

# INDOOR & OUTDOOR CABLE SPECIFICATION

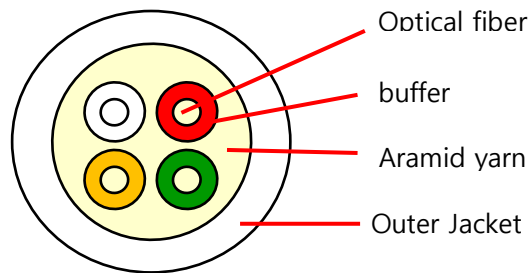
■ Type : DISTRIBUTION CABLE

SMF(G657A2)  
4C

■ Date : April 6, 2021

## 1. Cable Structure

### 1.1 Cross Section



### 1.2 Construction

Structure	Material	SPECCIFICATIONS
Optical Fiber	Fiber	- SMF : G657 A2
Tight Buffer	Material	- FR-PE(LSZH)
	Diameter	- $0.90 \pm 0.05\text{mm}$
	Color	- 4C White, Red, yellow, Green
Strength Member	Aramid yarn	- 4C : 12,000D
	jacket	Material
Diameter		- Diameter : 1.3 Reference - Jacket thickness 4C : $1.0 \pm 0.3\text{mm}$
Color		➔ WHITE
Marking	Ink Jet	- White, 1m,

### 1.3 Cable diameter & Tensile strength

Fiber Count	Outer Diameter	Weight (Nominal)	Max. Pulling Strength	Remark
	mm	Kg/km	N	
4	4.7 ± 0.3	23	600	-

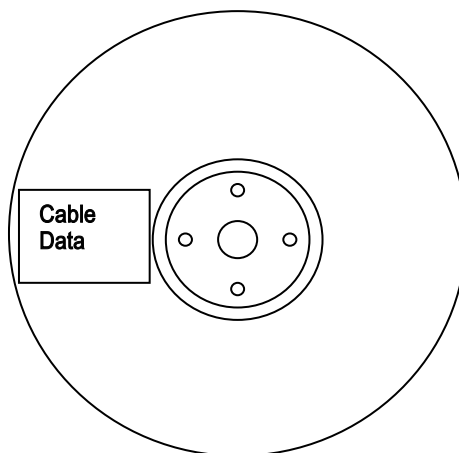
### 1.4 Marking

DISTRIBUTION CABLE ●● □□/125 ■■F XXXX M

- ●● : Single mode : SM, □□ : Single mode → 9XXXXM : figure of meter

- The marking is printed every 1 meter with white color.

### 1.5 Drum Marking



## 2. Optical Fiber Property

### 2.1 The properties of single mode fiber (ITU.G.657A2)

Parameter	Specification
<b>Optical Characteristics</b>	
Attenuation coefficient @ 1310 nm @ 1383 nm @ 1550 nm @ 1625 nm	$\leq 0.40$ dB/km $\leq$ @1310 nm dB/km loss↓ $\leq 0.30$ dB/km $\leq 0.35$ dB/km
Attenuation vs. Wavelength Max. $\alpha$ difference	$\leq 0.03$ dB/km at 1285 ~ 1330 nm $\leq 0.02$ dB/km at 1525 ~ 1575 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	$\leq 0.092$ ps/(nm <sup>2</sup> .km)
PMD Maximum Individual Fiber	$\leq 0.2$ ps/km <sup>1/2</sup>
Cable cut-off wavelength	$\leq 1260$ nm
Mode field diameter @ 1310 nm	$8.8 \pm 0.4$ $\mu$ m
<b>Geometrical Characteristics</b>	
Cladding diameter	$125.0 \pm 0.7$ $\mu$ m
Cladding non-circularity	$\leq 0.7$ %
Coating diameter	$245 \pm 5$ $\mu$ m
Coating-Cladding concentricity error	$\leq 12.0$ $\mu$ m
Coating Non-circularity error	$\leq 6.0$ %
Core-Clad concentricity error	$\leq 0.5$ $\mu$ m
Curl (Radius)	$\geq 4$ m
<b>Mechanical Specification</b>	
Proof test level	$\geq 100$ kpsi
Micro-bend induced attenuation 10 turns bend radius 15mm 10 turns bend radius 15mm 1 turn bend radius 10mm 1 turn bend radius 10mm 1 turn bend radius 7,5mm 1 turn bend radius 7,5mm	$\leq 0.03$ dB at 1550 nm $\leq 0.1$ dB at 1625 nm $\leq 0.1$ dB at 1550 nm $\leq 0.2$ dB at 1625 nm $\leq 0.2$ dB at 1550 nm $\leq 0.5$ dB at 1625 nm
Coating strip force Average force	1.7 N

### 3. Cable Property

#### 3.1 Mechanical & Environmental properties

3.1.1 Cable bending radius: 12mm (during operation)  
12mm (during installation)

3.1.2 Operating temperature range : -20°C to +70°C  
Installation temperature range : -10°C to +60°C

#### 3.2 Mechanical & Environmental requirements

No	Item	Test Method	Specification
1	Tensile load IEC60794-1-E1	- Load: Refer 1.3 - Length: 100 m - Time: 10 mins	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.1 dB @1300 nm (SM)
2	Crush test IEC60794-1-E3	- Load: 500 N(1C~12c) - plate : 100*100 - Time: 5 mins.	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.1 dB @1300 nm (SM)
3	Bending test IEC60794-1-E11A	- Mandrel dia. 15 x cable diameter - 6 turns	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.1 dB @1300 nm (SM)
4	Impact test IEC60794-1-E4	- Radius of impacted surface: 25 mm - Impact load: 0.5 kg - Falling height: 150mm - times : 10	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.1 dB @1300 nm (SM)
5	Torsion IEC60794-1-E7	- Length: 2 m - Load: 50 N - Twist angle: ±180° - No. of cycle : 5	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.1 dB @1300 nm (SM)
6	Temperature Cycling IEC60794-1-F1	- Length : 1,000m: - Temperature cycle: - Indoor : 20°C→-20°C→+70°C→-20°C→+70°C→20°C - Outdoor : 20°C→-40°C→+70°C→-40°C→+70°C→20°C - Number of cycle: 1 - Time per step: 12 hours	-Loss change ≤ 0.1 dB @1550 nm (SM) ≤ 0.3 dB @1300 nm (SM)
7	Flame Retardant test	According to IEC 332-3-24 standard	

3.3 All fiber and cable is manufactured and tested by Mercury.