



# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### **Bulk Tight-Buffered, Loose-Tube, and Armored Fiberoptic Cable**

*Be ready to deploy fibre wherever it's needed—indoors, outdoors, or even underground.*

#### **Key Features**

▶ *Tight-Buffered Cable, with core and cladding surrounded by a thick plastic buffer and Kevlar yarn, is tough enough for all sorts of rugged indoor jobs.*

▶ *Loose-Tube Cable carries large groups of fiber strands through or between buildings.*

▶ *Armored Cable has steel armor and strength members for outdoor runs of the most extreme nature—airial, underground, etc.*

**T**ired of fibreoptic cable that kinks, gets crushed, or breaks if you don't handle it like fine china? That carries only one, two, or maybe four fiber strands at most? That "catches a chill" and promptly expires if you try to run it beyond the safety of a nice comfy building?

We don't blame you. That's why we offer these rough and ready cables that are ready to carry 100-Mbps data wherever you need it to go.

The 62.5- $\mu$ m glass fibre cores of the Tight-Buffered Cordage Fiber Optic Cables (our product codes EHN4050A etc.) are sheathed in 125- $\mu$ m cladding as usual. However, then the cladding is wrapped in a plastic buffer to a diameter of

900  $\mu$ m, which in turn is swathed in aramid yarn made from Kevlar<sup>®</sup>—the same material used to make bulletproof vests—and jacketed.

This robust design gives the Tight-Buffered Cables great tensile strength and general toughness. Even so, they are flexible enough to easily carry, pull, strip, and attach connectors to. Use them for all your single-cable runs: patch panel to patch panel, panel to hub, hub to device, etc.

We offer two types of these cables: simplex (one fibre in one jacket) and zipcord (one fibre in each of two interconnected but easily separated jackets).

The Stranded Loose-Tube Indoor/Outdoor Fibre Cables (our product codes EFN012A, etc.) function as distribution or backbone cables: They carry 12, 24, or 48 color-coded fibre strands between major concentration points in the same or different building.

In the 12-strand type, the tight-buffered fibres are arranged in a single stranded ring around an overcoated dielectric central member, then surrounded by Kevlar and jacketed. In the 24- and 48-strand versions, sets of the tight-buffered fibres are wrapped around dielectric members in several loose tubes; these tubes are then

stranded around a larger central member, swathed (with a ripcord) in Kevlar, and jacketed.

The Armored Outside Plant Fibre Cables (our product codes EFN4070A etc.) are as tough as nails but seem as supple as leather. Though they also function as backbone or distribution cable for 6, 12, or 24 color-coded fibre strands, they can be run through parts of the great outdoors that other cables can't: the air or soil, for example.

The 6- and 12-strand types have the buffered fibres stranded around an overcoated dielectric central member, like the 12-strand Loose-Tube type. However, these fibres are sheathed in aramid yarn, then a layer of ribbed steel, then jacketed. The 24-strand type has sets of the fibers grouped in loose tubes that are stranded around a central dielectric member, also like the Loose-Tube variety, but the fibres are bound with a flooding compound rather than a secondary dielectric member; the tubes, a pair of ripcords, and core binder are sheathed with aramid, encased in ribbed-steel armor, and jacketed with medium-density polyethylene.

#### **Typical Applications**

*Run an Armored Outside Plant Fibre Cable from your main building, through the scaffolding supporting the walkway canopy, to the central wiring closet of the finance building. Then break out the separate strands to interconnect 10BASE-FL, 100BASE-FX, and Frame-Relay devices at the same time.*

## Specifications

### *Tight-Buffered Cordage Fibre Optic Cable*

Fiber Type — Multimode  
 Core Diameter — 62.5 ±3 µm  
 Cladding Diameter — 125 ±2 µm  
 Acrylate Diameter — 250 ±15 µm  
 Buffer Diameter — 900 ±30 µm  
 Temperature Tolerance —  
 Installation: 0 to 70° C;  
 Operating: -20 to 70° C;  
 Storage: -40 to 70° C  
 Maximum Attenuation —  
 3.7 dB/km for 850-nm  
 wavelengths, 1.5 dB/km for  
 1300-nm wavelengths  
 Typical Attenuation —  
 3.1 dB/km for 850-nm  
 wavelengths, 0.75 dB/km for  
 1300-nm wavelengths  
 Minimum Bandwidth —  
 160 MHz-km for 850-nm  
 wavelengths, 500 MHz-km  
 for 1300-nm wavelengths  
 Maximum Tensile Load —  
 Simplex types:  
 Short-term: 60 lb. (260 N);  
 Long-term: 20 lb. (90 N);  
 Zipcord types:  
 Short-term: 90 lb. (400 N);  
 Long-term: 30 lb. (133 N)  
 Minimum Bend Radius —  
 Loaded: 5.1 cm;  
 Unloaded: 2.5 cm  
 Outer Diameter —  
 Simplex types: 2.5 mm;  
 Zipcord types: 2.5 mm  
 for each strand, 5.4 mm for  
 whole cable  
 Weight —  
 Simplex types: 2.6 kg;  
 Zipcord riser: 5.3 kg  
  
*Stranded Loose-Tube Indoor/  
 Outdoor Fiber Cable*  
 Fiber Type — Multimode  
 Core Diameter — 62.5 ±3 µm  
 Cladding Diameter —  
 125 ±2 µm  
 Acrylate Diameter —  
 250 ±15 µm  
 Buffer Diameter — 900 ±30 µm  
 Temperature Tolerance —  
 Installation: 0 to 70° C;  
 Operating: -20 to 70° C;  
 Storage: -40 to 70° C  
 Maximum Attenuation —  
 3.5 dB/km for 850-nm

wavelengths, 1.0 dB/km for  
 1300-nm wavelengths

Typical Attenuation —  
 3.0 dB/km for 850-nm  
 wavelengths, 0.7 dB/km for  
 1300-nm wavelengths

Minimum Bandwidth —  
 160 MHz-km for 850-nm  
 wavelengths, 500 MHz-km  
 for 1300-nm wavelengths

Maximum Tensile Load —  
 12-strand:  
 Short-term: 400 lb. (1800 N);  
 Long-term: 135 lb. (600 N);  
 24-strand:  
 Short-term: 500 lb. (2200 N);  
 Long-term: 160 lb. (710 N);  
 48-strand:  
 Short-term: 600 lb. (2700 N);  
 Long-term: 224 lb. (1000 N)

Minimum Bend Radius —  
 12-strand:  
 Loaded: 14.8 cm;  
 Unloaded: 7.4 cm;  
 24-strand:  
 Loaded: 22.4 cm;  
 Unloaded: 11.2 cm;  
 48-strand:  
 Loaded: 40.6 cm;  
 Unloaded: 20.3 cm

Outer Diameter —  
 12-strand: 7.4 mm;  
 24-strand: 11.1 mm;  
 48-strand: 20.3 mm

Weight —  
 12-strand: 17.3 kg;  
 24-strand: 39.5 kg;  
 48-strand: 104.5 kg

### *Armored Outside Plant Fibre Cable*

Fiber Type — Multimode  
 Core Diameter — 62.5 ±3 µm  
 Cladding Diameter —  
 125 ±2 µm  
 Acrylate Diameter —  
 250 ±15 µm  
 Installation Loading — 600 lb.  
 (2700 N)  
 Temperature Tolerance —  
 Operating: -40 to 70° C;  
 Storage: -50 to 70° C

Maximum Attenuation —  
 3.5 dB/km for 850-nm  
 wavelengths, 1.0 dB/km for  
 1300-nm wavelengths

Typical Attenuation —  
 3.0 dB/km for 850-nm  
 wavelengths, 0.7 dB/km for  
 1300-nm wavelengths

Minimum Bandwidth —  
 160 MHz-km for 850-nm  
 wavelengths, 500 MHz-km for  
 1300-nm wavelengths

Crush Resistance —  
 454.5 kg

Impact Resistance —  
 25 impacts at 6.4 kg/m

Minimum Bend Radius —  
 Loaded: 25 cm;  
 Unloaded: 14.1 cm

Outer Diameter —  
 14.1 mm

Weight — 68.2 kg

## Ordering Information

All product codes are for 1000-ft. (304.8-m) reels; other lengths available on a quote basis.

### PRODUCT NAME

### ORDER CODE

*Tight-Buffered Cordage Fiber Optic Cables*

Simplex:

Riser (PVC) ..... EFN4050A-1000

Zipcord:

Riser (PVC) ..... EFN4060A-1000

### *Stranded Loose-Tube Indoor/Outdoor Fiber Cable*

12-Strand ..... EFN4012A-1000

24-Strand ..... EFN4024A-1000

48-Strand ..... EFN4048A-1000

(Different numbers of strands, in multiples of 6, are available on a quote basis.)

### *Armored Outside Plant Fiber Cable*

6-Strand ..... EFN4070A-1000

12-Strand ..... EFN4075A-1000

24-Strand ..... EFN4080A-1000

(Different numbers of strands, in multiples of 2, are available on a quote basis.)