

Loose Tube Fibre Cable SM 250um HDPE/Nylon 48 Fibre – Blue (Pantone 285C)

LTS2HN48BU

Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry.

CABLE TYPE	APPLICATION
LTS2HN48BU	Duct installation

Reference

Design, Manufacturing, and Testing Standards:

STANDARD	DESCRIPTION
ITU-T G.652	Characteristics of a single-mode optical fibre
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-21	Optical fibre cables- part1-2-Generic specification-Basic optical cable test procedure-Mechanical test methods
IEC 60794-1-22	Optical fibre cables- part1-2-Generic specification-Basic optical cable test procedure-Environmental test methods
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables
IEC 60794-3-10	Optical fibre cables-part 3-10: Outdoor cables-Family specification for duct and direct buried optical communication cables
IEC 60794-3-11	Optical fibre cables-Part 3-11: Outdoor cables-Detailed specification for duct and directly buried single-mode optical fibre telecommunication cables

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.

Application

ITEM	VALUE
OPERATION TEMPERATURE	-40 °C ~ +70 °C
INSTALLATION TEMPERATURE	-40 °C ~ +70 °C
STORAGE TEMPERATURE	-40 °C ~ +70 °C
STATIC BENDING RADIUS	10 times the cable diameter
DYNAMIC BENDING RADIUS	20 times the cable diameter

Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G.652

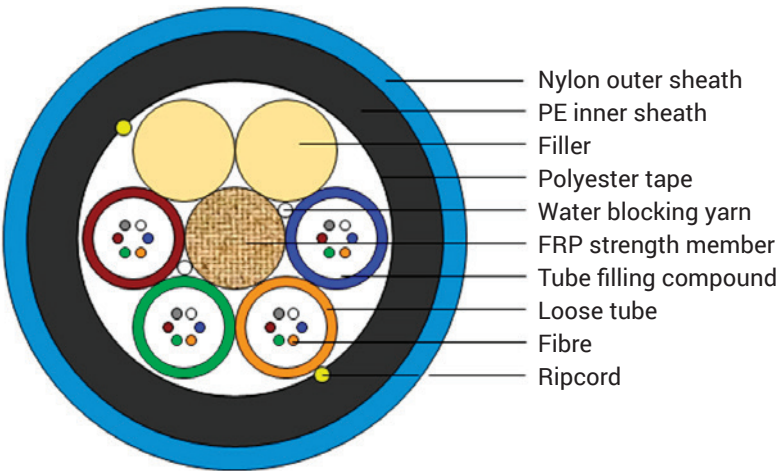
PARAMETER	SPECIFICATION
MFD (1310NM)	8.7~9.5 um
CLADDING DIAMETER	125±1.0um
FIBRE DIAMETER	235~255um, with UV coating, and coloured to: 250±15um
CORE/CLADDING CONCENTRICITY ERROR	≤ 0.6um
COATING/CLADDING CONCENTRICITY ERROR	≤ 12.0um
CLADDING NON CIRCULARITY	≤ 1.0%
CUT OFF WAVELENGTH	$\lambda_{cc} \leq 1260\text{nm}$
ATTENUATION COEFFICIENT	1310nm: 0.35dB/km max after cabling
	1550nm: 0.21dB/km max after cabling
BENDING-LOSS PERFORMANCE OF OPTICAL FIBRE @1310NM & 1550NM	≤0.05dB (100 turns around a mandrel of 50mm diameter)
POLARIZATION MODE DISPERSION MAXIMUM INDIVIDUAL FIBRE	≤0.2ps/√km
POLARIZATION MODE DISPERSION LINK VALUE	≤0.1ps/√km
ZERO-DISPERSION WAVELENGTH	1300~1324nm
ZERO-DISPERSION SLOPE	≤0.092ps/nm ² ·km

Optical Cable

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

Cross Section of Cable



LTS2HN48BU

Structure of other fibre counts refer to "Dimensions and Descriptions"

Schematic for reference only

Fibre and Loose Tube Identification

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

COLOUR CODE	1	2	3	4	5	6	7	8	9	10	11	12
	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Purple	Pink	Aqua

The colour of the fillers will be natural.

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	
		12/24	48/72
STRUCTURE	Type	1+6	
LOOSE TUBE	Fibre counts/tube	6	12
	Outer diameter (mm)	1.9	2.1
CENTRAL STRENGTH MEMBER	Material	FRP	
	Diameter (mm)	2.25	
	PE Layer Diameter(mm)	—	
WATER BLOCKING	Material	Water Blocking Yarn	
WRAPPING	Material	Polyester tape	
RIPCORDER	Material	Kevlar	
	Number	2	
INNER SHEATH	Material	HDPE	
	Colour	Black	
	Thickness (mm)	Minimum: 1.2	
OUTER SHEATH	Material	Nylon 12	
	Colour	Blue (Pantone 285C)	
	Thickness (mm)	Minimum: 0.3	
CABLE DIAMETER(MM) APPROX.		10.0	10.4
CABLE WEIGHT(KG/KM) APPROX.		80	85

Main Mechanical Performance

ITEM	TENSION (N)	CRUSH (N/100MM)	
		SHORT TERM	LONG TERM
12/24/48/72	2000	2000	1000

Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

ITEMS	TEST METHOD	REQUIREMENTS
TENSION	IEC 60794-1-21-E1 Load: According to 3.5 Sample length: Not less than 50m. Duration time: 30min.	Fibre strain: $\leq 0.6\%$ Additional attenuation: $\leq 0.05\text{dB}$ after test No damage to outer jacket and inner elements
CRUSH	IEC 60794-1-2-E3 Load: According to 3.5 Duration of load: 10min (short term), 120min (long term)	Additional attenuation: $\leq 0.05\text{dB}$ after test No damage to outer jacket and inner elements
IMPACT	IEC 60794-1-2-E4 Radius: 12.5 mm Impact energy: 15J Impact number: 1 Impact points: 3	Additional attenuation: $\leq 0.05\text{dB}$ No damage to outer jacket and inner elements
REPEATED BENDING	IEC 60794-1-2-E6 Bending radius: 20*D Cycles: 25 Load: 150N	Additional attenuation: $\leq 0.05\text{dB}$ No damage to outer jacket and inner elements
TORSION	IEC 60794-1-2-E7 Cycles: 10 Length under test: 1m Turns: $\pm 180^\circ$ Load: 150N	Additional attenuation: $\leq 0.05\text{dB}$ No damage to outer jacket and inner elements
WATER PENETRATION	IEC 60794-1-2-F5 Time : 24 hours Sample length : 3m Water height : 1m	No water leakage.
TEMPERATURE CYCLING	IEC 60794-1-2-F1 Sample length: at least 1000m Temperature range: $-40^\circ\text{C} \sim +70^\circ\text{C}$ Cycles: 2 Temperature cycling test dwell time: 12 hours	There should be no average attenuation increase ($\leq 0.05\text{dB/km}$) at the temperature extremes when compared to the attenuation at ambient temperature. No individual fibre should measure an attenuation change greater than 0.15 dB/km
OTHER PARAMETERS	According to IEC 60794-1	

Packaging and Drum

Cable Sheath Marking

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

ITEM	DESCRIPTION
<LTS2HN48BU>	Unique manufacture product identification code.
<OCULA>	Brand of cable.
<FIBRE OPTIC CABLE SM LOOSE TUBE HDPE/NYLON 9/125 48F>	Cable Description.
<0323>	Date of Manufacture: Month & Year.
<230103020211801>	A unique cable identification number provided by the cable manufacturer.
	Sequential length mark in meters starting at zero (0000) at the inner end of the drum.

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

Reel Length

- Standard reel length: 2/3 km/reel, other length is also available.

Cable Drum

- The cables are packed in fumigated wooden drums.

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.