

FIBER OPTIC CABLE

ADSS FIBER OPTIC SINGLE JACKET FRP

This specification covers design requirements and performance standards for procurement of fiber optic cables in the fiber industry. TSP brand guarantees a stable quality control system for us from the factory. Cable products pass several programs including ISO 9001, ISO 14001 and ROHS.

// PRODUCT DESCRIPTION

- Single Mode (9/125 μm)
- The cable shall be used for aerial or duct installed.
- Provide additional mechanical protection.
- low friction installation.
- Excellent protection from environmental hazards.
- Color code fiber and Loose tube in standard.

// APPLICATION

- Ethernet LAN Network, CCTV Camera , ETC
- Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of 30 years without detriment to the operation characteristics of the cable.
- Outdoor environment with high electric field strength in the Power communication system and the area where frequent thunder happens suitable for both aerial or duct installation.

// STANDARD

- ATM, FDDI, FTTX, Fiber Channel, CATV, Communication
- ISO/IEC 11801:2007, ISO/IEC 11801:2011(Ed.2.2)
- ANSI/TIA/EIA-568-B.3, ANSI/ TIA-568-C.3, ANSI/TIA-568.3-D, ANSI/ICEA 640
- Telcordia (Bellcore)GR-20CORE, GR-409-CORE
- ANSI/ICEA 596, ICEA696, IEC61034-2, IEC60754-2, IEC60793, IEC60794-1-2, EN50173
- ITU-T G.652D, ITU-TG 657A2
- TIA/EIA-598-C (Rev.TIA/EIA-598-A), EIA-359-A.
- IEEE802.3z, IEEE802.3ae, IEEE802.3 (LAN, Ethernet Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet 40-100 Gbps)
- RoHS Compliant
- TIS 2166-2548
- GB/T 12706-2008 Standard



// CONSTRUCTION CABLE

Cable type		ADSS
Element	-	5
Fiber Optic	Material	Silica High Grade / Compound Glass
Central strength member	Material	FRP 1.8 ± 0.2 mm
Loose tube	Material	PBT
	Outer Diameter	2.0 ± 0.2 mm
	Inner Diameter	1.5 ± 0.2 mm
	-	6 fiber per tube, Thixotropic Jelly Compound
Protective tape	Material	Water -blocking tape : 0.3mm, Water blocking yarn : 0.3mm
Strength member	Material	Aramid yarns
Rodent Protection Armor	Material	Flat FRP Non-Metallic type (FRP: Fiber Reinforced Plastics)
		Nominal thickness 1.0 ± 0.2 mm
Outer Sheath	Material	Black HDPE (non Rodent Repellent/Rodent Repellent)
	Thickness	1.8 ± 0.2 mm
Rip Cord	Material	Polyester
	No.	2
Filler Rod	Material	Polyethylene, natural Color
	Diameter	2.2 mm ± 0.2 mm
Stranding method	-	Reverse oscillating lay (ROL) technique (SZ Direction)
	-	Lay - length 75 mm ± 5 mm
Tensile Load	Short term	4000 N
	Long term	2500 N
	Pressure	≥ 3400 N / 10 cm
Overall diameter	Diameter	9.5 - 12 mm
Cable diameter	Diameter (24/48 core)	10.5 ± 1mm / 11.5 ± 1mm.
Weight	(24/48 core)	Approx. 85 / 100±10 kg/km
Span Length		40-100m
Water Blocking Element		Dry-core technology
Width		≥ 126 km/hr
Temperature Range	Operation Temperature	-40°C to +70 °C
	Installation Temperature	-40°C to +70 °C
	Storage/Shipping Temperature	-40°C to +75°C
Color Stripe		3 mm ± 0.5mm

// BUFFER TUBE STRANDING

Fiber count	Fiber number per tube	Number of tube / filler	Nom. Diameter(mm)	Nom. Weight(kg/km)
12	6	2/3	11.4 - 12	100
24	6	4/1	11.4 - 12	100
48	12	4/1	11.8 - 12.5	105
60	12	5/0	11.8 - 12.5	105

OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
Optical Specifications		ITU-T G.652D(SinglemodeOS2) 9/125 μm (OS2) ITU-T G651(Multimode) 62.5/125 μm , 50/125 μm
Attenuation	@1310nm	≤0.35/≤0.33dB/km
	@1383nm	≤0.35/≤0.31dB/km
	@1490nm	≤0.24db/km
	@1550nm	≤0.21/≤0.19dB/km
	@1625nm	≤0.23/≤0.20dB/km
Attenuation discontinuity		≤0.05 dB
Attenuation vs. Wavelength	1285 -1330 @1310nm	≤0.05 dB/km
	1525 -1575@1550nm	≤0.05 dB/km
Zero dispersion wavelength		1300 -1324 nm
Zero dispersion slope		≤0.092 ps/(nm ² .km)
Dispersion	@1310nm	≤3.5 ps/nm.km
	@1550nm	≤18 ps/nm.km
Polarization mode dispersion(PMD)		≤0.1 ps/km ¹ / ₂
Cable cutoff wavelength (λ _{cc})		≤1260 nm
Effective group index of reaction	@1310nm	1.4675
	@1550nm	1.4681
Geometric Specifications		
Mode field diameter	@1310nm	9.2 ± 0.6 μm
	@1550nm	10.4 ± 0.8 μm
Cladding diameter		125 ± 1 μm
Cladding non-circularity		≤1.0 %
Coating Material	Material	UV curable acrylate
	Diameter	250 ± 5μm
Coating/Cladding concentricity error		≤12 μm
Core/Cladding concentricity error		≤0.5μm
Color Fiber Diameter		250 μm ± 15 μm (Colored)
Fiber proof-tested		0.69 GPa (1.0%, 100kpsi) in accordance with the optical fiber proof test by IEC 60793-1-30

OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
Optical Specifications		ITU-T G.652D(SinglemodeOS2) 9/125 μm (OS2) ITU-T G651(Multimode) 62.5/125 μm , 50/125 μm
Attenuation	@1310nm	≤0.35/≤0.33dB/km
	@1383nm	≤0.35/≤0.31dB/km
	@1490nm	≤0.24db/km
	@1550nm	≤0.21/≤0.19dB/km
	@1625nm	≤0.23/≤0.20dB/km
Attenuation discontinuity		≤0.05 dB
Attenuation vs. Wavelength	1285 -1330 @1310nm	≤0.05 dB/km
	1525 -1575@1550nm	≤0.05 dB/km
Zero dispersion wavelength		1300 -1324 nm
Zero dispersion slope		≤0.092 ps/(nm ² .km)
Dispersion	@1310nm	≤3.5 ps/nm.km
	@1550nm	≤18 ps/nm.km
Polarization mode dispersion(PMD)		≤0.1 ps/km ^{1/2}
Cable cutoff wavelength (λ _{cc})		≤1260 nm
Effective group index of reaction	@1310nm	1.4675
	@1550nm	1.4681
Geometric Specifications		
Mode field diameter	@1310nm	9.2 ± 0.6 μm
	@1550nm	10.4 ± 0.8 μm
Cladding diameter		125 ± 1 μm
Cladding non-circularity		≤1.0 %
Coating Material	Material	UV curable acrylate
	Diameter	250 ± 5μm
Coating/Cladding concentricity error		≤12 μm
Core/Cladding concentricity error		≤0.5μm
Color Fiber Diameter		250 μm ± 15 μm (Colored)
Fiber proof-tested		0.69 GPa (1.0%, 100kpsi) in accordance with the optical fiber proof test by IEC 60793-1-30

// OPTICAL FIBER CHARACTERISTICS

CATEGORY	DESCRIPTION	SPECIFICATIONS
Mechanical Specifications		
Proof test level		≥1.0 %
Fiber curl radius		≥4.0 m
Peak coating strip force		1.3 - 8.9N
Relative humidity		Up to 90%, no frost
Maximum Span Length	Sag 0.5%	40 m.
	Sag 1.0%	80 m.
Maximum Wind Velocity		80 m and wind force 126 Km/hr
Max. Tensile load	Installation	4000 N. for 6-120 Cores
	Operation	1800 N. for 6-120 Cores
Maximum Crush resistance		2200 N./10 cm.
Minimum bending Radius	Installation	20 x Diameter of Cable
	Operation	10 x Diameter of Cable

// IDENTIFICATION COLOR CODE OF FIBER AND LOOSE TUBE

The color code of the loose tubes and the individual fibers within each loose tube shall be in accordance TIA/EIA-598-C (Rev.TIA/EIA-598-A) and EIA-359-A

NO.	FIBER COLOR	LOOSE TUBE COLOR
1	Blue	Blue
2	Orange	Orange
3	Green	Green
4	Brown	Brown
5	Slate	Slate
6	White	White
7	Red	Red
8	Black	Black
9	Yellow	Yellow
10	Violet	Violet
11	Rose	Rose
12	Aqua	Aqua

// PACKING AND DRUM

Standard reel length: 4 km/reel, other length is also available. The cables are packed in fumigated wooden drums.

Unless otherwise specified, the cable sheath marking shall be as follows:

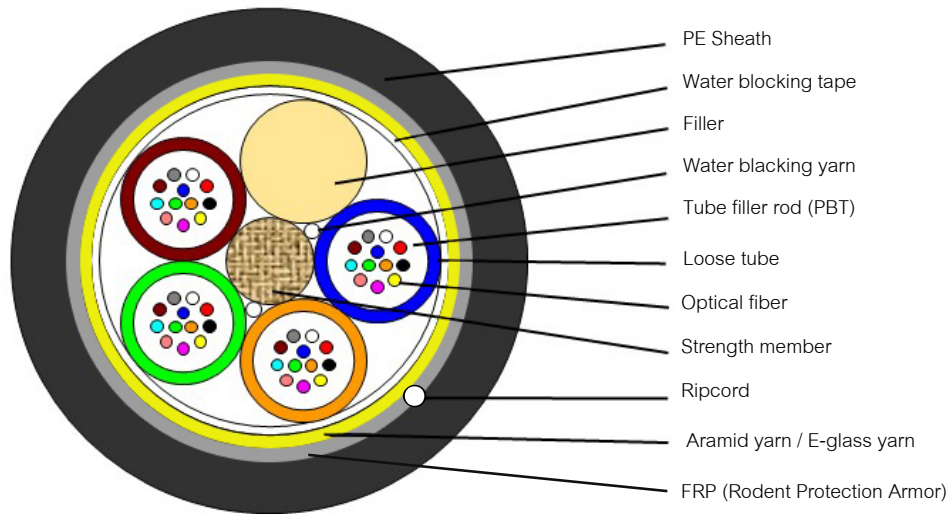
- Color: white.
- Contents: TSP, the year of manufacture, the type of cable, cable number, length marking , Name of organization in English, Thai, Chinese, etc.
- Format to choose from: screen, hot stamp, laser.
- Interval: 1 m.

(Outer sheath marking legend can be changed according to user's requests.)

// TEST REQUIREMENTS

Item	Method	Acceptance criteria
Tensile test	- Max. strength: 4000 N	-Fiber strain at maximum
IEC 60794-1-2	- Sample length: 100 meter	-Load max. 0.33 %
TIA/EIA-455-33A	- Times: 1 hour	-Attenuation increase \leq 0.1dB
Crush or Compression test	- load: 2200 N	-No splits or cracks in the outer jacket
IEC 60794-1-2	- Time: 10 minute	-Attenuation increase \leq 0.10 dB
TIA/EIA-455-41A	- Length: 100 m	
Impact test	- Impact energy: 450	- No splits or cracks in the outer jacke
IEC 60794-1-2	- Height: 1 mete	-Attenuation increase \leq 0.10 dB (after the test)
TIA/EIA-455-25C	- Impact points: min. - Number of impacts:	
Torsion or Twist test	- 1 m cable length with 150 N weigh	- No splits or cracks in the outer jacke
IEC 60794-1-2-E7	- $\pm 180^\circ$,10 cycle	-Attenuation increase \leq 0.10 dB (after the test)
TIA/EIA-455-85A		
Repeated bending Cable bending Test	- Radius = 20 \times cable outer diamete - 1m cable length with 150 N weight, 30 cycle	- No splits or cracks in the outer jacke -Attenuation increase \leq 0.10 dB (after the test)
IEC 60794-1-2-E6, TIA/EIA-455-104A IEC 60794-1-2-E11B		
Temperature cycling test	- emperature step: +20 $^\circ$ C -40 $^\circ$ C+70 $^\circ$ C-40 $^\circ$ C +70 $^\circ$ C+20 $^\circ$ C	-Attenuation variation for reference value(the attenuation to be measured before test at +20 \pm 3) \leq 0.10dB/km
IEC 60794-1-2-F1 TIA/EIA-455-3A	- ime per each step: 16 hrs. - N mber of cycles: 2 cycles	
Water penetration test	- Water height: 1	-No water leakage at the end of the sample
IEC 60794-1-2-F5	- Sample length:3	
TIA/EIA-455-82B	- Duration of test: 24hr	
Drip test	- Five 0.3m samples suspended vertically in a climat chamber, raised temperature to +70 $^\circ$ C	-No filling compound shall drip from tubes after 24 hrs.
IEC 60794-1-2-E14		

// STRUCTURE DESIGN



// ORDER INFORMATION

NO. OF CORE	DESCRIPTION
6	Indoor/Outdoor, 6C ADSS, Single Jacket FRP, Single Mode 9/125 μm
12	Indoor/Outdoor, 12C ADSS, Single Jacket FRP, Single Mode 9/125 μm
24	Indoor/Outdoor, 24C ADSS, Single Jacket FRP, Single Mode 9/125 μm
48	Indoor/Outdoor, 48C ADSS, Single Jacket FRP, Single Mode 9/125 μm
60	Indoor/Outdoor, 60C ADSS, Single Jacket FRP, Single Mode 9/125 μm
96	Indoor/Outdoor, 96C ADSS, Single Jacket FRP, Single Mode 9/125 μm
120	Indoor/Outdoor, 120C ADSS, Single Jacket FRP, Single Mode 9/125 μm



T.S.P. Intelligent Limited Partnership

Head office : 226/41 Bond Street, Bang Phut, Pak Kret, Nonthaburi 11120

TEL.: 02-960-1857 Website: www.tsp-hub.com

◀ Please scan our QR code for more details



WWW.TSP-HUB.COM



*Product pictures and technical data in this datasheet are only for reference. Updates are subject to change without prior notice. The final interpretation right is reserved by T.S.P. Intelligent Limited Partnership