

#### Scope

Drop FTTP offers the most flexible solution for fiber to the premise applications. The Drop cable unit allows for easy location after installation. The small profile reduces cost and increases both ease of use and access to small conduits. This product is the low cost solution to the network's last 100 meters. The durable design incorporates two dielectric rigid rods for tensile and crush protection, bracketing a single enhanced loose tube containing up to 12 optical fibers.

### **Optical Fiber**

The optical, geometrical and mechanical performance of the optical fiber shall be in accordance with Table

### SPECIFICATIONS - SINGLEMODE FIBER (SMF-28 ULTRA OPTICAL FIBER)

Cladding Diameter 125±0.7µm   Core-Clad Concentricity Error ≤0.5µm   Cladding Non-Circularity <0.7%   Coating Diameter 242±5 µm   Coating Cladding Concentricity <12 µm   Mode Field Diameter 9.2±0.4 µm@1310nm   Cable Cutoff Wavelength \$10.4±0.5 µm@1550nm   PMD Link Design Value <0.04ps/√km   Maximum Individual Fiber PMD ≤0.02 dB/km@1310nm   Attenuation (Maximum) ≤0.32 dB/km@1490nm   So and B/km@1550nm <0.32 dB/km@1550nm   Dispersion 1625 nm ≤ 12 ps/mk.m   Dispersion <0.03 dB/km@1550nm   Mattenuation vs. Wavelength (Maximum) <0.03 dB/km@1525 -1575nm   Point Discontinuity <0.05 dB/km@1525 nm   Micro-bend Loss <0.05 dB/km@150 nm   10 turns around a mandrel of 15mm Radius <0.05 dB/km.at 1550nm   10 turns around a mandrel of 10mm Radius <0.05 dB/km.at 1550nm   10 turn around a mandrel of 10mm Radius <0.01 dB/km.at 1550nm	Fiber Curl	≥4.0m radius of curvature
Cladding Non-Circularity <0.7%   Coating Diameter 242±5 µm   Coating-Cladding Concentricity <12 µm   Mode Field Diameter 9.2±0.4 µm@1310nm   10.4±0.5 µm@1550nm 10.4±0.5 µm@1550nm   Cable Cutoff Wavelength ≤0.04ps/√km   PMD Link Design Value ≤0.04ps/√km   Maximum Individual Fiber PMD ≤0.32 dB/km@1330nm   Attenuation (Maximum) ≤0.32 dB/km@1383nm   So = 0.20 dB/km@1550nm ≤0.20 dB/km@1625nm   Dispersion 1625 nm ≤ 12 ps/nm.km   Attenuation vs. Wavelength (Maximum) 0.03 dB/km@1285 - 1330nm   0.02 dB/km@1285 - 1350nm 0.02 dB/km@1310 nm   So = 0.05 dB/km@1310 nm ≤0.05 dB/km@1350 nm   Micro-bend Loss ≤0.05 dB Max. at 1550 nm   10 turns around a mandrel of 15mm Radius ≤0.05 dB Max. at 1625nm   10 turns around a mandrel of 10mm Radius <0.01 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB Max. at 1625nm	Cladding Diameter	125±0.7µm
Coating Diameter 242±5 µm   Coating-Cladding Concentricity <12 µm   Mode Field Diameter 9.2±0.4 µm@1310nm   10.4±0.5 µm@1550nm 10.4±0.5 µm@1550nm   Cable Cutoff Wavelength <1260 nm   PMD Link Design Value <0.04ps/√km   Maximum Individual Fiber PMD <0.04ps/√km   Attenuation (Maximum) <0.32 dB/km @1383nm   Attenuation (Maximum) <0.20 dB/km @1383nm   So 0.32 dB/km @1383nm <0.21 dB/km @1490nm   <0.20 dB/km @1383nm <0.20 dB/km @1625nm   So 0.32 dB/km @1625nm <0.20 dB/km @1625nm   So 0.30 dB/km @1285 -1330nm <0.03 dB/km @1285 -1330nm   0.03 dB/km @1285 -1330nm <0.02 dB/km @1310 nm   <0.02 dB/km @1525 -1575nm <0.05 dB/km @1310 nm   <0.05 dB/km @1310 nm <0.05 dB/km @1310 nm   <0.05 dB/km @1310 nm <0.05 dB/km @1350 nm   Micro-bend Loss <0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius <0.05 dB Max. at 1550nm   1 turn around a mandrel of 15mm Radius <0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB Max. at	Core-Clad Concentricity Error	≤0.5µm
Coating-Cladding Concentricity < 12 µm   Mode Field Diameter 9.2±0.4 µm@1310nm   10.4±0.5 µm@1550nm 10.4±0.5 µm@1550nm   PMD Link Design Value < 21260 nm   Maximum Individual Fiber PMD < 0.04ps/\km @1310nm   Attenuation (Maximum) < 0.32 dB/km @1313nm   So 32 dB/km @1383nm < 0.32 dB/km @1383nm   Attenuation (Maximum) < 0.32 dB/km @1350nm   Dispersion < 0.20 dB/km @1550nm   Matenuation vs. Wavelength (Maximum) 0.03 dB/km @1285 - 1330nm   0.03 dB/km @1525 - 1575nm 0.05 dB/km @1310 nm   0.03 dB/km @1285 - 1330nm 0.02 dB/km @1325 - 1575nm   Point Discontinuity < 0.05 dB/km @1310 nm   10 turns around a mandrel of 15mm Radius < 0.05 dB/km @1310 nm   10 turns around a mandrel of 15mm Radius < 0.05 dB/km @1310 nm   1 turn around a mandrel of 10mm Radius < 0.05 dB/km @1310 nm   < 0.05 dB/km @1310 nm < 0.05 dB/km @1310 nm   < 0.05 dB/km @1310 nm < 0.05 dB/km @1310 nm   < 0.05 dB/km @1310 nm < 0.05 dB/km @1310 nm   < 0.05 dB/km @150 nm < 0.05 dB/km @1310 nm   < 0.05 dB/km @1310 nm < 0.05 dB/km @1310 nm   < 0.05 dB/km @1310 n	Cladding Non-Circularity	≤0.7%
Mode Field Diameter 9.2±0.4 µm@1310nm   10.4±0.5 µm@1550nm 10.4±0.5 µm@1550nm   Cable Cutoff Wavelength ≤1260 nm   PMD Link Design Value <0.04ps//km   Maximum Individual Fiber PMD ≤0.32 dB/km @1310nm   ≤ 0.32 dB/km @1383nm ≤ 0.32 dB/km @1383nm   Attenuation (Maximum) ≤ 0.21 dB/km @1490nm   ≤ 0.18 dB/km @1550nm ≤ 0.20 dB/km @1550nm   0.20 dB/km @1550nm ≤ 0.20 dB/km @1550nm   0.20 dB/km @1550nm ≤ 0.20 dB/km @1550nm   0.20 dB/km @1525nm ≤ 0.00 dB/km @1525nm   0.03 dB/km @1525 nm 1550 nm ≤ 18 ps/nm.km   0.03 dB/km @1525 -1575nm 0.00 dB/km @1525 -1575nm   Point Discontinuity ≤ 0.05 dB/km @1310 nm   % 0.05 dB/km @1550 nm ≤ 0.05 dB/km @1550 nm   Micro-bend Loss ≤ 0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius ≤ 0.05 dB/km .at 1550nm   1 turn around a mandrel of 15mm Radius ≤ 0.01 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 0.01 dB Max. at 1625nm   < 0.01 dB Max at 1310 1550 1625nm ≤ 0.01 dB Max. at 13250 1625nm	Coating Diameter	242±5 μm
Mode Field Diameter 10.4±0.5 µm@1550nm   Cable Cutoff Wavelength ≤1260 nm   PMD Link Design Value ≤0.04ps/\km   Maximum Individual Fiber PMD ≤0.1ps/\km @1310nm   4 Co.32 dB/km @1310nm ≤ 0.32 dB/km @1313nm   Attenuation (Maximum) ≤ 0.32 dB/km @1383nm   Solution (Maximum) ≤ 0.21 dB/km @1490nm   Solution (Maximum) ≤ 0.20 dB/km @1550nm   Solution (Maximum) ≤ 0.20 dB/km @1550nm   Dispersion 1625 nm < 22 ps/nm.km   Attenuation vs. Wavelength (Maximum) 0.03 dB/km @1285 - 1330nm   O.02 dB/km @1525 - 1575nm 0.02 dB/km @1525 nm   Point Discontinuity ≤ 0.05 dB/km @1310 nm   Solot BB/km @1550 nm ≤ 0.05 dB/km @1310 nm   Solot BB/km @1550 nm ≤ 0.05 dB/km @1350 nm   Micro-bend Loss ≤ 0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius ≤ 0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 0.01 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius < 0.01 dB Max. at 1310 1550 1625mm	Coating-Cladding Concentricity	< 12 μm
Cable Cutoff Wavelength 10.4±0.5 µm@1550nm   PMD Link Design Value ≤0.04ps/\km   Maximum Individual Fiber PMD ≤0.32 dB/km @1383nm   Attenuation (Maximum) ≤ 0.32 dB/km @1383nm   Attenuation (Maximum) ≤ 0.21 dB/km @1490nm   ≤ 0.20 dB/km @1550nm ≤ 0.20 dB/km @1625nm   Dispersion 1052 nm ≤ 22 ps/nm.km   Attenuation vs. Wavelength (Maximum) 0.03 dB/km @1285 -1330nm   0.02 dB/km @1525 -1575nm 0.03 dB/km @1550 nm   Micro-bend Loss ≤ 0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius ≤ 0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 0.05 dB Max. at 1625nm   < 0.01 dB Max. at 1625nm ≤ 0.05 dB Max. at 1625nm	Mode Field Diameter	9.2±0.4 μm@1310nm
PMD Link Design Value <0.04ps/\km   Maximum Individual Fiber PMD <0.1ps/\km   Attenuation (Maximum) <0.32 dB/km @1310nm   <0.32 dB/km @1383nm <0.32 dB/km @1383nm   Attenuation (Maximum) <0.21 dB/km @1490nm   <0.02 dB/km @1550nm <0.20 dB/km @1625nm   0.10 dB/km @1625nm <0.20 dB/km @1625nm   Dispersion 1625 nm <22 ps/nm.km   Attenuation vs. Wavelength (Maximum) 0.03 dB/km @1285 - 1330nm   0.02 dB/km @1525 - 1575nm <0.05 dB/km @1525 - 1575nm   Point Discontinuity <0.05 dB/km @1525 nm   Micro-bend Loss <0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius <0.05 dB Max. at 1550nm   10 turns around a mandrel of 15mm Radius <0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <1.5 dB Max. at 1300 1550 1625mm		10.4±0.5 μm@1550nm
Maximum Individual Fiber PMD <0.1ps/√km   Attenuation (Maximum) <0.32 dB/km @1310nm   Attenuation (Maximum) <0.32 dB/km @1383nm   <0.32 dB/km @1383nm <0.32 dB/km @1490nm   <0.1 dB/km @1550nm <0.21 dB/km @1550nm   <0.20 dB/km @1625nm <0.20 dB/km @1625nm   <0.20 dB/km @1625nm <0.20 dB/km @1285 -1330nm   Micro-bend Loss <0.05 dB/km @1525 -1575nm   10 turns around a mandrel of 15mm Radius <0.05 dB Max. at 1550nm   1 turn around a mandrel of 15mm Radius <0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.05 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB Max. at 1625nm	Cable Cutoff Wavelength	≤1260 nm
Attenuation (Maximum) $\leq 0.32  dB/km @1310nm$ $\leq 0.32  dB/km @1383nm$ $\leq 0.21  dB/km @1490nm$ $\leq 0.21  dB/km @1550nm$ $\leq 0.20  dB/km @1550nm$ $\leq 0.20  dB/km @1625nm$ Dispersion1550 nm $\leq 18  \text{ps/nm.km}$ $1625 nm \leq 22  \text{ps/nm.km}Attenuation vs. Wavelength (Maximum)0.03 dB/km @1285 - 1330nm0.02  dB/km @1525 - 1575nmPoint Discontinuity\leq 0.05  dB/km @1310  nm\leq 0.05  dB/km @150  nmMicro-bend Loss10 turns around a mandrel of 15mm Radius1 turn around a mandrel of 15mm Radius1 turn around a mandrel of 10mm Radius1 turn around a mandrel of 10mm Radius\leq 0.01  dB  Max. at 1625 nm$	PMD Link Design Value	≤0.04ps/√km
Attenuation (Maximum) $\leq 0.32  dB/km @1383nm$ $\leq 0.21  dB/km @1490nm$ $\leq 0.18  dB/km @1550nm$ $\leq 0.20  dB/km @1625nm$ $\leq 0.20  dB/km @1625nm$ Dispersion1550 nm $\leq 18  ps/nm.km$ $1625 nm \leq 22  ps/nm.km1625 nm \leq 22  ps/nm.km0.03  dB/km @1285 - 1330nm0.02  dB/km @1285 - 1330nm0.02  dB/km @1525 - 1575nmPoint Discontinuity\leq 0.05  dB/km @1310  nm\leq 0.05  dB/km @1550  nmMicro-bend Loss10 turns around a mandrel of 15mm Radius1  turn around a mandrel of 15mm Radius1  turn around a mandrel of 10mm Radius\leq 0.01  dB  Max. at 1625nm\leq 0.01  dB  Max. at 1310  1550  1625nm$	Maximum Individual Fiber PMD	
Attenuation (Maximum)< 0.21 dB/km @1490nm< 0.18 dB/km @1550nm		$\leq$ 0.32 dB/km @1310nm
≤ 0.18 dB/km @1550nm≤ 0.20 dB/km @1625nmDispersion1550 nm ≤ 18 ps/nm.km1625 nm ≤ 22 ps/nm.km1625 nm ≤ 22 ps/nm.km0.03 dB/km @1285 - 1330nm0.03 dB/km @1285 - 1330nm0.02 dB/km @1525 - 1575nmPoint Discontinuity≤ 0.05 dB/km @1310 nm≤ 0.05 dB/km @1550 nmMicro-bend Loss10 turns around a mandrel of 15mm Radius10 turns around a mandrel of 15mm Radius≤ 0.05 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 1.5 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 0.01 dB Max. at 1310 1550 1625nm		≤ 0.32 dB/km @1383nm
≤ 0.20 dB/km @1625nmDispersion1550 nm ≤ 18 ps/nm.kmAttenuation vs. Wavelength (Maximum)0.03 dB/km @1285 - 1330nmOut Discontinuity0.02 dB/km @1525 - 1575nmPoint Discontinuity≤ 0.05 dB/km @1310 nmMicro-bend Loss≤ 0.05 dB/km @1550 nm10 turns around a mandrel of 15mm Radius≤ 0.05 dB Max. at 1550nm10 turns around a mandrel of 15mm Radius≤ 0.50 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 1.5 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 0.01 dB Max. at 1310 1550 1625nm	Attenuation (Maximum)	≤ 0.21 dB/km @1490nm
Dispersion1550 nm ≤ 18 ps/nm.kmAttenuation vs. Wavelength (Maximum)0.03 dB/km @1285 -1330nmAttenuation vs. Wavelength (Maximum)0.02 dB/km @1525 -1575nmPoint Discontinuity≤ 0.05 dB/km @1310 nmMicro-bend Loss≤ 0.05 dB/km @1550 nm10 turns around a mandrel of 15mm Radius≤ 0.05 dB Max. at 1550nm10 turns around a mandrel of 15mm Radius≤ 0.05 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 0.50 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius≤ 0.01 dB Max. at 1310 1550 1625nm		≤ 0.18 dB/km @1550nm
Dispersion1625 nm $\leq$ 22 ps/nm.kmAttenuation vs. Wavelength (Maximum)0.03 dB/km @1285 -1330nm0.02 dB/km @1525 -1575nmPoint Discontinuity $\leq$ 0.05 dB/km @1310 nmMicro-bend Loss $\leq$ 0.05 dB/km @1550 nm10 turns around a mandrel of 15mm Radius $\leq$ 0.05 dB Max. at 1550nm10 turns around a mandrel of 15mm Radius $\leq$ 0.50 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius $\leq$ 1.5 dB Max. at 1625nm1 turn around a mandrel of 10mm Radius $\leq$ 0.01 dB Max. at 1310 1550 1625nm		≤ 0.20 dB/km @1625nm
Attenuation vs. Wavelength (Maximum)0.03 dB/km @1285 -1330nm 0.02 dB/km @1525 -1575nmPoint Discontinuity $\leq 0.05 dB/km @1310 nm$ $\leq 0.05 dB/km @1350 nm$ Micro-bend Loss 10 turns around a mandrel of 15mm Radius 1 turn around a mandrel of 15mm Radius 1 turn around a mandrel of 10mm Radius 1 turn around a mandrel of 10mm Radius $\leq 1.5 dB Max. at 1625nm$ $\leq 0.01 dB Max. at 1310 1550 1625nm$	Dismonston	1550 nm ≤ 18 ps/nm.km
Attenuation vs. wavelength (Maximum)0.02 dB/km @1525 - 1575nmPoint Discontinuity $\leq 0.05 dB/km @1310 nm$ $\leq 0.05 dB/km @1550 nm$ Micro-bend Loss $\leq 0.05 dB/km @1550 nm$ 10 turns around a mandrel of 15mm Radius $\leq 0.05 dB Max. at 1550nm$ $\leq 0.30 dB Max. at 1625nm$ 10 turns around a mandrel of 15mm Radius $\leq 0.50 dB Max. at 1625nm$ $\leq 0.50 dB Max. 1550nm$ 1 turn around a mandrel of 10mm Radius $\leq 1.5 dB Max. at 1625nm$ 1 turn around a mandrel of 10mm Radius $\leq 0.01 dB Max. at 1310 1550 1625nm$	Dispersion	$1625 \text{ nm} \leq 22 \text{ ps/nm.km}$
Point Discontinuity ≤ 0.02 dB/km @1525 - 1575 nm   Point Discontinuity ≤ 0.05 dB/km @1310 nm   Micro-bend Loss ≤ 0.05 dB/km @1550 nm   10 turns around a mandrel of 15mm Radius ≤0.05 dB Max. at 1550 nm   10 turns around a mandrel of 15mm Radius ≤ 0.30 dB Max. at 1625 nm   1 turn around a mandrel of 10mm Radius ≤ 1.5 dB Max. at 1625 nm   1 turn around a mandrel of 10mm Radius ≤ 1.5 dB Max. at 1625 nm	Attenuation vs. Wavelangth (Maximum)	0.03 dB/km @1285 -1330nm
Point Discontinuity ≤ 0.05 dB/km @1550 nm   Micro-bend Loss ≤0.05 dB Max. at 1550nm   10 turns around a mandrel of 15mm Radius ≤0.30 dB Max. at 1625nm   10 turn around a mandrel of 15mm Radius ≤0.50 dB Max. 1550nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   2 0.01 dB Max. at 1310 1550 1625nm	Accentration vs. wavelength (Maximum)	0.02 dB/km @1525 -1575nm
Micro-bend Loss ≤ 0.05 dB/km @ 1550 nm   10 turns around a mandrel of 15mm Radius ≤ 0.05 dB Max. at 1550nm   10 turns around a mandrel of 15mm Radius ≤ 0.30 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 0.50 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤ 1.5 dB Max. at 1625nm	Point Discontinuity	$\leq$ 0.05 dB/km @1310 nm
10 turns around a mandrel of 15mm Radius ≤0.05 dB Max. at 1550nm   10 turns around a mandrel of 15mm Radius ≤0.30 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   2 0.01 dB Max at 1310 1550 1625nm		≤ 0.05 dB/km @1550 nm
10 turns around a mandrel of 15mm Radius ≤0.30 dB Max. at 1625nm   10 turns around a mandrel of 15mm Radius ≤0.50 dB Max. 1550nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius ≤0.01 dB May. at 1310 1550 1625nm	Micro-bend Loss	<0.05 dP Max at 1550nm
10 turns around a mandrel of 15mm Radius ≤0.50 dB Max. 1550nm   1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB Max. at 1310 1550 1625nm	10 turns around a mandrel of 15mm Radius	
1 turn around a mandrel of 10mm Radius ≤1.5 dB Max. at 1625nm   1 turn around a mandrel of 10mm Radius <0.01 dB May, at 1310, 1550, 1625nm	10 turns around a mandrel of 15mm Radius	
1 turn around a mandrel of 10mm Radius	1 turn around a mandrel of 10mm Radius	
<0.01 dB Max_af 1310.1550.1625nm	1 turn around a mandrel of 10mm Radius	
100 turns around a mandrel of 25mm Radius	100 turns around a mandrel of 25mm Radius	$\leq$ 0.01 dB Max. at 1310,1550,1625nm

### SPECIFICATIONS - SINGLEMODE FIBER (SMF-28 ULTRA OPTICAL FIBER)

Environmental Test Temperature Dependence(-60°C to +85°C) Temperature Humidity Cycling (-10°C to +85°C up to 98% RH)	≤0.05 dB/km(1310,1550,1625nm) ≤0.05 dB/km(1310,1550,1625nm)
Water immersion(23°C±2°C)	≤0.05 dB/km(1310,1550,1625nm)
Heat Aging(85°C±2°C)	≤0.05 dB/km(1310,1550,1625nm)
Damp Heat(85°C at 85% RH)	≤0.05 dB/km(1310,1550,1625nm)

\* Reference temperature = +23°C

\* Operating Temperature Range: -60°C to +85°C

## SPECIFICATIONS - PERFORMANCE CHARACTERIZATIONS

Core Diameter	8.2 μm
	0.14
Numerical	NA is measured at the one percent power
	Level of a one-dimensional far-field scan at 1310 nm.
Effective Crown Index of Defraction(Neff)	1310nm : 1.4676
Effective Group Index of Refraction(Neff)	1550nm : 1.4682
Fatigue Resistance Parameter (Nd)	20
Coating Strip Force	Dry : 0.6 lbs.(3N)
Coalling Strip Force	Wet, 14-day room temperature: 0.6 lbs.(3N)
Rayleigh Backscatter Coefficient	1310nm : -77 dB
(for 1 ns Pulse Width)	1550nm : -82 dB

### **SPECIFICATIONS - CABLE CONSTRUCTION**

Number of Fibers	1	2	6	12					
Central Tube		PBT (Polybutylene Terephthalate)							
Central lube		Diameter : 3.0mm±0.1							
Dry material			Wa	ter blocking aramid yarn					
Dialactric Strongth Mombor		FRP (Fiberglass Reinforced Plastic)							
Dielectric Strength Member		Diameter : 1.5mmx2							
Outer Jacket				Polyethylene(PE)					
Cable Outer diameter			Ν	lominal 8.0mm x 4.5mm					
Cable Weight (Nominal)		28 kg/km							

## SPECIFICATIONS - IDENTIFICATION

The Color Code of the individual fibers

Fiber	1	2	3	4	5	6	7	8	9	10	11	12
12	Blue	-	-	-	-	-	-	-	-	-	-	-
2F	Blue	Orange	-	-	-	-	-	-	-	-	-	-
6F	Blue	Orange	Green	Brown	Slate	White	-	-	-	-	-	-
12F	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua

### Outer jacket color

The outer jacket shall be an extruded layer of HDPE The color of outer jacket shall be UV stable black

# PHYSICAL / MECHANICAL / ENVIRONMENTAL PERFORMANCE AND TESTS

### **Temperature Range**

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

- Storage & Operation range : -40 to 70°C
- Installation range : -30 to 70°C

### **Mechanical Characteristics**

ltems	TEST METHOD AND ACCEPTANCE CRITERIA						
	Method Description	Acceptance Criteria					
Tensile Performance	IEC 60794-1-2 Method E1 - Mandrel diameter: min 1m but not less than cable spe- cific bending diameter - Length under tension: 50 m - Applied tensile load: 1350N	Permissible change in attenuation at 1550 nm wave- length less than 0.2dB.					
Repeated Bending	IEC 60794-1-2 Method E6 - Bending radius: 20 x cable diameter - Applied load: 40N - No. of flexing cycles: 25 cycles - Cycle duration: 2 seconds	Permissible change in attenuation at 1550 nm wave- length less than 0.2 dB.					
Impact resistance	IEC 60794-1-2 Method E4 - Impact Radius: 10mm or 300mm - Impact Energy: 5,0J of 10mm impact - No. of impact: minimum 3 times	No visible damage to the coating. Permissible change in attenuation at 1550 nm wavelength less than 0.2 dB.					
Torsion resistance IEC 60794-1-2 Method E7   - No. of cycles: 10 cycles   - Distance between fixed and rotary handle: 2m   - Tensioning force: 50N   - Twist angle: ±180°		No visible damage to the coating. Permissible change in attenuation at 1550 nm wavelength less than 0.2 dB.					
Crush resistance IEC 60794-1-2 Method E3   - Crushing force: 500N - Length of crushing element: 50mm   - Duration of loading: 5 minutes		Permissible change of attenuation at 1550 nm wave- length less than 0.2 dB, no visible damage to any element of the cable.					
Resistance to temperature changes	IEC 60794-1-2 Method F1 - Cable length: 500m - T <sub>A1</sub> : -40°C, T <sub>B1</sub> : +70°C, T <sub>A2</sub> :-40°C, T <sub>B2</sub> :+70°C, - Duration of 1 cycle t <sub>1</sub> : 12hours - Speed of temperature changes: 20°C/h	No visible damage to the coating. Permissible change in attenuation at 1550 nm wavelength less than 0.3 dB.					

# QUALITY CONTROL

#### **Incoming Inspection**

All the raw materials that are used for optical fiber cable shall be inspected by the raw material testing methods that are specified by the manufacturerr.

In some cases, suppliers' test report shall substitute for the raw material manufacturer's test.

Any materials that do not meet the manufacturer's raw material specification shall be rejected or scrapped, and the passed materials only shall be used in the process. Some raw material specifications and subsequent raw material test method may be changed without notice, if and only if the new specification and the new test method do not affect the quality of optical fiber cable.

### **In-Process Inspection**

Semi-final goods shall be inspected in accordance with specified manufacturer's testing method. The testing method may be changed without notice, if it does not affect quality of optical fiber cable.

### **Final Cable Inspection**

Following quality properties of finished cable shall be tested to assure the field performances.

- Construction/Material
- Mechanical characteristics
- Optical characteristics

### **Quality System - Passed Telcordia Standards**

FOTP 37 – Low/High Temperature Cable Bend FOTP 25 – Impact Resistance

- FOTP 41 Compressive Load
- FOTP 85 Cable Twist

### PACKING AND MARKING

### **Cable Marking**

The jacket shall be marked with white characters at intervals of one meter with the following information. Other marking is also available if requested by customer.

- 1) Length marking
- 2) Cable type and fiber counts
- 3) Manufacturer's name
- 4) Year of manufacture

### **Cable Packing**

Standard lengths of cable shall be 1km and 4km. Other cable length is also available if required by Customer. (Maximum lengths : 6km)

Each length of the cable shall be wound on a separate wooden reel or plywood reel.

Both ends of the cable shall be sealed with a suitable plastic cap or a suitable plastic tape to prevent the entry of moisture during shipping, handling and storage. Wood-fiber board or circumference battens shall be laid on cable between flanges and fixed by steel bands.

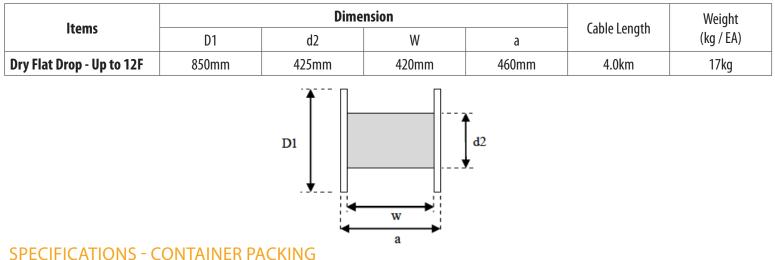
The cable ends shall be securely fastened to the reel to prevent the cable from becoming loose in transit or during placing operations. Cable Reel

The sticker information on the spool

- (1) Cable type and fiber counts
- (2) Length of cable in meters
- (3) Gross weight in kilograms
- (4) Reel number
- (5) Year of manufacture

The cable shall be wound on the reel designed to prevent damages during shipment and installation.

### **SPECIFICATIONS - PACKING DETAIL**



ltoma	Length	Weight	(drum)	Container (40ft)		
ltems	(km/drum)	NET	Gross	Packing	Gross Weight	
Dry Flat Drop - Up to 12F	4.0km	112.0kg	129.0kg	5x14 = 70 Bobbins (280km)	9,030kg	

#### SAFETY ROHS Directive

All cables and any associated packing and labeling materials shall meet RoHS (Restriction of the Use of certain Hazardous Substances) regulations as appropriate.

### **ISPM 15 Directive**

All wooden packing materials shall meet ISPM (International Standards for Phytosanitary Measures) regulations as appropriate.