

# Indoor Distribution Optical Cable

## LSZH Jacket

### Technical Specification

#### 1. Application

When it is necessary to run a large number of fibres through a building, distribution cable is often used. Distribution cable consists of multiple tight-buffered fibres bundled in a jacket with a strength member. Typically, these cables may also form sub cables within a larger distribution cable.

#### 2. OPTICAL FIBRE

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

##### 2.1 The properties of single mode fibre (G.652D)

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
Dispersion coefficient @ 1285 ~ 1330 nm @ 1550 nm	$\leq 3.4$ ps/(nm <sup>2</sup> .km) $\leq 18.0$ ps/(nm <sup>2</sup> .km)
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	$\leq 0.091$ ps/(nm <sup>2</sup> .km)
PMD Maximum Individual Fibre	$\leq 0.2$ ps/km <sup>1/2</sup>
Cable cut-off wavelength	$\leq 1260$ nm
Mode field diameter @ 1310 nm	$9.2 \pm 0.4$ $\mu$ m
<b>Geometrical Characteristics</b>	
Cladding diameter	$125.0 \pm 1.0$ $\mu$ m
Cladding non-circularity	$\leq 1.0$ %
Coating diameter	$245 \pm 7$ $\mu$ m
Coating-Cladding concentricity error	$\leq 12.0$ $\mu$ m
Coating Non-circularity error	$\leq 6.0$ %
Core-Clad concentricity error	$\leq 0.6$ $\mu$ m
Curl (Radius)	$\geq 4$ m

<b>Mechanical Specification</b>	
Proof test level	≥100 kpsi
Micro-bend induced attenuation 1 turn around a mandrel of 32mm diameter 100 turns around a mandrel of 50mm diameter	≤0.05 dB at 1550 nm ≤0.05 dB at 1310 nm & 1550 nm &1625 nm

## 2.2 The properties of cabled multi mode fibre(OM3)

<b>Parameter</b>	<b>Specification</b>
<b>Optical Characteristics</b>	
Attenuation coefficient @ 850 nm @ 1300 nm	≤ 3.0 dB/km ≤ 1.0 dB/km
Bandwidth (B.W) @ 850 nm @ 1300 nm	≥ 1500 MHz.km ≥ 500 MHz.km
Effective Modal Bandwidth @850nm	≥ 2000 MHz.km
Application support distance on 10 Gigabit Ethernet S 850nm Gigabit Ethernet SX 850nm Gigabit Ethernet LX 1300nm 40 & 100 Gigabit Ethernet 850nm	300 m 1000 m 600 m 100 m
Numerical Aperture (NA)	0.200±0.015
Zero-dispersion wavelength	1295 ~ 1320 nm
Zero-dispersion slope 1300 ~ 1320 nm	≤ 0.11 ps/(nm <sup>2</sup> .km)
<b>Back scatter characteristics (@850 nm and 1300 nm)</b>	
Step (mean of bidirectional measurement)	≤ 0.10 dB
Irregularities over fibre length	≤ 0.10 dB
Attenuation uniformity	≤ 0.08 dB/km
<b>Geometrical characteristics</b>	
Core diameter	50.0 ± 2.5 μm
Cladding diameter	125.0 ± 1.0 μm
Cladding non-circularity	≤ 5.0 %
Coating diameter	245 ± 10μm
Coating-Cladding concentricity error	≤ 12.0 μm
Coating Non-circularity error	≤ 6.0 %
Core-Clad concentricity error	≤ 1.0 μm
Proof test level	≥100 kpsi

Micro-bend induced attenuation 100 turns around a mandrel of 60 mm diameter	$\leq 0.5$ dB at 850 nm $\leq 0.5$ dB at 1300 nm
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### 2.3 The properties of cabled multi mode fibre(OM4)

Parameter	Specification
<b>Optical Characteristics</b>	
Attenuation coefficient @ 850 nm @ 1300 nm	$\leq 3.0$ dB/km $\leq 1.0$ dB/km
Bandwidth (B.W) @ 850 nm @ 1300 nm	$\geq 3500$ MHz.km $\geq 500$ MHz.km
Effective Modal Bandwidth @850nm	$\geq 4700$ MHz.km
Application support distance on 10 Gigabit Ethernet S 850nm Gigabit Ethernet SX 850nm Gigabit Ethernet LX 1300nm 40 & 100 Gigabit Ethernet 850nm	550 m 1100 m 600 m 150 m
Numerical Aperture (NA)	$0.200 \pm 0.015$
Zero-dispersion wavelength	1295 ~ 1320 nm
Zero-dispersion slope 1300 ~ 1320 nm	$\leq 0.11$ ps/(nm <sup>2</sup> .km)
<b>Back scatter characteristics (@850 nm and 1300 nm)</b>	
Step (mean of bidirectional measurement)	$\leq 0.10$ dB
Irregularities over fibre length	$\leq 0.10$ dB
Attenuation uniformity	$\leq 0.08$ dB/km
<b>Geometrical characteristics</b>	
Core diameter	$50.0 \pm 2.5$ $\mu$ m
Cladding diameter	$125.0 \pm 1.0$ $\mu$ m
Cladding non-circularity	$\leq 5.0$ %
Coating diameter	$245 \pm 10$ $\mu$ m
Coating-Cladding concentricity error	$\leq 12.0$ $\mu$ m
Coating Non-circularity error	$\leq 6.0$ %
Core-Clad concentricity error	$\leq 1.0$ $\mu$ m
Proof test level	$\geq 100$ kpsi
Micro-bend induced attenuation 100 turns around a mandrel of 60 mm diameter	$\leq 0.5$ dB at 850 nm $\leq 0.5$ dB at 1300 nm

### 3. Construction

Structure	Material	Specifications
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Optical Fibre	Fibre	<ul style="list-style-type: none"> <li>●SMF: G652D, G657 A2</li> <li>●MMF: 50.0(OM3), 50.0(OM4)</li> </ul>	
Tight Buffer	Material	PVC, LSZH	
	Diameter	0.90 ± 0.05 mm	
	Color	●1C~12C : Blue, Orange, Green, Red, Yellow, Violet, Brown, Black, White, Gray, Aqua, Pink	
Outer jacket	Strength Member	Aramid yarns	
	Waterproof	Water blocking yarns	
	Jacket	Material	UV Stabilized LSZH
		Diameter	<ul style="list-style-type: none"> <li>●Diameter : 1.3 Reference</li> <li>●Jacket thickness 1C~12C : 1.0 ± 0.3 mm</li> </ul>
		Color	SM : Yellow, MM : Orange
Marking	Ink Jet	Black & White , 1m,	

#### 4. Cable diameter & Tensile strength

Fibre Count	Outer Diameter (mm)	Weight (Nominal) (kg/km)	Max. Pulling Strength (N)	Remarks
1	3.0 ± 0.2	9.8	600	2km/drum
2	4.3 ± 0.2	18.5	600	2km/drum
4	4.7 ± 0.2	23	600	2km/drum
6	5.2 ± 0.3	28	600	2km/drum
12	6.2 ± 0.3	41	800	2km/drum
24	9.0 ± 0.5	79	1,200	1km/drum

#### 5. Cable Property

##### 5.1 Mechanical & Environmental properties

**5.1.1** Cable bending radius: 10 x cable diameter (during operation)  
15 x cable diameter (during installation)

**5.1.2** Operating temperature range : -20°C to +60°C  
Installation temperature range : -10°C to +60°C

##### 5.2 Mechanical & Environmental requirements

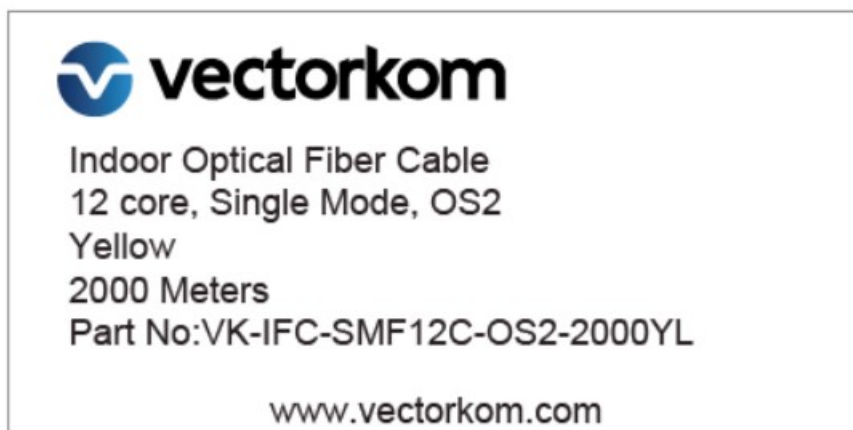
No	Item	Test Method	Specification
1	Tensile load IEC60794-1-E1	<ul style="list-style-type: none"> <li>● Load: Refer 4</li> <li>● Length: 100 m</li> <li>● Time: 10 mins</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.2dB @1550 nm (SM) ≤ 0.3dB @1300 nm (MM)</li> </ul>
2	Crush test IEC60794-1-E3	<ul style="list-style-type: none"> <li>● Load: 1,000 N</li> <li>● plate : 100*100</li> <li>● Time: 5 mins.</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.2 dB @1550 nm (SM) ≤ 0.3 dB @1300 nm (MM)</li> </ul>

3	Bending test IEC60794-1-E11A	<ul style="list-style-type: none"> <li>● Mandrel dia. 15 x cable diameter</li> <li>● 6 turns</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.2 dB @1550 nm (SM) ≤ 0.3 dB @1300 nm (MM)</li> </ul>
4	Impact test IEC60794-1-E4	<ul style="list-style-type: none"> <li>● Radius of impacted surface: 25 mm</li> <li>● Impact load: 0.5 kg</li> <li>● Falling height: 150mm</li> <li>● Times: 10</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.2 dB @1550 nm (SM) ≤ 0.3 dB @1300 nm (MM)</li> </ul>
5	Torsion IEC60794-1-E7	<ul style="list-style-type: none"> <li>● Length: 2 m</li> <li>● Load: 50 N</li> <li>● Twist angle: ±180°</li> <li>● No. of cycle : 5</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.2 dB @1550 nm (SM) ≤ 0.3 dB @1300 nm (MM)</li> </ul>
6	Temperature Cycling IEC60794-1-F1	<ul style="list-style-type: none"> <li>● Temperature cycle: 20C→-20C→+60C→-20C→+60C →20C</li> <li>● Number of cycle: 1</li> <li>● Time per step: 8 hours</li> </ul>	<ul style="list-style-type: none"> <li>● Loss change ≤ 0.3 dB @1550 nm (SM) ≤ 0.6 dB @1300 nm (MM)</li> </ul>

## 6. Cable Marking & Packing label

### VECTORKOM INDOOR OPTICAL FIBER CABLE SMF OS2 12F LSZH YELLOW 2022-0001M

The marking is printed every 1 meter.



Label size: 100x50MM

**7. SAFETY**

**7.1 ROHS Directive**

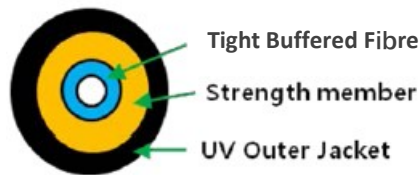
All cables and any associated packing and labeling materials shall meet RoHS (Restriction of the Use of certain Hazardous Substances) regulations as appropriate.

**7.2 ISPM 15 Directive**

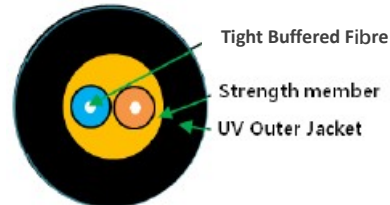
All wooden packing materials shall meet ISPM(International Standard for Phytosanitary Measures) regulations as appropriate

**Cross-sectional Drawing of Cable**

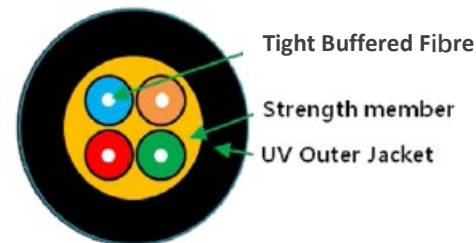
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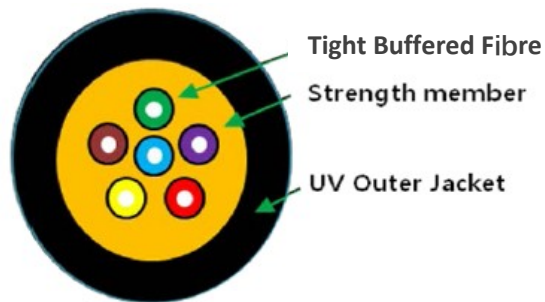
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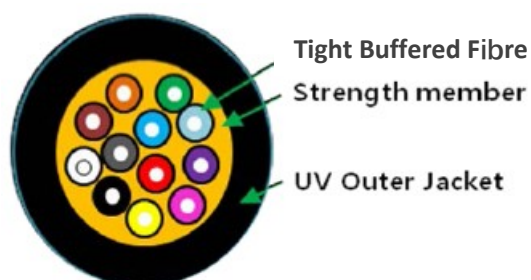
[4F]



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[12F]



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