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LINK AMERICAN CABLING



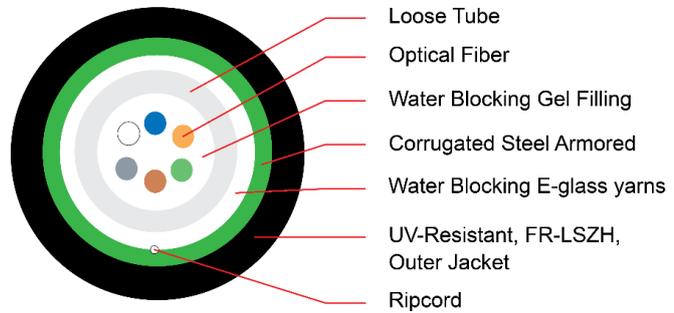
F.O. OUTDOOR/INDOOR, ARMORED, FR-LSZH, SINGLE TUBE

Scope of Application

This specification covers the general requirements for fiber optic telecommunication cables used for campus backbone, building backbone, indoor and outdoor in duct, lash aerial or direct buried installation. LINK fiber optic cable supports application such as 40/100Gbps Ethernet, IEEE802.3ae, 10G Ethernet, IEEE802.3z, Gigabit Ethernet, Fast Ethernet, Ethernet, 100BASE-F, 52/155/622Mbps and 1.2Gbps ATM, FDDI, Fiber channel and others.

LINK OUTDOOR/INDOOR, ARMORED, FR-LSZH, fiber optic cable, Singlemode and Multimode color coded fibers, single loose tube, the interstices between the optical fibers filled with a suitable waterproof compound. The water blocking E-glass yarns provide for tensile strength and water blocking, corrugated steel tape armored for rodent protection and ripcord for easy to strip. The outer sheath is UV-Resistant black PE with FR-LSZH.

Drawing



Technical Standard

- ANSI/TIA-568.3-E
 - ANSI/TIA-568.3-D
 - ANSI/ICEA 696, ANSI/ICEA 596, ANSI/ICEA 640
 - Telcordia (Bellcore) GR-20-CORE, GR-409-CORE
 - ITU-T G.652D (Singlemode)
 - ITU-T G.651 (Multimode)
 - RoHS Compliant
- ISO/IEC 11801:2011
 - ISO/IEC 11801:2017
 - IEC 60332-1-2, IEC 60332-3
 - IEC 61034-2, IEC60754-2
 - IEC 60793, IEC 60794-1-2
 - EN 50173-1, TIS 2165-2561





OPTICAL FIBER

| Items | | Specifications |
|--------------------------------------|--------------------------|---|
| Fiber Type | | 9/125 μm (OS2) |
| Max. / Typ. Attenuation | 1310 nm | $\leq 0.35/0.33$ dB/km |
| | 1383 nm | $\leq 0.35/0.31$ dB/km |
| | 1550 nm | $\leq 0.21/0.19$ dB/km |
| | 1625 nm | $\leq 0.23/0.20$ dB/km |
| Core | Mode Field Diameter | 9.2 \pm 0.4 μm @ 1310 nm 10.4 \pm 0.5 μm @ 1550 nm |
| Cladding Diameter | | 125 \pm 0.7 μm |
| Coating Diameter, Primary | | 242 \pm 5 μm |
| Coating Diameter, Secondary | | 250 \pm 5 μm |
| Cladding Non-circularity | | ≤ 0.7 % |
| Core/Cladding Concentricity error | | ≤ 0.5 μm |
| Coating/Cladding Concentricity error | | ≤ 12 μm |
| Attenuation (Homogeneity) | | Max 0.1 dB/km |
| Zero Dispersion Wavelength | | 1300 ~ 1324 nm |
| Zero Dispersion Slope | | ≤ 0.092 ps/(nm ² .km) |
| Cut-off Wavelength | λ_0 (Fiber) | 1150 ~ 1330 nm |
| | λ_∞ (Cable) | ≤ 1260 nm |
| Proof Test Stress | | 100 Kpsi |
| Chromatic Dispersion | λ ; 1285~1340 nm | ≤ 3.5 ps/nm.km |
| | $\lambda = 1550$ nm | ≤ 18 ps/nm.km |
| | $\lambda = 1625$ nm | ≤ 22 ps/nm.km |
| Polarization mode dispersion (PMD) | | ≤ 0.20 ps/ $\sqrt{\text{km}}$ |
| Fiber Curl | | $\geq 4\text{M}$ |
| Numerical Aperture | | 0.130 \pm 0.010 |
| Group refractive index | 1310 nm | 1.4676 |
| | 1550 nm | 1.4682 |

Table 1 The Optical, Geometrical Performance of the Singlemode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568.3-E, IEC 60793-2B1.3, ITU-T G.652D)



OPTICAL FIBER

| Items | | Specifications | | | |
|--|---------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | 50/125 μ m (OM2) | 50/125 μ m (OM3) | 50/125 μ m (OM4) | 50/125 μ m (OM5) |
| Fiber Type | 850 nm | $\leq 2.7 / \leq 2.5$ | $\leq 2.7 / \leq 2.3$ | $\leq 2.7 / \leq 2.3$ | $\leq 2.7 / \leq 2.3$ |
| | 1300 nm | $\leq 0.8 / \leq 0.7$ | $\leq 0.8 / \leq 0.6$ | $\leq 0.8 / \leq 0.6$ | $\leq 0.8 / \leq 0.6$ |
| | 953 nm | N.A | N.A | N.A | $\leq 2.3 / \leq 2.0$ |
| Max./ Typ. Attenuation (dB/km) | 850 nm | ≥ 500 | ≥ 1500 | ≥ 3500 | ≥ 3500 |
| | 1300 nm | ≥ 500 | ≥ 500 | ≥ 500 | ≥ 500 |
| | 953 nm | N.A | N.A | N.A | ≥ 1850 |
| 850nm Laser Bandwidth (MHz/km) | | N.A | ≥ 2000 | ≥ 4700 | ≥ 4700 |
| 953nm Laser Bandwidth (MHz/km) | | N.A | N.A | N.A | ≥ 2470 |
| Core Diameter (μ m) | | 50.0 ± 2.5 | 50.0 ± 2.5 | 50.0 ± 2.5 | 50.0 ± 2.5 |
| Cladding Diameter (μ m) | | 125 ± 1 | 125 ± 1 | 125 ± 1 | 125 ± 1 |
| Core Non-circularity (%) | | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Cladding Non-circularity (%) | | ≤ 1.0 | ≤ 1.0 | ≤ 1.0 | ≤ 1.0 |
| Core/Cladding Concentricity error (μ m) | | ≤ 1.5 | ≤ 1.5 | ≤ 1.5 | ≤ 1.5 |
| Coating Diameter, Primary (μ m) | | 242 ± 5 | 242 ± 5 | 242 ± 5 | 242 ± 5 |
| Coating Diameter, Secondary (μ m) | | 250 ± 5 | 250 ± 5 | 250 ± 5 | 250 ± 5 |
| Coating Non-Circularity (%) | | ≤ 5 | ≤ 5 | ≤ 5 | ≤ 5 |
| Coating/Cladding Concentricity error (μ m) | | ≤ 12 | ≤ 12 | ≤ 12 | ≤ 12 |
| Attenuation (Homogeneity) | | Max 0.1 dB/km | Max 0.1 dB/km | Max 0.1 dB/km | Max 0.1 dB/km |
| Proof Test Stress (kpsi) | | 100 | 100 | 100 | 100 |
| Bending Loss @ 850 & 1300 nm (100 turns, | | ≤ 0.5 dB | ≤ 0.5 dB | ≤ 0.5 dB | ≤ 0.5 dB |
| Zero-Dispersion Wavelength | | 1295~1315nm | 1295~1315nm | 1295~1315nm | 1295~1315nm |
| Zero-Dispersion Slope (ps/(nm ² .km)) | | ≤ 0.101 | ≤ 0.101 | ≤ 0.101 | ≤ 0.101 |
| Numerical Aperture | | 0.200 ± 0.015 | 0.200 ± 0.015 | 0.200 ± 0.015 | 0.200 ± 0.015 |
| Group refractive index | 850 nm | 1.482 | 1.482 | 1.482 | 1.482 |
| | 1300 nm | 1.477 | 1.477 | 1.477 | 1.477 |

Table 2 The optical, Geometrical Performance of the Multimode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568.3-E, IEC 60793-2A1a, IEC 60793-2A1b, ITU -T G.651)



CABLE CONSTRUCTION

The construction of the cable shall be in accordance with Table 3 below.

| Items | | Specifications | |
|----------------------------|---|---|----------------|
| Number of fiber | | 2, 4, 6, 8 | 12 |
| Loose tube | Material | PBT (Polybutylene Terephthalate) | |
| | Color | White | |
| | Filling Compound | Thixotropic jelly compound | |
| Additional Strength Member | Water blocking E-Glass yarns (To provide the required tensile strength and water blocking) | | |
| Rip Cord | Material | Plastic thread | |
| Armored | Material | Corrugated chrome steel tape coated with polymer on both sides | |
| Outer Jacket | Material | UV-Resistant, Black PE with FR-LSZH (Flame Retardant Low Smoke Zero Halogen) | |
| | Thickness (Approx.) | 1.6 mm. | |
| Cable Diameter (Approx.) | | 7.9 ± 0.5 mm. | 8.4 ± 0.5 mm. |
| Cable Weight (Approx.) | | 75 ± 5 kg./km. | 82 ± 5 kg./km. |

Table 3 Construction of OUTDOOR/INDOOR, DUCT, All-Dielectric, FR-LSZH, Fiber optic cable.

TEMPERATURE RANGE

For the cables covered by this specification, the following temperature ranges apply.

- Operation Temperature : -40°C to +70°C
- Installation Temperature : -40°C to +70°C
- Storage/Shipping Temperature : -40°C to +75°C

MECHANICAL SPECIFICATION

| Item | Specification |
|--------------------------|----------------------------------|
| Maximum Tensile load | Installation 1,800 N. |
| | Operation 1,000 N. |
| Maximum Crush resistance | 2,200 N./10 cm. |
| Minimum bending Radius | Installation 15 x Cable Diameter |
| | Operation 10 x Cable Diameter |

Table 4 Mechanical Specification of the cable.



FIBER AND LOOSE TUBE IDENTIFICATION

The color code of the loose tubes and the individual fibers within each loose tube shall be in accordance with Table 5 TIA/EIA-598-C (Rev. TIA/EIA-598-A) and EIA-359-A Color Code for Fiber and Loose tube Identification.

| No. | Fiber color |
|-----|-------------|
| 1 | Blue |
| 2 | Orange |
| 3 | Green |
| 4 | Brown |
| 5 | Slate |
| 6 | White |
| 7 | Red |
| 8 | Black |
| 9 | Yellow |
| 10 | Violet |
| 11 | Rose |
| 12 | Aqua |

Table 5 TIA/EIA-598-C Color Code for Fiber and Loose tube Identification.

MECHANICAL PERFORMANCE TEST

- Tensile loading Test TIA/EIA-455-33A and IEC 60794-1-2-E1A
- Compression Test TIA/EIA-455-41A and IEC 60794-1-2-E3
- Repeated Bending Test TIA/EIA-455-104A and IEC 60794-1-2-E6
- Impact Test TIA/EIA-455-25B and IEC 60794-1-2-E4
- Cable Bending Test IEC 60794-1-2-E11B
- Cable Twist or Torsion Test TIA/EIA-455-85A and IEC 60794-1-2-E7
- Temperature Cycling Test TIA/EIA-455-3A and IEC 60794-1-2-F1
- Water Penetration Test TIA/EIA-455-82B and IEC 60794-1-2-F5

ORDER INFORMATION

OUTDOOR/INDOOR, ARMORED, FR-LSZH, SINGLE TUBE, FIBER OPTIC CABLE.

| Descriptions | OS2, SM 9/125 μ m | OM2, MM 50/125 μ m | OM3, MM 50/125 μ m | OM4, MM 50/125 μ m | OM5, MM 50/125 μ m |
|--------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 4 Core | UFC9304A | UFC5304A | UFC4304A | UFC3304A | UFC2304A |
| 6 Core | UFC9306A | UFC5306A | UFC4306A | UFC3306A | UFC2306A |
| 8 Core | UFC9308A | UFC5308A | UFC4308A | UFC3308A | UFC2308A |
| 12 Core | UFC9312A | UFC5312A | UFC4312A | UFC3312A | UFC2312A |

Specifications subject to change without notice.

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