KST Ltd

Technical Data Sheet

Cable Description	**24F FIBRE DOUBLE SHEATH GLASS YARN ARMORED (METAL FREE) HDPE CABLE**
Type of Fibre	**Single Mode, G.652D**

Introduction

Double HDPE Metal Free optic cable containing LWP - SMF in full compliance with ITU-T G 652D. The offered cables are fully compliant to the relevant IEC specifications.

Cable Design

* Single mode fibers in full compliance with ITU-T-G652D.
* Non-metallic and anti-buckling element FRP rod used as Central Strength Member.
* Loose buffer tubes fully filled Thixotropic Jelly
* Loose buffer tubes S-Z Stranded
* Cable core is filled with Thixotropic Jelly
* Cable core is wrapped with Polyester Tape
* UV Stablized HDPE Inner sheath, Black
* Glass Yarn as Pheripheral Strength Member
* UV Stablized HDPE Outer sheath, Black
* Rip cord to open the sheath

Application

* Direct burial / Inside Duct
* In areas with particularly high mechanical loads
* In areas with rodents

Special Features

* Single layer stranded construction
* Glass Yarn acts as protection against rodents and mechanical damage.
* Flexible buffer tubes provide easy fibre routing inside closure

Cable Physical Characteristics

Fibre Count	**24**
Number of Fibres in each Loose Tube	6
Number of Loose Tube in each cable	4
Number of Filler (if Required)	2
Cable Diameter (mm)	**12.0**
Tolerance ± (mm)	0.5
Nominal Cable Weight (kg/km)	**120**
Standard Length (meters)	4000 ± 5%

Cable Mechanical & Environmental Characteristics

Test	Standard	Product Performance
Temperature Range (°C)	[IEC 60794-1-22-F1]	-20 °C to +70 °C
Cable Bending Radius (mm)	[IEC 60794-1-21-E11 A & B]	20 X D , D= Cable diameter
Tensile Force (N)	[IEC 60794-1-21-E1]	2700 N
Impact Resistance (Nm)	[IEC 60794-1-21-E4]	15 Nm
Crush Resistance (N)	[IEC 60794-1-21-E3]	3000 N (100 X 100 mm)
Torsion Resistance	[IEC 60794-1-21-E7]	± 180°
Water Penetration	[IEC 60794-1-22-F5 B]	1 Meter Water Head, 3 Meters Cable Sample, 24 Hours (Inner Sheath)

Note: After the Test, Change in Attenuation shall be ≤ 0.05 dB/Km. No Fibre Break & Damage or Crack on the Cable

Cable Transmission Characteristics

Fibre Type		Attenuation Coefficient (dB/Km)					PMD	Cable Cut-Off	MFD
		850	1300	1310	1550		ps/sqrt.km	nm	µm
Single Mode	G.652D	-	-	≤ 0.35	≤ 0.22		≤ 0.2	≤ 1260	9.2 ± 0.4

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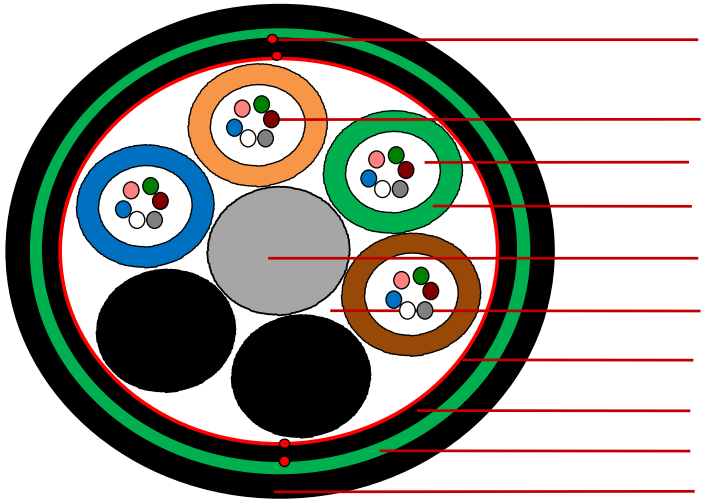
Cable Constructional Details

Cable Cross Sectional Diagram of 24F Cable [Drawing not to scale]



Rip Cord - To Open the sheath

Primary Coated Fiber- G652D Colour Coded

Tube Filling Compound - Thixotropic Jelly

Loose Tube - PBTP

Central Strength Member - FRP ROD

Cable Filling Compound - Thixotropic Jelly

Core Wrapping - Polyester Tape

Inner Sheath - HDPE, Black

Peripheral Strength Member - Glass Yarn

Outer Sheath - UV HDPE, Black

Indentification Fibre & Loose Tube Colour

Fibre Colour	Blue	Orange	Green	Brown	Slate	White						
Loose Tube Colour	Blue	Orange	Green	Brown								
Filler Colour	Black											

Proposed Printing Details & Method at every meters

Printing Method & Colour	Hot foil Indentation Method, Contrast Color	CABLE ID Customer/Project Name Telephone Symbol, Laser Symbol, Number of Fibres, Type of Fibre Type of Cable YYYY Manufacturer Name Sequential Meter Marking

Proposed Stencling on Drum

Every length will be delivered on non-returnable wooden drums. Generally the cable drum flange will be marked with following: (These details can also be customised.)	* Arrow showing the direction, the drum can be rolled. * Country of origin. * The manufacturer's name * Number of fibers. * Nominal cable length in meters * Net and gross weight. * Drum number * Customer's/Project name and destination

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Specification of Single Mode Matched Clad Type Optical fibre Conforming to ITU - T Rec. G.652D

Properties	Unit	Values
Transmission		
Attenuation at 1310 nm	dB/km	≤ 0.34
Attenuation at 1550 nm	dB/km	≤ 0.20
Attenuation at 1625 nm	dB/km	≤ 0.23
Point discontinuity at 1310 & 1550 nm	dB	≤ 0.05
Difference in maximum attenuation in the range from		
1285 to 1330 nm w.r.t attenuation at 1310 nm	dB/km	≤ 0.03
1530 to 1570 nm w.r.t attenuation at 1550 nm	dB/km	≤ 0.02
Maximum chromatic dispersion at		
1285 - 1330 nm wavelength range	ps/nm.km	≤ 3.5
1270 - 1340 nm wavelength range	ps/nm.km	≤ 5.3
1550 nm	ps/nm.km	≤ 18.0
1625 nm	ps/nm.km	≤ 22.0
Zero dispersion wavelength	nm	1302 to 1322
Zero dispersion slope	nm².km	≤ 0.092
PMD at 1310 & 1550 nm	ps/sqrt.km	≤ 0.15
PMD Link Design Value at 1310 & 1550 nm**	ps/sqrt.km	≤ 0.06
Fibre cut-off wavelength	nm	≤ 1320
Cable cut-off wavelength	nm	≤ 1260
Mode field diameter range at 1310 nm	µm	9.2 ± 0.4
Mode field diameter range at 1550 nm	µm	10.4 ± 0.5
Geometrical		
Cladding Diameter	µm	125 ± 0.7
Cladding noncircularity	%	≤ 0.7
Primary Coating Diameter (uncoloured)	µm	242 ± 5
Coating Diameter (coloured)	µm	252 ± 10
Core/Clad or Mode Field concentricity error	µm	≤ 0.5
Coating / Cladding Concentricity error	µm	≤ 12
Numerical Aperature**		0.14
Refractive Index at 1310 & 1550 nm**		1.467 & 1.468
Mechanical**		
Proof Test for minimum strain level	kpsi, Gpa, %	≥ 100, ≥ 0.69, ≥ 1
Change in Attenuation with Bending		
100 Turns on 60 mm Diameter Mandrel		
at 1310	dB	≤ 0.05
at 1550	dB	≤ 0.05
1 Turn on 32 mm Diameter Mandrel		
at 1310	dB	≤ 0.5
at 1550	dB	≤ 0.5
Strippability force to remove primary coating of fibre	Newton	1.3 ≤ F ≤ 8.9
Fibre Curl	radius of curve.	≥ 4 mtrs
Dynamic tensile strength (unaged)	kpsi	≥ 550
Dynamic tensile strength (Aged)	kpsi	≥ 440
Dynamic Fatigue		≥ 20
Environmental**		
Induced attenuation at 1310 nm, 1550 nm & 1625 nm for		
Temperature & Humidity cycle from -10°C to +85°C at 98 % humidity (min), Reference Temperature 23°C	dB/km	≤ 0.05
Temperature cycle from -60°C to +85°C, Reference Temperature 23°C	dB/km	≤ 0.05
Water Immersion at 23 ± 2°C	dB/km	≤ 0.05
Accelerated Ageing (Temperature) at 85 ± 2°C, Reference Temperature 23°	dB/km	≤ 0.05

**** Fibre Manufacturer Certificate will be provided**

Design no.	BEPB/TDS/3625
Reference	BEPB/TDS/3625
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