1. General

1.1 Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. Netcom ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and OHS.

Cable type	Application
GCYFY-192B6a1 200um	Suitable for air blowing installation

1.1 Reference

The cable offered by Netcom are designed, manufactured and tested according to the standards as follows:

ITU-G657	Characteristics of a single-mode optical fiber
IEC 60794-1-1	Optical fiber cables- part1-1-Generic specification-General
IEC 60794-1-21	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fiber cables- part1-2-Generic specification-Basic optical cable test procedure-Environmental test methods
IEC 60794-3	Optical fiber cables- part3-Sectional specification- Outdoor cables
IEC 60794-5-10	Optical fibre cables –Part 5-10 Family specification for outdoor microduct optical and protected microducts for installation by blowing

1.2 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

1.3 Application

Item	Value
Operation temperature	-30 ºC～+70 ºC
Installation temperature	-10 ºC～+50 ºC
Storage temperature	-30 ºC～+70 ºC
Static bending radius	10 times the cable diameter
Dynamic bending radius	20 times the cable diameter

2. Optical Fiber In Cable

Optical Fibres supplied in this specification meet the requirements of ITU-T G.657A1 200um.

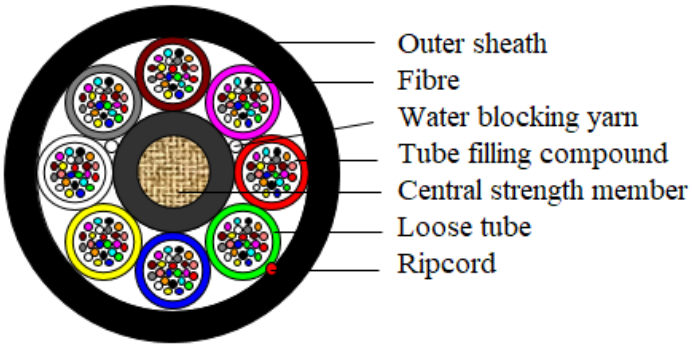
Category	Description	Specification
Geometrical Characteristics	Cladding diameter	125.0 ± 0.7 μm
	Cladding non-circularity	≤ 0.7 %
	Core concentricity error	≤ 0.5 μm
	Coating diameter	190 ~ 200 μm (Before Colored)
		195~215 μm (Colored)
	Coating/cladding concentricity error	≤ 12.0 μm
Optical Characteristics	Mode field diameter at 1310 nm	8.4 ~ 9.2 μm
	Attenuation at 1310 nm	≤ 0.36 dB/km
	Attenuation at 1550 nm	≤ 0.22dB/km
	Point discontinuity at 1310nm and 1550nm	≤ 0.05dB
	Zero dispersion wavelength	1300 ~ 1324 nm
	Zero dispersion slope	≤0.092 ps/(nm^2·km)
	Cable cut-off wavelength (λcc)	≤ 1260 nm
	Polarization mode dispersion individual fiber	≤ 0.2 ps/√km
	Polarization mode dispersion design link value (M=20, Q=0.01%)	≤ 0.1 ps/√km
	Macro-bend loss (10 turns, 15mm radius)	1550nm: ≤ 0.25 dB; 1625nm: ≤1.0 dB;
	Macro-bend loss (10 turns, 10mm radius)	1550nm: ≤ 0.75 dB; 1625nm: ≤ 1.5 dB;
Mechanical Specification	Proof stress level	≥100kpsi (0.69 GPa)
	Coating strip force (peak value)	1.3~8.9N
	Dynamic Fatigue Parameter（nd）	≥20
	Fiber curl (Radius)	≥2 m

3. Optical Cable

3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable
- Accurate process control ensures good mechanical and temperature performance
- High quality raw material guarantees the long service life of cable

3.2 Cross Section of Cable



GCYFY-192B6a1 200um
Schematic for reference only

3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence, other sequence also is available.

Fiber color code	1	2	3	4	5	6
	Red	Green	Blue	Yellow	White	Slate
	7	8	9	10	11	12
	Brown	Purple	Aqua	Black	Orange	Pink
	13	14	15	16	17	18
	Red with black ring	Green with black ring	Blue with black ring	Yellow with black ring	White with black ring	Slate with black ring
	19	20	21	22	23	24
	Brown with black ring	Purple with black ring	Aqua with black ring	Natural with black ring	Orange with black ring	Pink with black ring

Tube color code	1	2	3	4	5	6
	Red	Green	Blue	Yellow	White	Slate
	7	8				
	Brown	Purple				

3.4 Dimensions and Descriptions

The standard optical cable structure is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	Contents	Value
		192
Structure		**1+8**
Loose tube	Outer diameter (±0.1 mm)	1.5
Fiber count per tube		24
Central strength member	Material	PE coated FRP
	Diameter (±0.1 mm)	2.5
Sheath	Material	HDPE
	Color	Black
	Thickness (mm)	Nominal: 0.45
Ripcord	Number	1
	Color	Red
Cable diameter(±0.2 mm)		6.4
Tension(N)		1000
Crush(N/100mm)		500
For micro duct inside(mm)		8～14
Cable weight(kg/km) Approx.		37

4. Mechanical, Electrical and Environmental Test Characteristics

The finished cables can be subjected to the following mechanical, electrical and environmental conditions.

Item	Test Method	Requirements
Tensile performance	**IEC 60794-1-21-E1** Load: according to short term tensile described in 3.2.2 Cable length under tension: Not less than 50m. Duration of load sustain: 1min. Velocity of transfer device: 10mm/min	The maximum fiber strain less than 0.6% under maximum tensile short term load. The maximum increase in attenuation less than 0.1dB. No change in attenuation after test at 1550nm. Under visual examination without magnification, no damage to the sheath or to the cable elements after test.
Crush	**IEC 60794-1-21-E3** Load: 600N Duration of load: 1min	No change in attenuation after test at 1550nm. Under visual examination without magnification, no damage to the sheath or to the cable elements. The imprint of the striking surface on the sheath is not considered

		mechanical damage.
Bend	**IEC 60794-1-21-E11A** Mandrel radius: 10 times cable diameter Turns:10 Cycles:5	No change in attenuation at 1550nm after test. Under visual examination without magnification, no damage to the sheath or to the cable elements.
Repeated bending	**IEC 60794-1-21-E6** Bending radius: 20 times cable diameter Cycles: 25 Load: 25N Duration of cycle: Approximately 2s.	No change in attenuation at 1550nm after test. Under visual examination without magnification, no damage to the sheath or to the cable elements.
Torsion	**IEC 60794-1-21-E7** Cycles:5 Length under test: 1m Turns: ±180° Load: 40N	The variation on attenuation for each fiber less than 0.05dB at 1550nm Under visual examination without magnification, no damage to the sheath or to the cable elements. No permanent change in attenuation after test
Temperature cycling	**IEC 60794-1-22-F1** Sample length: at least 1000m Temperature range: -30℃～+70℃ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.15 dB/km.
Water Penetration	**IEC 60794-1-22-F5B** Time : 24 hours Sample length : 3m Water height : 1m	No water leakage
Compound flow	**IEC 60794-1-21-E14** Sample count:5 Sample length:300 ±5 mm, Remove length: 130 ±2,5 mm, Time:24h	No filling compound dripped.
Other parameters	According to IEC 60794 ,YD/T 1460.4-2006	

Remark: “No attenuation changes” is considered as the attenuation changes ≤ 0.05 dB.

5.1 Cable Sheath Marking

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

Method: inkjet

Color: White

Contents: Netcom-Tec, the year of manufacture, the type of cable, cable number, length marking Interval: 1 m

Outer sheath marking legend can be changed according to user’s requests.

5.2 Reel Length

Standard reel length: 2/3 km/reel, and the tolerance scope is -2%~+2%， other length is also available.

5.3 Cable Drum

The cables are packed in wooden drums.

5.4 Cable Packing

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.