

## Flame Retardant Central Loose Tube Fiber Optic Cables

### APPLICATION

These cables are characterized by light weight and small diameter, suitable for both aerial and duct installation. They are mainly installed inside buildings, tunnels, subways or closed areas in general, specially designed to guarantee the signal transmission even in case of fire. The cable can also be used for direct burial for armoured version.

### STANDARDS

Basic design adapted to Telcordia GR-20 / RUS 7 CFR 1755.900 (REA PE-90) / ICEA S 87-640

### FIRE PERFORMANCE

Flame Retardance (Single Vertical Wire Test)	EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*
Reduced Fire Propagation (Vertically-mounted bundled wires & cable test)	EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4
Halogen Free	IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*
No Corrosive Gas Emission	IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*
Minimum Smoke Emission	IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*
No Toxic gases	NES 02-713; NF C 20-454

Note: Asterisk \* denotes superseded standard.

### CABLE CONSTRUCTION

**Fibers:** Singlemode and multimode fibers, with loose tube technology.

**Structure:** Central loose tube cable contains one tube with 2-24 single or multimode fibers, which are filled with water blocking gel.

**Water blocking:** The jelly filled tube is waterblocked by using swellable tape and thread.

**Reinforcement:** Either aramid yarn or fiber glass is wound around the tube to provide physical protection and tensile strength, with added fire protection.

**Inner Sheath (optional):** The cable can be jacketed with either PE or thermoplastic LSZH inner sheath. PE is the preferred option in outdoor environment for water protection purpose.

**Moisture Barrier Tape (optional):** An aluminum moisture tape can be incorporated under the sheath for water blocking and shielding purpose.

**Armouring(optional):**

For direct burial, either galvanized steel wire braid, corrugated steel tape armour or galvanized steel wire armour is applied over an inner polyethylene or LSZH sheath. For steel tape armour, the 0.15mm thick steel tape is coated with a copolymer and applied with an overlap. For steel wire braid or armour, single layer of galvanized steel wire braid or armour is applied.



# Caledonian

## Flame Retardant Optic Fiber Cables

www.caledonian-cables.co.uk    www.addison-cables.com



**Ripcord (optional):** An optional ripcord can be located under the jacket to facilitate jacket removal.

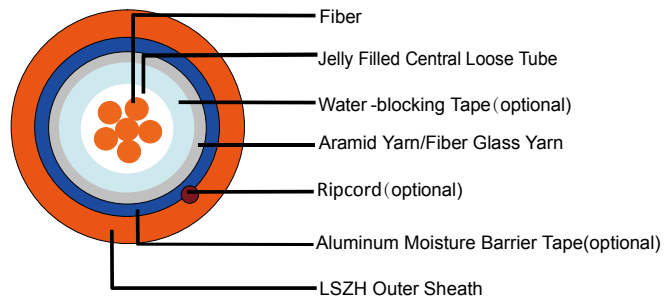
**Outer Sheath:** Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

### FIBER COLOUR CODE

Fiber colour code	1	Red	7	Brown
	2	Green	8	Violet
	3	Blue	9	Turquoise
	4	Yellow	10	Black
	5	White	11	Orange
	6	Grey	12	Pink

### CONSTRUCTION

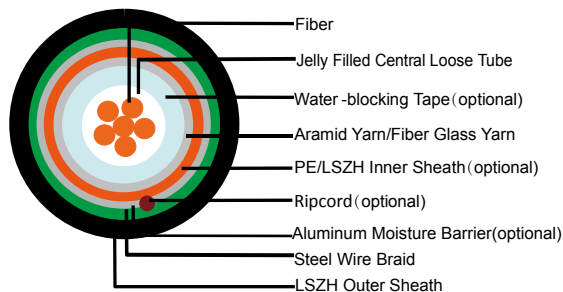
#### UNARMoured TYPE



#### CONSTRUCTION PARAMETERS

Cable Code	Fiber Count (n°)	Tube Diameter mm	Nominal Overall Diameter mm	Approx. Weight kg/km	Tension load N	Crush N/100mm
CLA-B-C-H-J	02-06	2.7	8.0	70	1000	1500
CLA-B-C-H-J	08-16	3.5	9.0	90	1200	1500
CLA-B-C-H-J	18-24	4.2	10.0	100	1500	1500

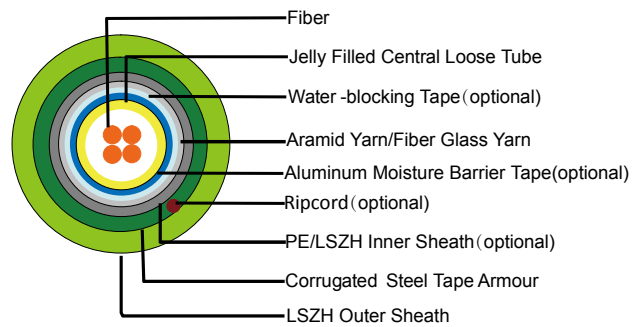
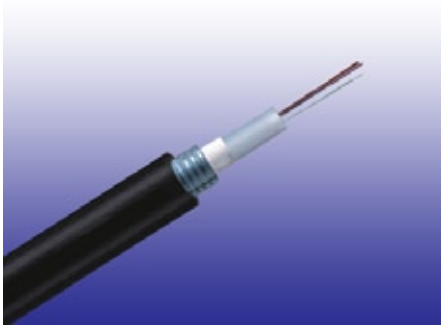
#### STEEL WIRE BRAID



### CONSTRUCTION PARAMETERS

Cable Code	Fiber Count	Tube Diameter	Nominal Overall Diameter	Approx. Weight	Tension load	Crush
	(n°)	mm	mm	kg/km	N	N/100mm
CLA-B-C-2Y(SWB)H-J	02-06	2.7	11.5	160	1000	2000
CLA-B-C-2Y(SWB)H-J	08-16	3.5	12.0	180	1200	2000
CLA-B-C-2Y(SWB)H-J	18-24	4.2	13.0	200	1500	2000

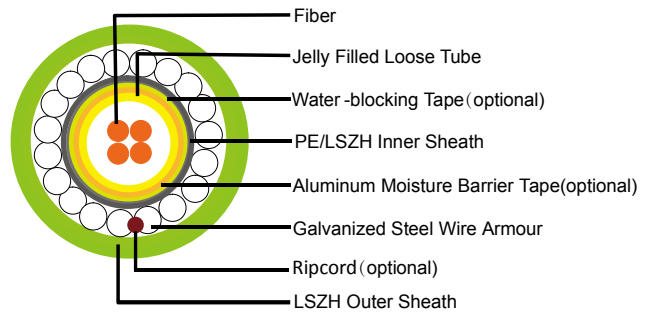
### CORRUGATED STEEL TAPE ARMOUR



### CONSTRUCTION PARAMETERS

Cable Code	Fiber Count	Tube Diameter	Diameter	Approx. Weight	Tension load	Crush
	(n°)	mm	mm	kg/km	N	N/100mm
CLA-B-C-2Y(STA)H-J	02-06	2.7	13.0	200	1000	2500
CLA-B-C-2Y(STA)H-J	08-16	3.5	14.0	220	1200	2500
CLA-B-C-2Y(STA)H-J	18-24	4.2	14.5	250	1500	2500

### STEEL WIRE ARMOUR





### CONSTRUCTION PARAMETERS

Cable Code	Fiber Count	Tube Diameter	Nominal Overall Diameter	Approx. Weight	Tension load	Crush
	(n°)	mm	mm	kg/km	N	N/100mm
CLA-B-C-2Y(SWA)H-J	02-12	2.7	10.5	180	2500	4000
CLA-B-C-2Y(SWA)H-J	16-24	3.5	11.0	210	2500	4000

### PHYSICAL AND THERMAL PROPERTIES

**Temperature range during operation (fixed state):** -20°C - +60°C

**Temperature range during installation (mobile state):** 0°C - +50°C

**Minimum Operation Bending Radius:** 10 times the outer diameter for unarmoured cables  
20 times the outer diameter for armoured cables

**Minimum Installation Bending Radius:** 20 times the outer diameter

### MECHANICAL PROPERTIES

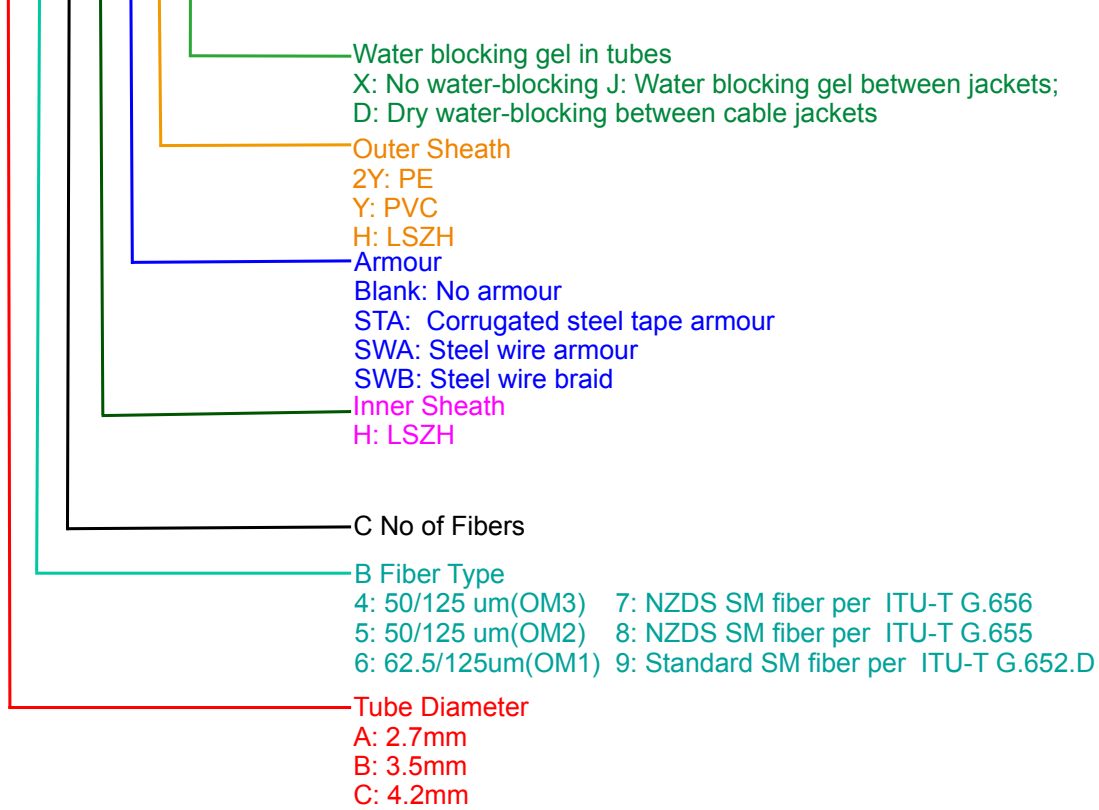
Maximum Compressive Load	4000N for unarmoured cables 5000N for armoured cables
Repeated Impact:	4.4 N.m (J)
Twist (Torsion):	180×10 times, 125×OD
Cyclic Flexing:	25 cycles for armoured cables; 100 cycles for unarmoured cables.
Crush Resistance:	263N/cm (150lb/in)

### FIBER COMPLIANCE

Temperature Cycling	IEC60794-1-2-F2
Tensile Strength	IEC60794-1-2-E1A
Crush	IEC60794-1-2-E3
Impact	IEC60794-1-2-E4
Repeated Bending	IEC60794-1-2-E6
Torsion	IEC60794-1-2-E7
Kink	IEC60794-1-2-E10
Cable Bend	IEC60794-1-2-E11
Cool Bend	IEC60794-1-2-E11

## TYPE CODES

CLA-B-C-D-E-F-G



Standard



Standard



Flame Retardancy  
NF C32-070-2.1(C2)  
IEC60332-1-2/EN50265-2-1



Reduced Fire Propagation  
NF C32-070-2.2(C1)  
IEC60332-3-24  
EN50266-2-4



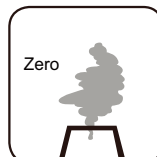
Low Toxicity  
NES 02-713/NF C 20-454



Low Corrosivity  
IEC60754-2  
EN50267-2-2/3  
NF C 32-074



Low Smoke Emission  
IEC 61034-1&2  
EN 50268-1&2/NF C32-073



Zero  
Halogen Free  
IEC60754-1  
EN50267-2-1