 seconds per ribbon). Single corrugated steel tape (CST) or interlocked aluminum (IAC) armor provides crush and rodent protection. Gel-free dry-block eliminates cleanup.

## APPLICATIONS

- High-count direct burial campus backbone
- Utility ROW fiber — mass-splice efficiency
- Telecom feeder with conduit size constraints
- Underground inter-building high-density runs
- Substation and transmission fiber
- Municipal fiber-to-premises FTTP builds
- Armored OSP runs needing fast restoration

## CONSTRUCTION DESCRIPTION

- Fiber Element:** 250µm coated OS2 9/125µm
- Ribbon Unit:** 12-fiber rollable ribbon, flat fan-out capable
- Water Block:** Gel-free dry-block tape between ribbons
- Strength Members:** Central FRP rod, aramid over-wrap
- Armor:** Interlocked Al (IAC) or corrugated steel tape (CST)
- Inner Jacket:** Polyethylene (PE) — black
- Outer Jacket:** HDPE direct burial rated, UV-stable
- Splice Prep:** Fan-out flat for 12-fiber mass fusion

## TECHNICAL SPECIFICATIONS

PARAMETER	STANDARD RIBBON	ROLLABLE RIBBON
<b>Fiber Type</b>	OS2 9/125µm G.652.D	OS2 9/125µm G.652.D
<b>Attenuation @ 1310nm</b>	≤0.40 dB/km	≤0.40 dB/km
<b>Attenuation @ 1550nm</b>	≤0.35 dB/km	≤0.35 dB/km
<b>Ribbon Width</b>	12-fiber flat	12-fiber rollable
<b>Splice Time / Ribbon</b>	~45 seconds	~30 seconds
<b>Crush Resistance (CST)</b>	≥3,000 N/cm	≥3,000 N/cm
<b>Crush Resistance (IAC)</b>	≥2,200 N/cm	≥2,200 N/cm
<b>Water Blocking</b>	Dry-block (gel-free)	Dry-block (gel-free)
<b>Operating Temperature</b>	-40°C to +70°C	-40°C to +70°C
<b>Jacket Material</b>	HDPE black, UV-rated	HDPE black, UV-rated
<b>Burial Rating</b>	Direct burial OK	Direct burial OK
<b>Standards</b>	Telcordia GR-20, IEC 60794-3, TIA-598	Same

## STRAND COUNT — ORDERING INFORMATION

FIBER COUNT	AVAILABILITY	OD (mm)	WEIGHT (kg/km)	MBR (mm)	ORDER CODE
12 Strand	IN STOCK - Reno/Houston	11.2	115	224	MR-ARR-012

# All-Dielectric Loose Tube

All-Dielectric · Single Jacket · OSP Rated · No Metal Components — 12 to 144

- ALL-DIELECTRIC
- NO METAL
- HV CORRIDOR SAFE
- OS2 / OM4

**FRP/Aramid**  
Strength Members

**No Ground Req.**  
HV ROW Safe

**-40°C to 70°C**  
Temp Range

**12-144F**  
Strand Range

## PRODUCT OVERVIEW

Mirabel Energy USA All-Dielectric Loose Tube fiber optic cable contains no metallic components — eliminating induced voltage concerns on high-voltage transmission and distribution corridors, near high-power equipment, and in lightning-prone environments. FRP central member and aramid yarn strength members provide tensile and compressive load resistance without requiring grounding. Gel-free dry-block water blocking and a rugged PE outer jacket provide full OSP moisture and UV protection for duct, lashed aerial, and conduit installations.

## APPLICATIONS

- Utility substation and transmission conduit runs
- SCADA / relay fiber on HV corridors (no grounding)
- Underground conduit in electrical substations
- Lashed aerial on distribution pole lines
- Lightning-prone areas — no ground potential transfer
- Renewable energy site OSP fiber in conduit
- Campus OSP runs in duct or conduit

## CONSTRUCTION DESCRIPTION

- Fiber Element:** 250µm coated OS2 or OM4, per buffer tube
- Buffer Tube:** Loose tube, 6 or 12 fibers per tube
- Water Block:** Dry-block tape — gel-free, clean termination
- Central Strength:** FRP (Fiberglass Reinforced Plastic) rod
- Outer Strength:** Aramid yarn over-wrap — no metal
- Jacket:** Polyethylene (PE) black — OSP/UV-rated
- Cert.:** No metallic components — all-dielectric
- Color Code:** TIA-598-C 12-color sequential

## TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION — OS2	SPECIFICATION — OM4
<b>Fiber Type</b>	OS2 9/125µm ITU-T G.652.D	OM4 50/125µm IEC 60793-2-10
<b>Attenuation @ 1310nm</b>	≤0.40 dB/km	—
<b>Attenuation @ 1550nm</b>	≤0.40 dB/km	—
<b>Attenuation @ 850nm</b>	—	≤3.0 dB/km
<b>Metallic Components</b>	None — fully dielectric	None — fully dielectric
<b>Strength Members</b>	FRP central rod + aramid yarn	FRP central rod + aramid yarn
<b>Tensile Strength</b>	2,700 N (installation)	2,700 N (installation)
<b>Min. Bend Radius</b>	20x cable OD (installation)	20x cable OD (installation)
<b>Operating Temperature</b>	-40°C to +70°C	-40°C to +70°C
<b>Jacket Material</b>	HDPE black, UV-stable	HDPE black, UV-stable
<b>Installation Method</b>	Duct / conduit / lashed aerial	Duct / conduit / lashed aerial
<b>Standards</b>	Telcordia GR-20, IEC 60794-2	Telcordia GR-20, IEC 60794-2

## STRAND COUNT — ORDERING INFORMATION

FIBER COUNT	AVAILABILITY	OD (mm)	WEIGHT (kg/km)	MBR (mm)	ORDER CODE
12 Strand	IN STOCK - Reno/Houston	8.2	76	164	MB-ADL-012

# All-Dielectric Ribbon Fiber

All-Dielectric · Rollable Ribbon · OSP Rated · No Metal — 12 to 144 Strand

ALL-DIELECTRIC

MASS-FUSION READY

HV CORRIDOR SAFE

OS2

FRP/Aramid

Strength Members

~30 sec/rib

Splice Time

-40°C to 70°C

Temp Range

12-144F

Strand Range

## PRODUCT OVERVIEW

Mirabel Energy USA All-Dielectric Ribbon Fiber cable combines rollable ribbon mass-splice efficiency with a fully non-metallic construction — ideal for installation on energized utility corridors, in conduit with lightning exposure, or anywhere grounding of metallic components is not feasible. Rollable ribbon units allow a compact cable cross-section and enable rapid 12-fiber mass-fusion splicing (~30 seconds per ribbon), significantly reducing field splice time on high-count runs. FRP central member and aramid yarn provide tensile strength without any metallic components.

## APPLICATIONS

- HV corridor conduit — no grounding required
- High-count substation fiber — fast restoration
- Utility ROW mass-splice backbone conduit runs
- Telecom / ISP high-fiber-count conduit builds
- Municipal FTTP / FTTH infrastructure
- Hyperscale campus OSP — space-constrained conduit
- Renewable energy — lightning-prone areas

## CONSTRUCTION DESCRIPTION

- Fiber Element:** 250µm coated OS2 9/125µm
- Ribbon Unit:** 12-fiber rollable ribbon — flat fan-out
- Water Block:** Gel-free dry-block tape — no cleanup
- Central Strength:** FRP rod — non-metallic
- Outer Strength:** Aramid yarn — no metallic components
- Jacket:** HDPE black, OSP/UV-rated — single jacket
- Dielectric Cert.:** No metallic components throughout
- Splice Prep:** Fan-out flat for 12-fiber mass fusion

## TECHNICAL SPECIFICATIONS

PARAMETER	STANDARD RIBBON	ROLLABLE RIBBON
<b>Fiber Type</b>	OS2 9/125µm G.652.D	OS2 9/125µm G.652.D
<b>Attenuation @ 1310nm</b>	≤0.40 dB/km	≤0.40 dB/km
<b>Attenuation @ 1550nm</b>	≤0.35 dB/km	≤0.35 dB/km
<b>Metallic Components</b>	None — fully dielectric	None — fully dielectric
<b>Ribbon Width</b>	12-fiber flat	12-fiber rollable (compact)
<b>Splice Time / Ribbon</b>	~45 seconds	~30 seconds
<b>Strength Members</b>	FRP central + aramid yarn	FRP central + aramid yarn
<b>Water Blocking</b>	Gel-free dry-block	Gel-free dry-block
<b>Operating Temperature</b>	-40°C to +70°C	-40°C to +70°C
<b>Jacket Material</b>	HDPE black, UV-rated	HDPE black, UV-rated
<b>Standards</b>	Telcordia GR-20, IEC 60794-2, TIA-598	Same

## STRAND COUNT — ORDERING INFORMATION

FIBER COUNT	AVAILABILITY	OD (mm)	WEIGHT (kg/km)	MBR (mm)	ORDER CODE
12 Strand	IN STOCK — Reno/Houston	9.8	88	196	MIR-ADR-012

# 1 1/4" HDPE Innerduct — Smooth Wall

Orange · Smooth Wall · High-Density Polyethylene — Fiber Optic Cable

SMOOTH WALL

ORANGE — FIBER STD.

HDPE

DIRECT BURIAL RATED

1.315"

Outside Diameter

1.049"

Inside Diameter (Nom.)

HDPE

Material

500 / 1,000 ft

Stock Reel Lengths

## PRODUCT OVERVIEW

Mirabel Energy USA 1-1/4 inch HDPE smooth wall innerduct is the standard subduct for fiber optic cable protection inside larger conduit systems, direct in underground structures, and in cable trays. The smooth-wall interior provides the lowest friction coefficient for cable pulling, maximizing pull length and minimizing installation force compared to corrugated alternatives. Orange is the universally recognized fiber optic pathway color per ANSI/TIA-758 and utility industry practice. HDPE construction provides chemical resistance, impact strength, and UV stability for long-term OSP performance.

## APPLICATIONS

- Fiber optic subduct inside 2"-4" main conduit
- Direct buried innerduct for fiber cable protection
- OSP underground cable pathway management
- Utility substation cable tray fiber separation
- Data center campus OSP duct entry subduct
- Telecommunications outside plant innerduct
- Renewable energy site fiber cable protection

## PRODUCT FEATURES

- Color:** Orange — fiber optic standard per ANSI/TIA-758
- Wall Type:** Smooth wall — minimum pull friction
- Material:** High-Density Polyethylene (HDPE)
- UV Rating:** UV-stabilized for outdoor/OSP exposure
- Flexibility:** Coilable — ships on reel for easy deployment
- Chemical Res.:** Resistant to soils, chemicals, fuels
- Temp Range:** -40°C to +60°C (installation/service)
- End Fittings:** Compatible with standard 1.25" conduit fittings

## TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION	TEST / STANDARD
Nominal Size	1-1/4 inch (1.25")	Trade size designation
Outside Diameter (OD)	1.315" (33.4 mm)	ASTM D3035
Inside Diameter (ID)	1.049" (26.6 mm) nominal	ASTM D3035
Wall Thickness	0.133" (3.4 mm) nominal	ASTM D3035
Material	High-Density Polyethylene (HDPE)	ASTM D3350
Color	Orange — UV-stabilized pigment	ANSI/TIA-758 fiber standard
Wall Type	Smooth wall (non-corrugated)	—
Min. Bend Radius	6" (152 mm) installed	Mfr. specification
Tensile Strength	≥24 MPa (HDPE base resin)	ASTM D638
UV Resistance	UV-stabilized — HDPE OSP grade	ASTM D4355
Operating Temp.	-40°C to +60°C	ASTM D648
Reel Lengths	500 ft and 1,000 ft standard	—
Compliance	ASTM D3035 / F2160   NEMA TC-7	NEMA TC-7

## COMPATIBLE FIBER CABLE — PULL-IN CAPACITY (70% FILL RATIO)

CABLE TYPE	MAX CABLE OD	TYPICAL FIBER COUNT	NOTES
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