ramcro

special cables

FIBER OPTIC CABLES

ABOUT COMPANY

Ramcro was founded in 1979, as a family Company producing Special Cables. Family Croci owns 100% of Ramcro S.p.a.. In over 45 years Ramcro successfully expanded its presence in different countries and in a few different but important segments: Oil & Gas, Fire, Railway Signal & Control, BMS, and Optical Cables.

Ramcro production capacity is 4.000 Km/Month and 50.000 Km/Year. Production dpt is 18.000 sqm, of which 3.000 sqm on stock, allowing outstanding very high flexibility in delivery, with also 1.300 sqm of offices and 750 sqm for Laboratory.

Ramcro Laboratory provides any certificates of tests run following major international specifications and it is ready to be certified ISO 17025. It is also recognized by the international body as a “Third part Laboratory”. Ramcro solves any kind of technical issue in the area of the cable, assuring the Client’s satisfaction thanks to high quality and personalized solutions, improving the Client’s efficiency and optimizing its processes. Ramcro offers extremely flexible solutions and a complete range of services, even tailor-made, based on outstanding worldwide experience

INDEX

ramcro special cables

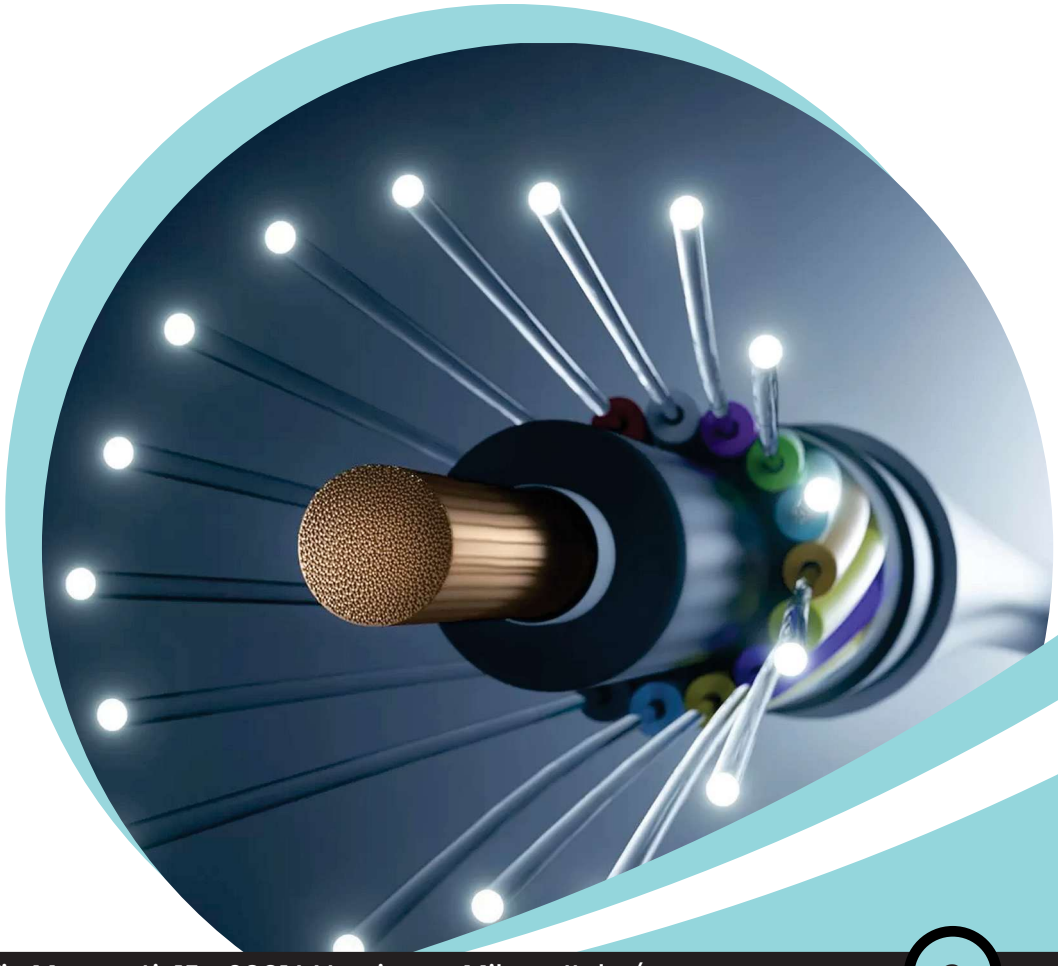
ABOUT OPTICAL FIBRE CABLE

Data cable is an important part for computers or communication systems. It provides a connection between various hardware components. This enables to communicate with its own various parts or additional equipment's. These cables can be divided into three main types: Twisted pair cable, coaxial cable, Optic cables. Optical Fiber Cable (OFC) continues to be the backbone of the digital world. The exponential rise in the digital population and the consequent explosion in data consumption is necessitating the increase in speed and bandwidth of OFC networks. Our OFC products and capabilities have constantly been evolving, enabling us to sustain the market leadership in OFC manufacturing.

WHY TO ADOPT OPTICAL FIBER CABLE

The advantages of fiber optic cables are well known in the industry:

- Greater Bandwidth than traditional copper cables
- Faster Speeds
- Longer Distances
- Better Reliability
- Thinner | Sturdier | Light weight
- The life cycle of fiber cables is 30-50 years, which is much higher than other kind of cables.
- Lower Total Cost of Ownership
- No worries about corrosion/ chemical impact.



RAMCRO SPECIAL CABLE

Ramcro has maintained its advantage in copper communications and Optical Fibre cables, with a full range of products used in consumer electronics, telecommunications, Industrial networks, railway networks and Fibre to Home projects. We provide excellent customized products; meanwhile we also provide system solution in communication engineering design, construction, testing, technical training and other areas.

Our products are widely used in major telecommunication operators, radio and television, state route, railway, metropolitan area network, intelligent buildings, new resource and special industry, and enjoy great popularity both at home and abroad.

Our Data Communication Cables range ?

- Data cable and assemblies
- High-speed data transfer cable & consumer electronic cable
- Wire & cable for rail transit and access
- Communication flexible cables and accessories
- Industrial special cable
- Speaker Cable.
- Optical Fibre Cable

APPLICATION OF OPTICAL FIBRE USES

Optical fibers have a wide range of applications across various fields due to their ability to transmit data at high speeds with minimal loss. Here are some key uses:

TELECOM & BROADBAND

High-density splicing solutions for backbone and metro networks

DATA CENTER

Fast development and connectivity for high-bandwidth networks

SURVEILLANCE

Optical fibers are extensively used in telecommunications to transmit data over long distances with high bandwidth and low signal loss

TRANSPORTATION

Fiber network for roads, highways and metro systems. High-density fiber deployments in rail, tunnels, and subways

INDUSTRIAL AUTOMATION

Robust connections for industrial control and automation

POWER UTILITIES

Optical fibers are extensively used in telecommunications to transmit data over long distances with high bandwidth and low signal loss

HEALTHCARE

Structured cabling for hospitals and medical facilities requiring low-interference communication

UTILITIES

Ruggedized solutions for instrumentation and infrastructure

GOVERNMENT & DEFENCE

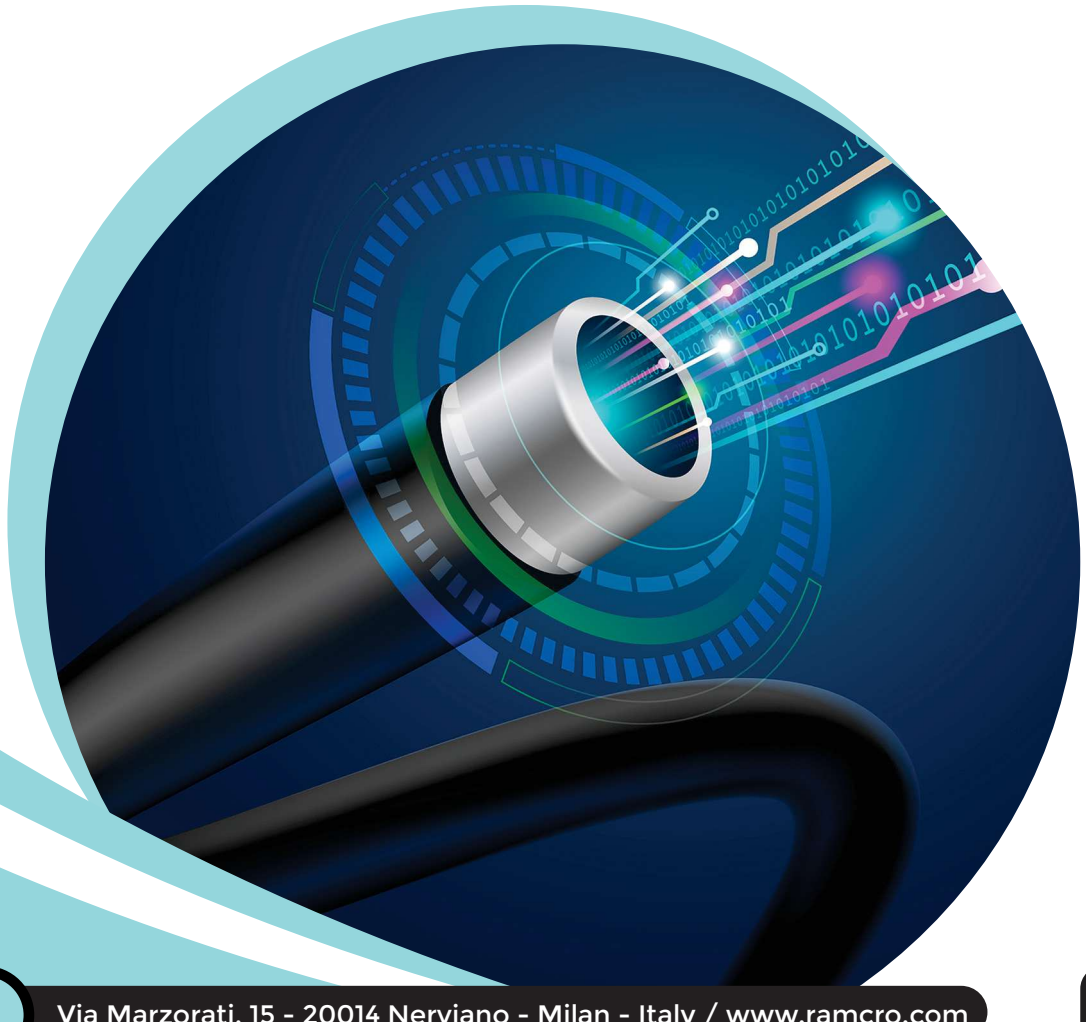
Scalable, high - performance network for secure communi-cations. Tactical solutions for rugged, reliable field communication

OIL AND GAS

Optical fiber cables enable high-speed data transmission, which is essential for remote operations and data-intensive applications in the oil and gas industry , monitoring both temperature and strain in criti-cal infrastructure

SPECIAL TYPE OF OPTICAL FIBRE WHICH WE USE IN COMMUNICATION:

- OS1 9/125
- OS2 9/125
- OM1 62.5/125
- OM2 50/125
- OM3 50/125
- OM4 50/125
- OM5 50/125



SINGLE MODE OPTICAL FIBRE

Single mode fibre allows for higher bandwidth and longer transmission distances compared to multimode fiber. Single mode fiber is typically used in long-haul applications, such as telecommunications and data centers. This is a full-spectrum fiber that is fully backward-compatible with legacy singlemode fiber. It enables increased optical launch power , improved macrobend specifications from 0.05 dB to 0.03 dB, and tighter zero dispersion wavelength (l0) tolerance from a range of ± 10 nm to ± 7 nm. This fiber supports all broadband applications and complies with the most stringent industry standards, ITU-T G.652.D, IEC 60793-2-50, EN 50173, Telcordia GR- 20-CORE, ANSI/ICEA S-87-640, RUS 7CFR 1755.900, ANSI/TIA/EIA492CAAA

GEOMETRICAL AND MECHANICAL CHARACTERISTICS		
	G.652.D	G.655
Cladding Diameter	125 ± 0,7 µm	125 ± 1 µm
Core/Cladding Concentricity	≤ 0.5 µm	≤ 0.6 µm
Cladding Non-Circularity	≤ 0.7 %	≤ 1.0 %
Secondary Coating Diameter	242 ± 7 µm	242 ± 7 µm
Coating/Cladding Concentricity	≤ 12 µm	≤ 12 µm
Coating Non-Circularity	≤ 7 %	≤ 5 %
Proof Test	≥ 100 kspi	≥ 100 kspi

GEOMETRICAL AND MECHANICAL CHARACTERISTICS			
G.652.D G.655			
Mode Field Diameter (µm)	1310 nm	9.0 ± 0.4	----
	1550 nm	10.1 ± 0.5	9.2 ± 0.5
Attenuation Coefficient (dB/km)	1310 nm	≤ 0.35	≤ 0.40
	1383 nm	≤ 0.35	≤ 1.00
	1460 nm	≤ 0.25	----
	1550 nm	≤ 0.22	≤ 0.25
	1625 nm	≤ 0.23	≤ 0.28
Chromatic Dispersion	1310 nm	----	-6
Coefficient (ps/nm.km)	1530 - 1565 nm	----	5.5 to 10
	1285 - 1330 nm	≤ 3	10 to -3
	1565 - 1625 nm	----	7.5 to 13.8
	1550 nm	≤ 18	8
	1625 nm	≤ 22	12
Zero Dispersion Wavelength (nm)		1300 - 1322	≤ 1440
Zero Dispersion Slope (ps/nm2 Km)		≤ 0.090	≤ 0,052
Group Index of Refraction		1467	1.4682
		1468	1.4683
Cable Cutt-Off Wavelenght (nm)	Cabling	≤ 1260	≤ 1300
PMD (ps / √km)	1550 nm	≤ 0.1	≤ 0.2

APPLICATION

- Operational in the entire 1260nm to 1625nm wavelength range
- Low chromatic dispersion in the 1310nm operating window
- Low attenuation at the 1383 nm water peak region
- Operational in the 1360nm to 1460 nm wavelength extended band
- All OS2 Optronics cable constructions including tight buffered, loose tube and ribbon
- Supports 1 Gb/s up to an indicative 5 km in data networks
- Supports high speed multi channel video, data and voice services in metropolitan and access networks
- ATM, SONET and WDM, CWDM

MULTI-MODE OPTICAL FIBRE: OM1

Multimode optical fiber is a graded index multimode fiber. This optical fiber comprehensively optimizes the characteristics of 850 nm and 1300 nm operating windows, providing higher bandwidth, lower attenuation, which meet the use requirements in 850 nm and 1300 nm window. The Multimode optical fiber meets the ISO/IEC 11801 OM1 technical specifications and A1b type of optical fibers in IEC 60793-2-10.

GEOMETRICAL AND MECHANICAL CHARACTERISTICS	
Core Diameter	62.5 ± 2.5
Core Non-Circularity	≤ 6%
Core / Cladding concentricity error	≤ 1.5
Cladding Diameter	125 ± 2
Cladding non-circularity	≤ 1 %
Secondary coating diameter	245 ± 10
Coating non-circularity	≤ 6%
Coating concentricity error	≤ 12,5
Proof Test	≥ 8.8 N / ≥ 1 % / ≥ 100 Kpsi

OPTICAL CHARACTERISTICS		
Attenuation Coefficient	850 nm	≤ 3.0
(dB/Km)	1300 nm	≤ 0.7
Bandwidth	850 nm	≥ 200
(MHz.Km)	1300 nm	≥ 500
Link Distance (m)	1000Base-SX	300
	1000Base-LX	550
Numerical Aperture	0.275 ± 0.015	
Group Index of	850 nm	1.496
Refraction	1300 nm	1.491

APPLICATION

- Gigabit Ethernet in high speed LAN networks, over an indicative 275m link length at 850 nm wavelength
- Legacy networks including Ethernet, Fast Ethernet and FDDI
- All OM1 Optronics cable constructions, including tight buffered, loose tube and ribbon
- Data centres
- Premises cabling in data networks including backbone, riser and horizontal
- Supports video, data and voice services
- Specially suitable for gigabite Ethernet t (IEEE802.3z)

MULTI MODE OPTICAL FIBRE - OM2, OM3, OM4, OM5

Graded-Index multimode optical fibres 50/125 micron. The fibres are designed for use at 850, 953 and 1300 nm. These fibres are suitable for use in premises wiring applications, like Local Area Networks (LAN) with video, data and voice using LED, VCSEL or Laser Fabry Perot sources.

The fibre complies with or exceeds ITU-T Recommendation G651.1 (OM2, OM3 y OM4), IEC 60793-2-10 A1a.1, A1a.2, A1a.3, A1a.4 Optical Fibre Specification, ISO/IEC 11801 OM2 / OM3 / OM4 / OM5 specification, TIA/EIA-492AAAB, TIA/EIA-492AAAC, TIA/EIA-492AAAD, TIA/EIA-492AAAE, Telcordia GR-20-CORE, GR-409-CORE.

GEOMETRICAL AND MECHANICAL CHARACTERISTICS	
Core Diameter	50 ± 2,0
Core Non-Circularity	≤ 5%
Core / Cladding concentricity error	≤ 1
Cladding Diameter	125 ± 1,0
Cladding non-circularity	≤ 0.7 %
Secondary coating diameter	242 ± 5
Coating non-circularity	≤ 5%
Coating concentricity error	≤ 12.5
Proof Test	≥ 8.8 N / ≥ 1 % / ≥ 100 Kpsi

OPTICAL CHARACTERISTICS							
		OM2	OM2 XL	OM3 SL	OM3	OM4	OM5
Attenuation Coefficient (dB/Km)	850 nm	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4	≤ 2.4
	953 mm	-----	-----	-----	-----	-----	≤ 1.8
	1300 nm	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.6
Bandwidth (MHz.Km)	850 nm	≥ 500	≥ 600	≥ 700	≥ 1500	≥ 3500	≥ 3500
	953 mm	-----	-----	-----	-----	-----	≥ 1850
	1300 nm	≥ 500	≥ 500	≥ 500	≥ 500	≥ 500	≥ 500
Link Distance (m)	1000Base-SX	550	550	550	900	1100	1000
	1000Base-LX	550	550	550	550	550	600
	10GBASE-SX	82	82	82	300	550	400
	40GBASE-SR4	-----	-----	-----	100	150	150
	100GBASE-SR1	-----	-----	-----	100	150	100
Numerical Aperture				0.200 ± 0.015			
Group Index of Refraction	850 nm			1.482			
	1300 nm			1.477			

APPLICATION

OM2 Fiber:

- Cost-effective solution for legacy systems and short-distance applications.
- Ideal for 1 Gigabit Ethernet deployments within building infrastructures.
- Economical for basic network upgrades.

OM3 Fiber:

- Optimized for 10 Gigabit Ethernet applications, commonly used in data centers and LANs.
- Supports 40 Gigabit and 100 Gigabit Ethernet for shorter distances, providing a pathway to faster network speeds.
- Versatile for modern network environments.

OM4 Fiber:

- Designed for high-speed data centers and demanding network applications.
- Supports 10 Gigabit, 40 Gigabit, and 100 Gigabit Ethernet over extended distances.
- Enables high-bandwidth connectivity for critical applications.
- Used in financial data centers, and large corporate networks.

OM5 Fiber:

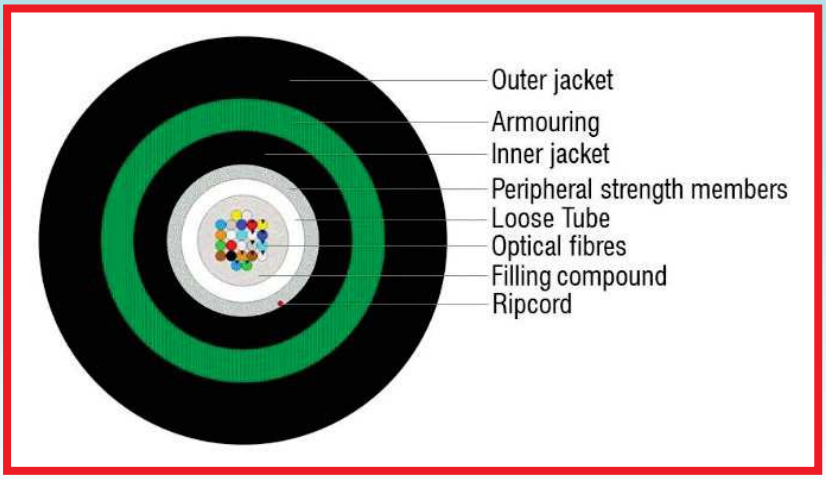
- Next-generation multimode fiber optimized for Short Wavelength Division Multiplexing (SWDM) technology.
- Supports multiple wavelengths on a single fiber, maximizing bandwidth capacity.
- Future-proof solution for 400 Gigabit Ethernet and beyond.
- Ideal for high density data centers that require maximum bandwidth, and fiber efficiency.
- Reduces fiber count in complex networks.

OPTICAL FIBRE CABLE

Unitube Steel wire Armoured Cable (SWA)

Indoor / Outdoor cable

- Fibre optics
- Central tube (jelly filled)
- Strength members
- Inner jacket
- Metallic armour
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications:

- Universal (Indoor/Outdoor)
- Direct Burial
- Offshores

Rodent Protection

- Excellent rodent resistence Options
- Jacket: PE / PA / MUD
- Strength Members: Aramid
- Special colour code: EIA/TIA 5

Advantages:

- Compact / Tough / Resistant / Reduced diameter / Water-tight / Excellent rodent resistance

SPECIFICATION		
Fibre	2/4/6/8/12	16/24
Central Tube (mm)	$3.5^{\pm 0.2}$	$3.5^{\pm 0.2}$
Strength Members	Reinforced Fibreglass WB	
Inner jacket	LSZH-Black	
Armour	Steel Wire Armour	
Outer Jacket	LSZH- Black	
Weight (Kg/Km)	$215^{\pm 10\%}$	$235^{\pm 10\%}$
Outer Diam. (mm)	$11.1^{\pm 0.5}$	$12.3^{\pm 0.5}$
Max. Tensile Load (N)	3500(Operating)/4500(Installation)	4500(Operating)/6000(Installation)
Max Crush (N/10 cm)	3500	4000
Max Impact (J)	5	
Repeated Bending	25 Cycles r=220 mm, 4 kg	
Torsion	10 Turns ± 180 ° , 4 Kg	
Water Tightness (3m/1m/24h)		
Temperatre Range	-40°C to + 70°C (Operation)/ -5°C to +50°C (Installation)	
Min. Bending Radius (mm)	15x Outer Dia. (Operation) /20x Outer Dia. (Installation)	

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

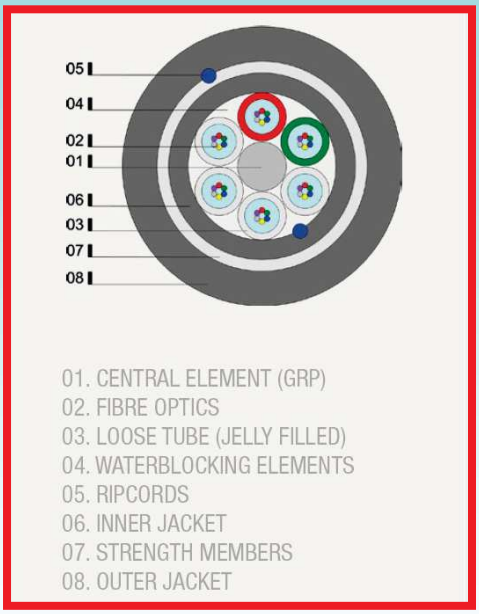
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

OPTICAL FIBRE CABLE

Multitube Steel wire Armoured Cable (SWA)

Indoor / Outdoor cable

- Central element
- Fibre optics
- Loose tubes (jelly filled)
- Strength members
- Ripcords
- Inner jacket
- Metallic armour
- Outer jacket



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SPECIFICATION							
Fibre	12	24	36	48	72	96	144
Total / Active Tubes	6/1	6/2	6/3	6/4	6/6	8/8	12/12
Fibres per Tube	12						
Strength member	Reinforced Fibreglass Yarn WB						
Inner jacket	LSZH- Black						
Armour	Steel Wire Armour						
Outer jacket	LSZH- Black						
Outer Dia.	$14.0^{\pm0.5}$	$14.0^{\pm0.5}$	$14.0^{\pm0.5}$	$14.0^{\pm0.5}$	$14.0^{\pm0.5}$	$15.3^{\pm0.5}$	$19.5^{\pm0.5}$
Weight (Kg/Km)	318	319	320	321	322	375	593
Max Tensile Load(N)	4500(Operating)/ 6000 (Installation)						
Max Crush (N/10cm)	3000						
Max. Impact (J)	10						
Water Penetration	(3m/ 1m/ 24h/ Optical Core)						
Temperature Range	-40 °C to +70°C (Operating) -10 °C to +50 °C (Installation)						
Min. Bending Radius (mm)	15x Outer Dia. (Operating) / 20x Outer Dia. (Installation)						

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

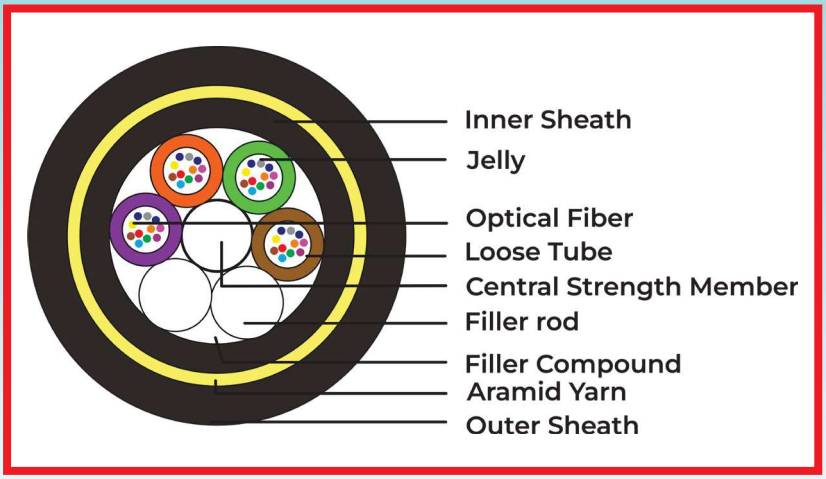
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

AERIAL LOOSE TUBE CABLE

ADSS 80/120/150/200

Optical Fibre Cable Description

- Central strength member (grp)
- Fibre optics
- Loose tube (thixotropic jelly field)
- Water blocking yarn
- Ripcord
- Filler rod
- Inner sheath
- Aramoured yarn
- Outer jacket



Advantages:

- Excellent mechanical resistance
- Totally dielectric / Tough / Resistant
- High density of fibres
- Self-supported aerial applications.
- Good water resistant performance.

Applications:

- All Dielectric Self-Supporting Cable

SPECIFICATION												
Maximum Distance			**80 m**			**120 m**			**150 m**			**200 m**
Fibres	4	6	8	12	16	24	32	36	48	64	72	96
Fibres per Tube	2	2	2	2	4	4	8	6	8	8	12	12
Total Tube	6	6	6	6	6	6	6	6	6	8	6	8
Inner Jacket						Polythylene						
Strenght Member						Aramid Yarns						
Outer Jacket						Polyethylene						
Colour						Black						
MAT (N)	80 m: 3000			120 m: 4000			150 m: 6000			200 m: 8000		
EDS (N)	80 m: 1200			80 m: 1600			80 m: 2400			80 m: 3200		
Impact						SJ						
Temperature Range						-40° C to +70° C						
Min. Bending Radius						20 x Ø Outer						
						80 m						
Weight (Kg/Km)	111	113	115	120	116	120	133	121	139	175	141	177
Ø Outer (mm)	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$13,3^{\pm0,5}$	$12,4^{\pm0,5}$	$13,3^{\pm0,5}$	$15,0^{\pm0,5}$	$13,3^{\pm0,5}$	$15,0^{\pm0,5}$
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100
						120 m						
Weight (Kg/Km)	113	115	117	122	118	123	133	123	142	177	143	179
Ø Outer (mm)	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$12,4^{\pm0,5}$	$13,3^{\pm0,5}$	$12,4^{\pm0,5}$	$13,3^{\pm0,5}$	$15,0^{\pm0,5}$	$13,3^{\pm0,5}$	$15,0^{\pm0,5}$
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100
						150 m						
Weight (Kg/Km)	118	120	123	127	123	128	141	128	147	182	148	184
Ø Outer (mm)	$12,7^{\pm0,5}$	$12,7^{\pm0,5}$	$12,7^{\pm0,5}$	$12,7^{\pm0,5}$	$12,7^{\pm0,5}$	$12,7^{\pm0,5}$	$13,6^{\pm0,5}$	$12,7^{\pm0,5}$	$13,6^{\pm0,5}$	$15,3^{\pm0,5}$	$13,6^{\pm0,5}$	$15,3^{\pm0,5}$
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	2100	2100	2100
						200 m						
Weight (Kg/Km)	123	125	127	132	128	132	145	133	151	186	153	188
Ø Outer (mm)	$12,8^{\pm0,5}$	$12,8^{\pm0,5}$	$12,8^{\pm0,5}$	$12,8^{\pm0,5}$	$12,8^{\pm0,5}$	$12,8^{\pm0,5}$	$13,7^{\pm0,5}$	$12,8^{\pm0,5}$	$13,7^{\pm0,5}$	$15,3^{\pm0,5}$	$13,7^{\pm0,5}$	$15,3^{\pm0,5}$
Maximum Lenght	3200	3200	3200	3200	3200	3200	2100	3200	2100	21200	2100	2100

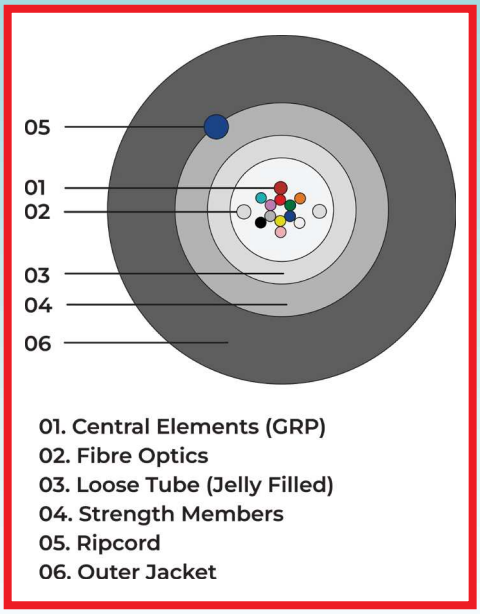
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

LOOSE TUBE CABLE RE

Indoor / Outdoor cable

Cable Description:

- Fibre Optics
- Central Tube Jelly Field
- Fibreglass Reinforcements- WB
- Rip cord
- Outer Jacket



01. Central Elements (GRP)
02. Fibre Optics
03. Loose Tube (Jelly Filled)
04. Strength Members
05. Ripcord
06. Outer Jacket

Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Rodent Protection:

Advantages:

- Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/Reduce Diameter/Rodent Protected

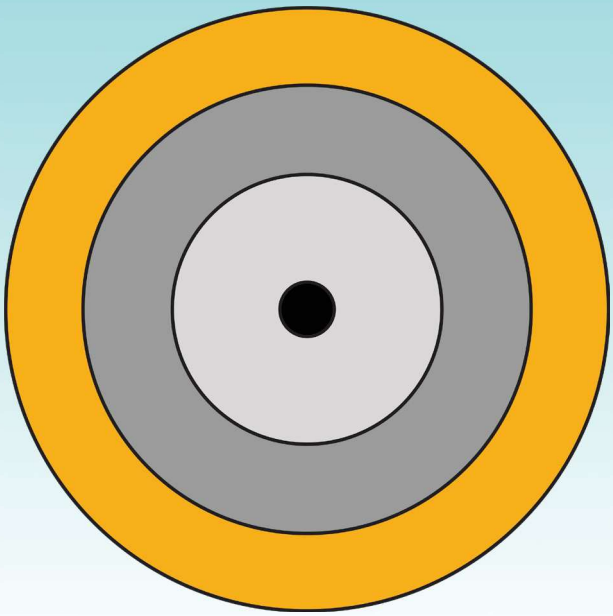
SPECIFICATION							
FIBRES	2	4	6	8	12	16	24
Central Tube (mm±0.3)			3,2		4,2		
Strength Members		Fibre glass Reinforcements WB (Wtareblocking)					
Outer Jacket		Thermoplastic Low Smoke Halogen Free LSZH9FRNC)					
Colour		Dark Grey					
Weight(kg/Km)		53				60	
Outer(mm±0.3)		7,0				7,9	
Tensile Load (N)		1000 / 1800					
Crush(N)		2000					
Temperature Range		-30 °C to +70 ° C					
Min. Bending Radius		20 x Outer Diam.					
Standards							
Environmental and mechanical tests according to EN 187000 and CEI 60794							
Fire Test according to : UNE-EN50266(IEC 60332-3)/UNE-EN50267(IEC 60754-1)/UNE-EN 50268(IEC 61034-1/2)							

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua
TIA/EIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected

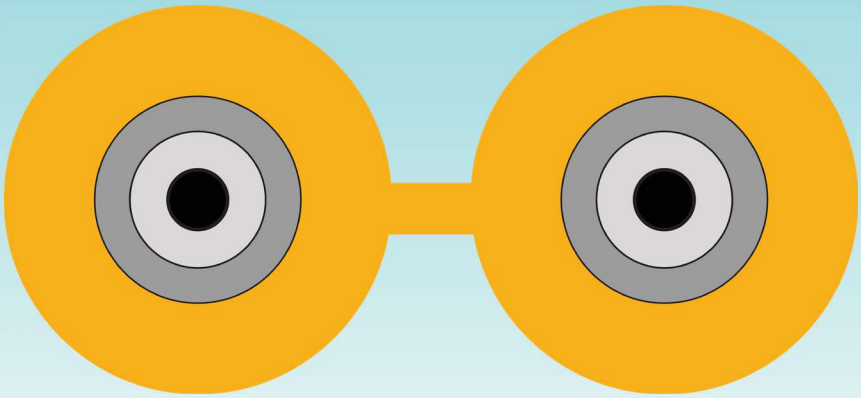
SPECIFICATION	
FIBRES COUNT	1
Strength Members	Aramid Yarns
Armour	Corrugated Steel Armour
Compound	Thermoplastic FRLS
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)
Weight(kg/Km)	7,5
Outer(mm±0.3)	$2{,}9^{\pm 0{,}1}$
Tensile Load Perm/Inst (N)	200 / 350
Crush(N)	500
Temperature Range	-5 °C to +60 ° C
Min. Bending Radius	15 x ø Outer
Standards Environmental and mechanical tests according to EN 187000 and CEI 60794	

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected

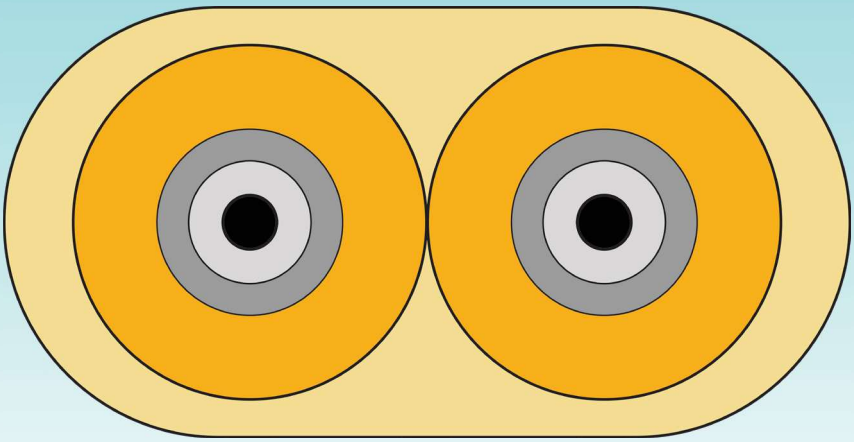
SPECIFICATION				
	Zipcord	Mini Zip-16	Mini Zip-21	Mini Zip-25
FIBRES COUNT	2			
Identificaton	Colours			
Strength Members	Aramid Yarns			
Outer Jacket	FRLS	LSZH (FRNC)		
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)			
Weight(kg/Km)	15	5,5	9	12,2
Outer(mm±0.3)	2,8 x 5,9	1,6 x 3,4	2,1 x 4,4	2,5 x 5,3
Tensile Load Perm / Inst (N)	400 / 700	80 / 130	240 / 400	300 / 500
Crush(N)	500	300	300	500
Temperature Range	-5 °C to +60 ° C			
Min. Bending Radius	15 x ø Outer			
Standards				
Environmental and mechanical tests according to EN 187000 and CEI 60794				

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/ Reduced Diameter/ Rodent Protected

SPECIFICATION	
FIBRES COUNT	2
Strength Members	Aramid Yarns
Subcables Jacket	FRLS[1]
Ø Subcables (mm)	$2{,}9^{\pm 0{,}1}$
Outer Jacket	Thermoplastic FRLS
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)
Weight(kg/Km)	27
Outer(mm±0.3)	$3.8 \times 6.7^{\pm 0{,}2}$
Tensile Load Perm/Inst (N)	400 / 700
Crush(N)	750
Temperature Range	-5 °C to +60 ° C
Min. Bending Radius	15 x ø Outer

Standards

Enviromental and mechanical tests according to EN 187000 and CEI 60794

Fire Test according to UNE-EN 50265 (IEC 60332-1) / UNE-EN 50268 (IEC 61034-1/2)

Inner Jacket colour: Red, Green

[1] FRLS - Special PVC heavy metal free, low halogen and low smoke emission and flame retardant

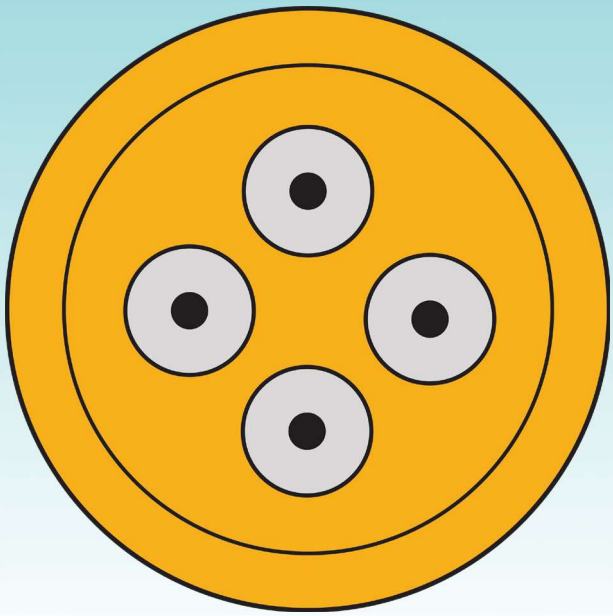
[2]For singlemode fibre G.657 the jacket colour is ivory

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

Cable Description:

- Fibre Optics
- Central Tube (Jelly Field)
- Fiberglass Reinforcements – WB
- Ripcord
- Outer jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Applications

Universal (Indoor/ Outdoor)

Rodent Protection

Advantages

Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/
Reduced Diameter/ Rodent Protected

SPECIFICATION					
FIBRES COUNT	2	4	6	8	12
Strength Members	Aramid Yarns				
inner Jacket	Thermoplastic LSZH[1]				
Colour	Orange (MM62) / Blue (MM50) / Yellow (SM)				
Weight(kg/Km)	19	22	29	37	49
Ø Outer(mm$^{\pm 0,3}$)	4,5	4,9	5,6	6,3	7,3
Tensile Load Perm / Inst (N)	400 / 700	500/850	600/1000		
Crush(N)	1000				
Temperature Range	-5 °C to +60 ° C				
Min. Bending Radius	20 x Ø Outer				
Standards					
Environmental and mechanical tests according to EN 187000 and CEI 60794					

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

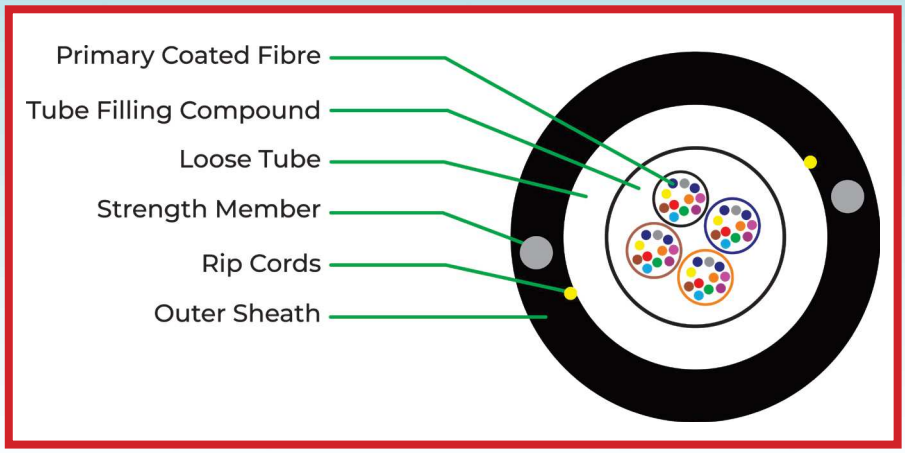
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

OPTICAL DUCT UNITUBE STEEL WIRE

2 to 24 fibre OM1, OM2, OM3, OM4 multimode or OS1/OS2 (ITU-T G.652D singlemode 250µm single loose tube external duct cables with e-glass strength members and polyethylene (PE) or Low Smoke Zero Halogen (LSZH) jacket.

Cable Description:

- Fibre Optics
- Loose Tube Filling Jell Compound
- Strength Member
- Rip cord
- Outer Jacket



Reference Standard:

- IEC 60332-1-2:2004
- EN60754-1:2014
- EN61034-2:2005

Rodent Protection:

Application:

- Indoor/ Outdoor
- Suitable for Duct Installation
- For CATV application, aerial application

Advantages:

- Compact/Lightweight/Flexible/Tough/Resistant/Totally Dielectric/Watertight/Reduce Diameter/Rodent Protected

SPECIFICATION		UPTO 12-CORE	24-CORE	48-CORE
Outer Diameter	mm	6.0	8.0	9.5
Weight	Kg/Km	40	60	80
Max. Load (installation)	N	1000		
Max Load (installed)	N	500		
Min. Bending Radius (mm)		15x Outer Dia. (Operating) / 20x Outer Dia. (Installation)		
Temperature Range		-40 °C to +70°C (Operating) -10 °C to +50 °C (Installation)		
Crush Resistance (N/100mm)		1000		

----------Special Design----------
The cable can be manufactured with the Following alternative Design
Armoured -SWA/SWB/STA/ Corrugated
Lead cover or Nyloram (AL+HDPE Polyamide)
Fire Resistant version

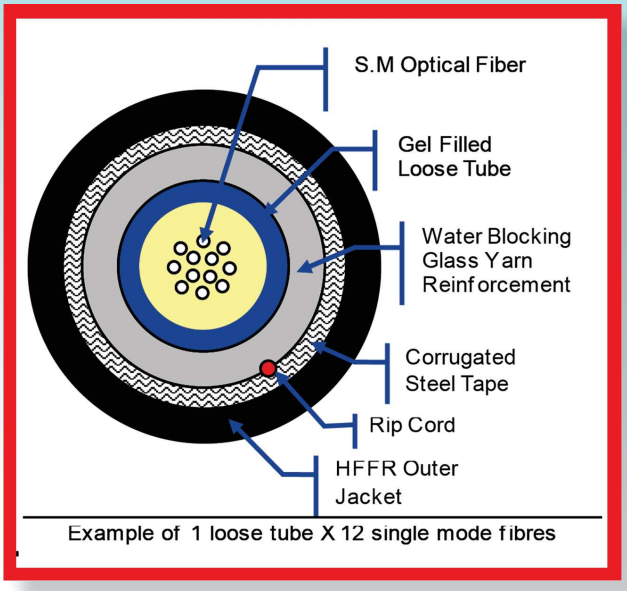
Fibre & Tube Color	1	2	3	4	5	6	7	8	9	10	11	12
EIA/TIA 598	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Voilet	Pink	Aqua

FIBER OPTIC - LOOSE TUBE

SINGLE MODE 9/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single-mode fibres. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/ outdoor applications in ducts, direct burial, or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively



REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014

CONSTRUCTION

Fibers:
Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications color coded for easy identification

Tubes:
PBT tube.

Filling:
The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:
A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

Ripcords:
laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

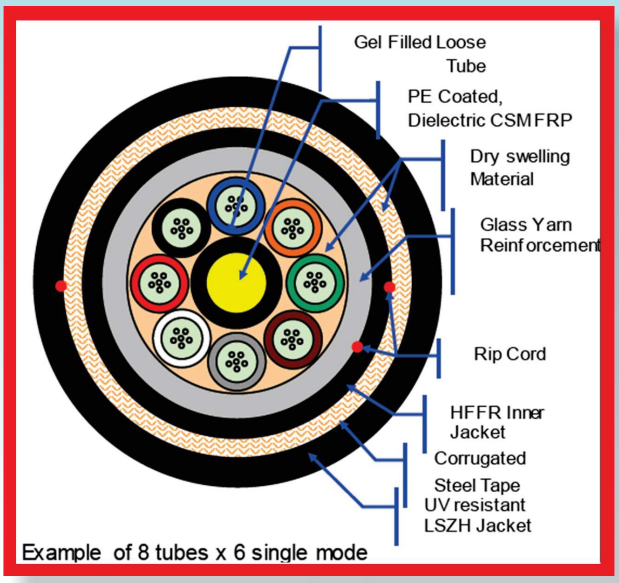
FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - MULTI TUBE

SINGLE MODE 9/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single mode fibers. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/ outdoor applications in ducts, direct burial or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.



REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014

CONSTRUCTION

Fibers:
Up to 432 optical single mode fibers color coded for easy identification

Tubes:
PBT tube he tubes are SZ stranded around a dielectric central member

Filling:
The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over
the yarn.

Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:
UV resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.
.

Ripcords:
laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

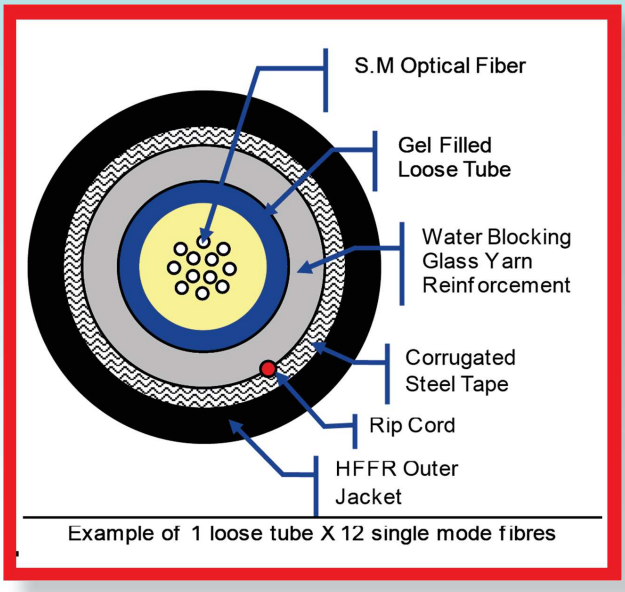
FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - LOOSE TUBE

MULTI MODE OM3 50/125 µm - 50/125 µm - 62.5/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single-mode fibres. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/ outdoor applications in ducts, direct burial, or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.



Example of 1 loose tube X 12 single mode fibres

REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014

CONSTRUCTION

Fibers:
Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications color coded for easy identification

Tubes:
PBT tube.

Filling:
The tube is filled with water blocking, thixotropic gel to prevent the ingress of water

Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:
A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

Ripcords:
laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

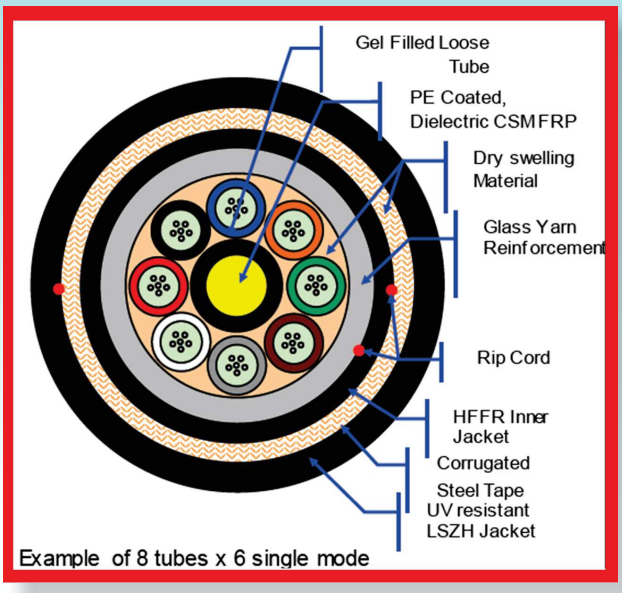
FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - MULTI TUBE

MULTI MODE OM3 50/125 µm - 50/125 µm - 62.5/125 µm

DESCRIPTION

These Fiber Optic cables can incorporate up to 24 single mode fibers. The cable is glass yarn reinforced and jacketed with Halogen Free Flame Retardant compound (HFFR). The cable is designed for indoor/ outdoor applications in ducts, direct burial or latched installations. Comply with IEC 60332- 3 & IEC 60331-25 flammability test and with halogen-free according to IEC 60754-2 Corrosively.



REFERENCE STANDARD

- IEC 60331-25:1999
- IEC 60332-1-2:2004
- EN 61034-2:2005
- EN 60754-1:2014

CONSTRUCTION

Fibers:
Up to 432 optical single mode fibers color coded for easy identification

Tubes:
PBT tube he tubes are SZ stranded around a dielectric central member

Filling:
The tube is filled with water blocking, thixotropic gel to prevent the ingress of water.

Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration. LSZH inner jacket is extruded over the yarn.

Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.

Sheath:
UV resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

.

Ripcords:
laid under the steel tape to facilitate the jacket removal.

IDENTIFICATION OF FIBERS

FIBER COLOR	FIBER NUMBER
Blue	1
Orange	2
Green	3
Brown	4
Slate	5
White	6
Red	7
Black	8
Yellow	9
Violet	10
Rose	11
Aqua	12

FIBER OPTIC - CR1-C1
LOOSE TUBE

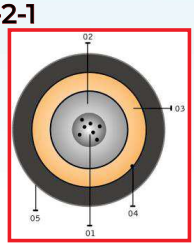
XP C 93-539

APPLICATIONS

- Indoor installation
- For fixed installation in ducts, tubes and trenches
- Fire resistant
- Flame and Fire retardant
- Halogen Free
- Low smoke emission – UV stabilized

REFERENCE STANDARD

IEC 60793 IEC 60794-1-2
Flame spread: IEC 60332-1-2 / NF C 32-070 C2
Smoke toxicity: IEC 60754-1 / EN 50267-2-1



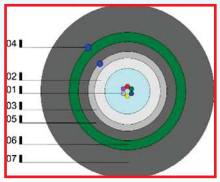
CONSTRUCTION

Fibers:
Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications
Color coded following TIA/EIA 598 for easy identification
Tube:
PBT tube filled with water blocking, thixotropic gel to prevent the ingress of water
Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.
Ripcord:
laid under the jacket for easy removal.
Sheath:
A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the Fiber Glass Tape.

APPLICATIONS

- **Outdoor or indoor/outdoor installation**
- **For installation in ducts, tubes, trenches, or directly buried**
- **Fire resistant**
- **Flame and Fire retardant**
- **Halogen Free**

Smoke opacity: IEC 61034-2 / EN 50268-2
Spread of fire:IEC 60332-3-24 / NF C 32-070 C1
Fire resistance: IEC 60331-25 / NF C 32-070 CR1



CONSTRUCTION

Fibers:
Up to Twenty-four single mode fibers, meeting or exceeding the ITU-T G.652/G.651 and/or IEC 60793 specifications Color coded following TIA/EIA 598 for easy identification
Tube:
PBT tube filled with water blocking, thixotropic gel to prevent the ingress of water
Tubes Filles:
Dry, water swelling glass yarn is laid over the tube to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.
Ripcords:
laid under the steel tape to facilitate the jacket removal.
Inner Sheath:
LSZH inner jacket is extruded over the yarn.
Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.
Sheath:
A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

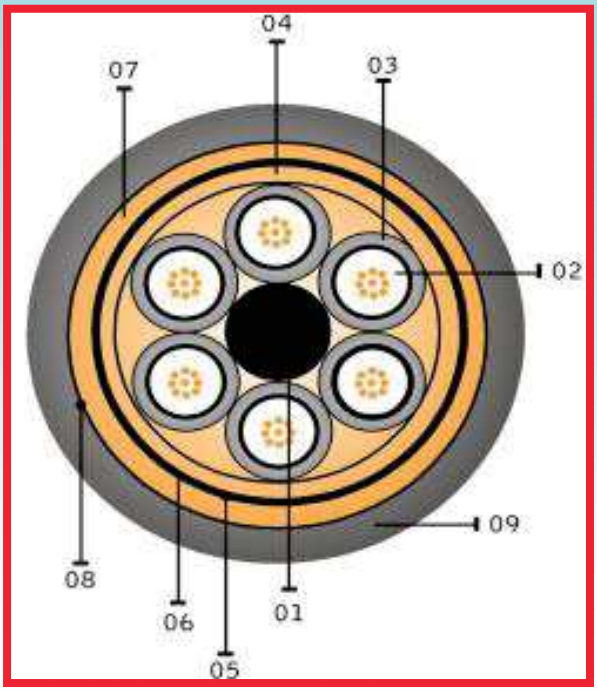
Code	Type of Fiber	N. Fibres	Fibres Per Tube	Active Tube	Tube Diameter mm	O Outer Diameter er mm
FO4x9_125SMSTZA-F3XPC	UnArmoured	4	4	1	2,7	8,9
FO6x9_125SMSTZA-F3XPC	UnArmoured	6	6	1	2,7	8,9
FO12x9_125SMSTZA-F3XPC	UnArmoured	12	12	1	2,7	8,9
FO24x9_125SMSTZA-F3XPC	UnArmoured	24	24	1	2,7	8,9
FO4x9_125SMSTCSTZA-F3XPC	Armoured	4	4	1	2,7	10,0
FO6x9_125SMSTCSTZA-F3XPC	Armoured	6	6	1	2,7	10,0
FO12x9_125SMSTCSTZA-F3XPC	Armoured	12	12	1	2,7	10,0
FO24x9_125SMSTCSTZA-F3XPC	Armoured	24	6	1	2,7	10,0

FIBER OPTIC - CR1-C1
MULTI TUBE

XP C 93-539

DESCRIPTION

- Outdoor installation
- For installation in conduits, cable trays, ducted or directly buried
- Rodent resistant – Reinforced corrugated steel tape armor
- Sealing – Water-repellent barrier construction – Dry conductor
- Flame and Fire retardant
- Halogen Free
- Low smoke emission – UV stabilized



REFERENCE STANDARD

Flame spread:	IEC 60332-1-2 / NF C 32-070 C2
Smoke opacity:	IEC 61034-2 / EN 50268-2
Smoke toxicity:	IEC 60754-1 / EN 50267-2-1
Spread of fire:	IEC 60332-3-24 NF C 32-070 C1
Fire resistance:	IEC 60331-25 NF C 32-070 CR1

CONSTRUCTION

Dielectric central member
Fibers:
Up to 48 optical ITU-T G.652/G.651 and/or IEC 60793 fibers, Color coded following TIA/EIA 598 for easy identification
Tubes:
PBT tube he tubes filled with water blocking, thixotropic gel to prevent the ingress of water.
Tubes Filles:
Dry, water swelling glass yarn is laid over the tubes to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.
Ripcord:
laid under the jacket for easy removal.
Inner Sheath:
LSZH inner jacket is extruded over the yarn.
Armouring:
A corrugated steel armor tape is longitudinally applied over the yarn with an overlap.
Ripcords:
laid under the steel tape to facilitate the jacket removal.
Sheath:
A UV-resistant, Halogen Free, Flame-Retardant (HFFR) extruded over the armoring.

Code	Type of Fiber	N. Fibres	Fibres Per Tube	Active Tube	Tube Diameter mm	O Outer Diameter er mm
FO6x9_125SMMTCSTZA-F3XPC	Single Mode	6	6	1/8	2	8,9
FO6x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO12x9_125SMMTCSTZA-F3XPC	Single Mode	12	6	2/8	2	8,9
FO12x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO24x9_125SMMTCSTZA-F3XPC	Single Mode	24	6	4/8	2	8,9
FO24x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO36x9_125SMMTCSTZA-F3XPC	Single Mode	36	6	6/8	2	8,9
FO36x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO48x9_125SMMTCSTZA-F3XPC	Single Mode	48	6	8/8	2	10,0
FO48x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO72x9_125SMMTCSTZA-F3XPC	Single Mode	72	12	6/8	2	10,0
FO72x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO96x9_125SMMTCSTZA-F3XPC	Single Mode	96	12	8/8	2	10,0
FO96x50_125MMMTCSTZA-F3XPC	Multi Mode					
FO144x9_125SMMTCSTZA-F3XPC	Single Mode	144	24	6/8	2	10,0
FO144x50_125MMMTCSTZA-F3XPC	Multi Mode					

1. Deployment of Optical Fibre Cable:

(i) Aerial Cable
(ii) Duct cable
(iii) Direct Buried cable
(iv) Micro Duct Cable
(v) Drop Cable
(vi) Indoor/ Outdoor- Universal
(vii) Duct and Ariel
(viii) OPGW

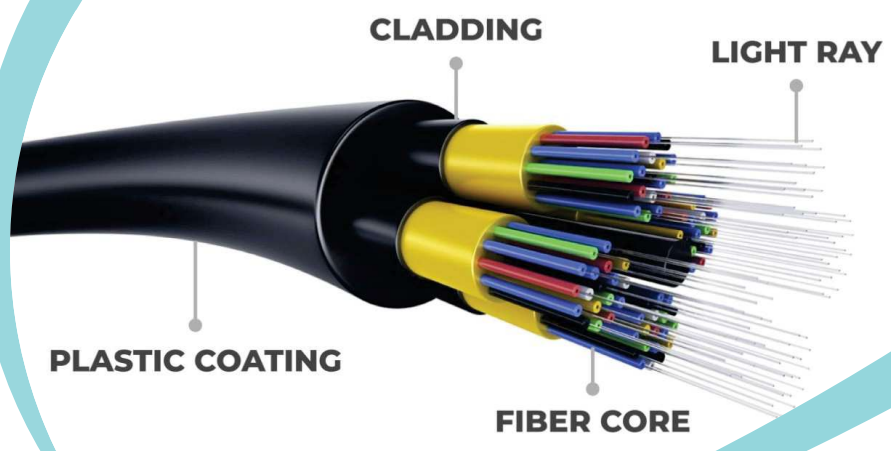
We also have specialized in the Outer Sheet Solution for the Optical Fibre cable.

2. Outer Jacketing Option:

(i) PE
(ii) LSHF
(iii) LSZH
(iv) PE+ECCS+PE
(v) ECCS+PE
(vi) ECCS+PE+ ECCS+PE
(vii) PE+FRP+PE/PA
(viii) PE+PA (polyethylene & polyamide)
(ix) Chemical Protection /
(x) Moisture barrier- Al HDPE PA

3. Core Type Option Can be Available:

(i) Dry Tube / Dry Core
(ii) Jel Core / Dry Core

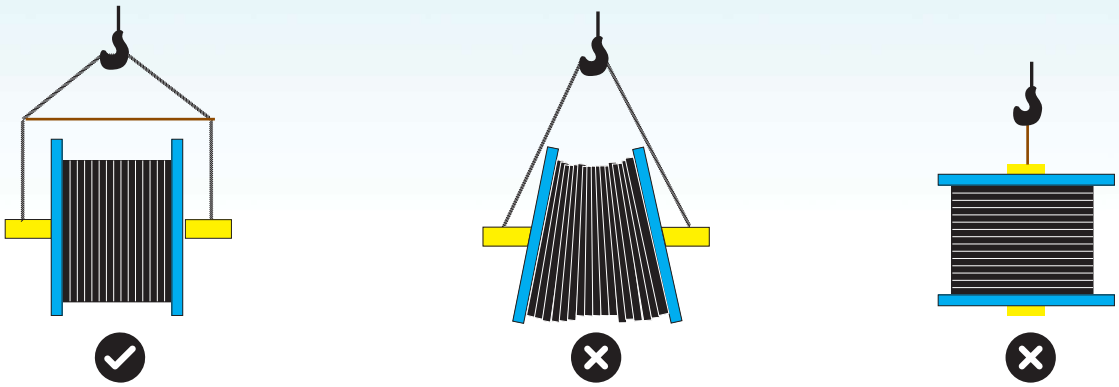


HANDLING STORAGE AND LAYING OF CABLES

The drums with the cables cannot be thrown from any heights! The drums with optical cables have to always stand on the edges of the head, secured with a wedge to prevent movement. The only time when it is not necessary to secure the drums with a wedge is when the drums are mutually secured between each other by standing them crosswise.

It is possible to store Heavy Duplex, Simplex, Diplex type cables and coils with cables up to 5mm in diameter by laying them on the head. However, the cable has to be fastened by shrink wrap to prevent the loosening of individual cable coils.

Cables intended for internal use can only be stored in closed areas without humidity ,Directly sun light affect the Cable outer sheath. Cables for universal and outdoor use can be stored in outdoor conditions. However, the cable ends have to be waterproof or caping. However, if the cable is on a plywood spool, it has to be stored in such a manner so as to prevent the effects of water on the spool.



When manipulating with the drums using a crane, a spacer rod has to be placed between the load bearing ropes, so that the ropes do not exert pressure on the cable through the side drums.

A. CABLE INSPECTION

1. Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:
2. A reel is lying flat on its side
3. Several reels are stacked one over the other
4. Other freight is stacked on a reel
5. Cable drums are without planks or broken
6. Nails have been driven into reel flanges to secure shipping blocks
7. A reel flange is damaged
8. A cable covering is removed, stained or damaged
9. A cable end seal is removed or damaged. A reel has been dropped (hidden damage likely)

Mechanical stresses during installation are generally more severe than those encountered while in service. Thus careshould be taken as regards to the following while installation and laying of cables.

1. Care shall be taken during laying to avoid sharp bending, and twisting.
2. Cable shall be unwound from the drum by lifting the drum on the center.
3. Shaft supported both ends with suitable jacks / stands.
4. Under no circumstances the cable winding shall be lifted off a coil or drum lying flat at the flanges. This would cause serious twist and damages.
5. Suitable protection shall be provided to the cables against mechanical damages, it includes covers, pipes etc.

B. CABLE HANDLING & STORAGE

When lifting the drums using a forklift, the drums can only be gripped from the sides and only when the skids of the forklift are long enough for the head of the drum to be positioned on it with a safe overhang.

It is only possible to roll the drums short distances and only on a hard and flat surface.

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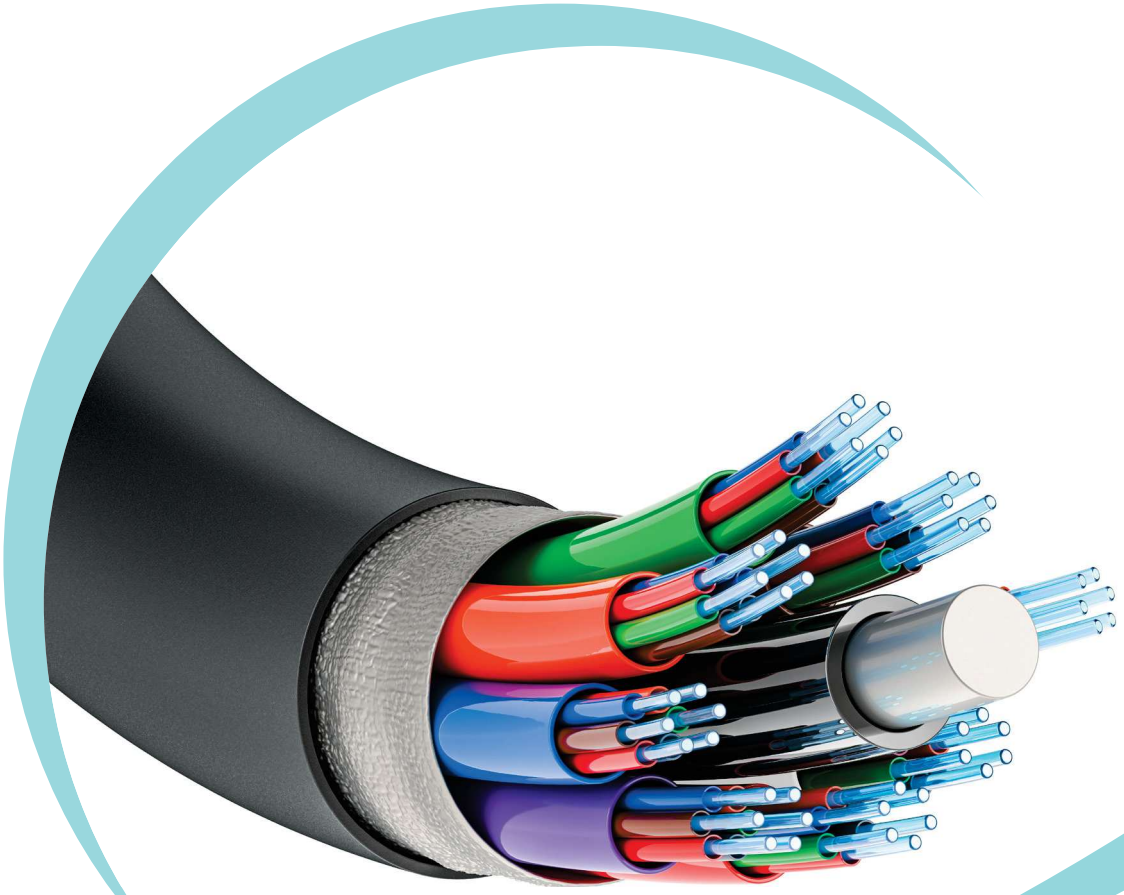

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Milan
Italy

Scope:
Design, manufacture and supply of electric cables including cables used for installations that require safety in the event of fire and fibre optic cables.

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Signed for BRE Global Ltd.	CPM Assessment Services	Date of this Issue	Expiry Date	Date of First Issue
Ruben Graham		16 May 2024	15 May 2027	29 July 2009

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is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirements of the standard(s) detailed below:

Product(s)
Cable Types as listed below:
FO Cables (Single & Multi Mode)

Standard(s) (see Appendix for details)
IEC 60331-25:1999
IEC 60332-1-2:2004+A11:2016
EN 61034-2:2005+A2:2020
EN 60754-1:2014
IEC 60332-3-24:2009

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Signed for LPCB	Senior Certification Manager	Date of Issue	Date of First Issue
	Obada Piracha	31 October 2024	26 July 2017

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PROGETTAZIONE, PRODUZIONE PER ESTRUSIONE DI MATERIE TERMOPLASTICHE, FORNITURA DI CAVI ELETTRICI COMPRESI I CAVI UTILIZZATI PER INSTALLAZIONI CHE RICHIEDONO SICUREZZA IN CASO DI INCENDIO E CAVI IN FIBRA OTTICA

DESIGN, EXTRUSION PRODUCTION OF THERMOPLASTICS, SUPPLY OF ELECTRICAL CABLES INCLUDING CABLES USED FOR INSTALLATIONS REQUIRING FIRE SAFETY AND FIBER OPTIC CABLES

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Prima emissione / First Issue	23.12.2014	Data decisione di rinnovo / Renewal decision date	18.12.2023
Data scadenza / Expiry Date	22.12.2026	Data revisione / Revision date	18.12.2023

Davide Torti
Turin Management System Certification, Head

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova Italy

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RINA Services S.p.A.
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RAMCRO S.p.A.
via Marzorati, 15 - Nerviano
20014 - Milano - Italy

Get In Touch
Tel. +39 0331 406 511
Fax +39 0331 406 559
Email: ramcro@ramcro.it
Website: www.ramcro.com

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