



ALGERIAN TELECOMMUNICATION CABLES COMPANY



الكابلات الجزائرية للاتصالات
Reliable partner



COMPANY PROFILE

CATEL - Telecommunications Cables Of Algeria

industrial company specialized in copper and fiber optic telecommunications cables.

The company's aim is to provide durable and reliable cables solutions for the transformation and development of telecom networks.

CATEL, in the middle of new technologies

Autonomous production lines, high-performance equipment, large production capacity, equipped testing laboratories and competent human resources ... are all elements that CATEL set up to strengthen its position and face new trends and technological advances.

History / date and event ...

The CATEL factory was created in 1928 by the French company LTT. It was attached to SNMETAL in 1968 and to SONELEC in 1969 then to ENICAB in 1983.

The restructuring of ENICAB in 1993 gave birth to (3) cable companies including CATEL.

The year 2005 was characterized by the creation by joint venture of the company CATEL FIBROPTIC, specialized in the production of fiber optic cables.

In 2007, CATEL opened its capital to the HOLDING CABLECO which currently holds 60% of the shares. The remaining 40% of shares are held by the public Holding ELEC EL DJAZAIR.

Our mission

To be a reliable and a secure partner for our customers by offering a high quality telecom and special cables , while providing a constant working environment in which the company staff can learn and improve.

Our values :

- Respect for ethics in business affairs
- Establishing a winner-winner relationship with our partners.
- Continuous process improvement and support for permanent growth.
- Respect of the employees and their potentials development

ISO Quality 9001-2015 : in the middle of the company ...

In CATEL, the quality approach is considered as a strategic tool allowing the improvement of the overall performance of the company, the development of customer's relation, the control of risks, the consideration of opportunities and the development of a corporate culture with the staff.



Our Products /Market :

Telecommunications Market :

The telecommunications sector in Algeria had developed considerably particularly since the deployment and generalization of optical fiber.

Present with a global offer in urban and private copper telephone cables since 1928, CATEL has been able to adapt continually to the requirements of this market and has extended its offer since 2007 to fiber optic cables. From 04 to 288 fibers in underground cables, Aerial, hybrid, ADSS ... with all the desired protections, CATEL FIBROPTIC presents a wide range of optical fiber products. The company is the supplier of the main telecom companies in Algeria. It is the unique cable producer in the local market for telecom cables.



Rail and Urban Transport Market :

The wide variety of railway signaling cables offered by CATEL perfectly meets the requirements and needs of new railway line modernization and electrification projects initiated by the Algerian public authorities.

This range includes signaling cables protected against magnetic induction, armored cables, quads cables, «Eurobalise» cables, LSOH cables, catenary wire, and hybrid cables.

Petrochemicals market :

CATEL's instrumentation offer for the petrochemical market includes individually and generally shielded cables. Armored and non armored cables. This range takes into account the requirements of standard NF M 87 202. For specific applications, CATEL is able to adapt and provide customers with custom-made solutions.

Industry Market :

The industrial market is characterized by heterogeneous and derived demand. From the assembly of industrial factories in all sectors to installation projects for electrical and photovoltaic power plants.... Cables for industrial applications must be innovative and must constantly follow the progress of automation systems. For this segment, CATEL is developing:

- Command cables
- Control cables
- Profibus cables
- Special cables



Building / Security market :

The construction market occupies a large place in the national economy. Cable requirements are very high. CATEL has a wide and deep offering for this segment:

- Electric cables
- Halogen-free cables
- CATV cables
- Fire protection cables
- Fire resistant cables (based on mica)

USAGES

Telephone network cables for interconnecting communications equipment and weak signal devices.

STANDARDS

- NFC 93-526
- NFC93-527-12
- NFC 93-529/1- 93-529/2
- NFC 93-529/1- 93-529/2
- NFC 93-527-8
- PTT L131 Specification
- NFC 93-527-3

TESTINGS

Electrical :

- Linear resistance.
- Insulation resistance.
- Rigidity tension.
- Temperature resistance.

Mechanical :

- Load at the break of the career.
- Adhesion value.
- Elongation at the break of conductors.

CONSTRUCTION

1. Conductors : Solid copper 0.4 to 0.8 mm in diameter

2. Numbre of conductors :

- From 02 pairs to 896 pairs for urban cables.
- From 02 to 56 (Conductors/ Pair/ Third/Quarter) for other cables.

3. Assembly : Pair-Quarter-Strand

4. Shielding/armor :

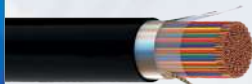
- Polyester tape.
- **Aluminum tape :** for an electromagnetic protection
- **Steel strip :** used as a mechanical protection

5. Insulation and sheathing materials :

- Polyvinyl chloride PVC.
- Polyethylene PE.
- Halogen-free materials LSOH

COPPER TELECOMMUNICATIONS CABLES

PUBLIC TELEPHONE NETWORKS



UNDERGROUND URBAN CABLES : Cables for outdoor use for local telecommunications networks for pipe installation.

- **Series 88 :** from 2 pairs to 896 pairs – diameter 0.6 mm
- **Series 89 :** from 2 pairs to 448 pairs – diameter 0.8 mm

Solid copper/ Polyethylene insulation/ Polyester tape/ ALUPE tape/ PE sheath.



URBAN AERIAL CABLES : Cables for outdoor use for local telecommunications networks for aerial installation.

- **Series 98 :** from 2 pairs to 112 pairs – diameter 0.6 mm.
- **Series 99 :** from 2 pairs to 56 pairs – diameter 0.8 mm.

Solid copper/ Polyethylene insulation/ Polyester tape/ ALUPE tape/ Polyethylene sheath/ Steel carrier.



OVERHEAD CONNECTION CABLES : Cables for outdoor use used to connect the concentration point to the subscriber.

- **5/9 self-supporting flat pair :**

Solid copper core 0.75 mm/ Steel strand carrier/ Polyethylene insulation.

- **5/1 self-supporting flat pair :**

Bronze core 1.2 mm/ Polyethylene insulation.

- **5/3 self-supporting flat pair :**

Bronze core 0.9 mm/ Polyethylene insulation.



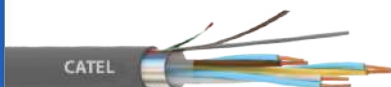
CABLE FOR CONNECTION : Jumper for indoor use, used in distribution cabinets for the connection between the user line

and the switch.

- **Series 281 :** 001 pair – diameter 0.5 mm.

Solid copper core/PVC insulation.

PRIVATE TELEPHONE NETWORKS



• **INSTALLATION CABLES :** Cables for indoor use used in building networks.

- **Series 278 :** from 2 pairs to 56 pairs – diameter 0.6mm.

Solid copper core / Polyethylene insulation / PVC sheath or LSOH materials.

PRIVATE CONNECTION CABLES : Cables used for private telephone installation and for low current transmission.

- **SYT1 & SYT2 series :** from 02 pairs to 112 pairs – diameter 0.6 mm
from 02 pairs to 30 pairs – diameter 0.9 mm.

SYT 1: Solid copper core/ PVC insulation/ Polyester tape/ Aluminum tape/ PVC sheath or LSOH materials.

SYT2 : Solid copper core/PVC insulation/Polyester tape/Aluminum tape/PVC steel strap sheath/PVC sheath or LSOH materials.

USAGES

Fiber optic cables are used in particular for high-speed networks.

STANDARDS

- IEC 60793
- ITU G-651
- IEC 60794
- ITU G-652
- CEI 60332
- ITU G-655
- ITU G-657

TESTINGS

Mechanical Environmental Tests :

- Cables Resistance to traction.
- Cables Resistance to repeated bending.
- Cables resistance to crushing.
- Cables resistance to torsion.
- Cables resistance to shocks.
- Cables resistance to water penetration.
- Resistance of cables to temperature changes.

GENERAL CONSTRUCTION

1. Optical fiber :

Single mode : G652.D- G655- G657.

Multimode: G651 (OM1- OM2- OM3- OM4).

2. Number of fibers

Optical fiber: 02 to 288 fibers.

3. Assembly

Optical fiber: 2 to 24 fibers/tube.

4. Shielding/Armoring

- **Aramid yarn** : Used as mechanical protection.
- **Corrugated Steel** : Mechanical and anti-rodent protection.
- **Fiberglass** : Anti-rodent protection.
- **Aluminum tape** : Electromagnetic protection.
- **Steel braid** : Electromagnetic protection.

5. Insulation and sheathing materials :

- Polyvinyl chloride PVC category C2 and category C1.
- Polyethylene PE.
- Polybutylene terephthalate (P.B.T).
- Polyvinyl chloride resistant to PVC-RH hydrocarbons.
- Halogen-free materials-LSOH.



OPTICAL FIBER TELECOMMUNICATION CABLE SINGLEMODE & MULTIMODE



FLEXIBLE FIBER OPTICAL CABLES : UNDERGROUND

1. In a single sheath :

- Aramid yarn/ Sealing with water-repellent gel/ Aluminum covering.
- Glass yarn/ Sealing with water-repellent gel/ Aluminum covering.
- Aramid yarn/ Water-swelling tape and rope sealing.
- Glass yarn/ Water-swelling tape and rope sealing.

2. In double sheath :

- Glass yarn/ Water-swelling tape sealing.
- Aramid yarn/ water-swelling tape sealing.



UNDERGROUND SHIELDED (ARMORED) OPTICAL FIBER CABLES :

A doubled reinforced sheath with a strip in steel/ Waterproofing with a water-repellent gel/ Aluminum recovering.



ADSS - AERIAL OPTICAL FIBER CABLES :

1. In a single sheath :

- Aramid yarn/ Waterproofing in ribbon and swelling ropes in water.
- Glass yarn/ Waterproofing in ribbon and swelling ropes in water.

2. In a doubled sheath :

- Aramid yarn/ waterproofing in ribbon swelling in water.



SELF-SUPPORTING AERIAL OPTICAL FIBER CABLES :

1. In a single sheath :

- Aramid yarn/ Waterproofing in ribbon and swelling ropes in water.

2. In a doubled sheath :

- Aramid yarn/ Waterproofing in ribbon and swelling ropes in water.



OPTICAL JUMPERS SIMPLEX AND DUPLEX :

In single-mode optical fiber G652D, G657A1, A2 and B1.

In multimode optical fiber G651, OM2, OM3 and OM4.



PIGTAILS :

1. In single-mode optical fiber G652D, G657A1, A2 and B1.

2. In multimode optical fiber G651, OM2, OM3 and OM4.

Usage : For indoor installations and connection to the optical drawers.

USAGES

Instrument cables fit in many industrial applications that require electronic control of manufacturing and processing operations.

Intended for the transmission of analog measurement signals at the chemical industries, these cables must be reliable, robust and provide protection against interference electromagnetic.

STANDARDS

- NF M87-202
- CEI 60 754
- CEI 61 034
- CEI 60 331
- CEI 60 332-1
- CEI 60 332-3-24

CONSTRUCTION

Core : Solid or wired bare copper:
0.5 mm. -0.88 mm. -1.0mm. -1.5mm.

Number of conductors : from 01 to 56.

Insulation : PVC/ XLPE/ LSOH.

Screen : Individual and/ or general.

Tape : Polyester laid in a helix.

Continuity wire : Tinned copper.

Screen : ALUPE tape.

Intermediate Sheath : PVC resistant to Hydrocarbons -RH.

Frame : Galvanized steel ropes/metal braid.

Outer sheath : LSOH resistant to hydrocarbons - RH.

- **Assembly :** Pair/ Third/ Quartet.
- **Shielding :** Individual and/or general.
- **Mica Tape :** Used for manufacturing cable fire resistant.

INSTRUMENTATION CABLE



EGSF : General Screen Without Strap :

Used for transmission of analog or digital signals.

Solid or wired bare copper core/ PVC insulation/ Polyester ribbon/ General screen/ RH PVC outer sheath.



EGAF : General Screen With Strap :

Used for transmission of analog or digital signals.

Solid or wired bare copper core/ PVC insulation/ Polyester ribbon/ General screen/ PVC intermediate sheath/ 2 steel tapes/ RH PVC outer sheath.



EISF : Individual Screen Without Strap :

Solid or wired bare copper core/ PVC insulation/ Screen individual/ Polyester ribbon/ General Screen/ Outer sheath RH PVC.



EIAF : Individual Screen With Strap :

Solid or wired bare copper core/ PVC insulation/ Screen individual/ Polyester ribbon/ General screen/ Sheath intermediate in PVC/ 2 Steel tapes/ Sheath PVC-RH exterior.

INSTRUMENT CABLES WITH BRAID : for EGAF & EIAF.

Frame : Braid with galvanized steel wire.



FIRE-RESISTANT INSTRUMENTATION CABLES CR1 : Bare copper core/ Mica ribbon/ XLPE insulation or LSOH/ LSOH sheath/ Frame/ Mica ribbon/ Outer sheath LSOH.

FIRE RETARDENT INSTRUMENTATION CABLES CAT C1 :

Bare copper core/ XLPE or LSOH insulation/ LSOH sheath/ Braid/Mica ribbon/LSOH outer sheath.



LSOH INSTRUMENTATION CABLES : Copper core bare solid/ Insulation in halogen-free materials/ LSOH sheath/ Frame/ Outer sheath LSOH.

USAGES

Are used in public buildings, tunnels...

STANDARDS

- CEI 60 754
- CEI 61 034
- CEI 60 331
- CEI 60 332-1
- CEI 60 332-2

TESTINGS

- Fire test – circuit integrity with/without shock.
- Vertical flame propagation test.
- Test on the gases emitted during the combustion of cable materials.
- Test on the gases emitted during the combustion of cable materials.
- Measurement of the smoke density released by the burned cables.



SAFETY CABLES

CAT CR1 FIRE RESISTANT CABLES

These cables are specially designed to transmit electrical energy in the extreme conditions that occur during a prolonged fire, guaranteeing power to emergency equipment such as signaling, smoke extractors, acoustic alarms, water pumps, etc.

HALOGEN-FREE CABLES - LSZH/LSOH SHEATH

Halogen-free cables with low smoke and corrosive gas emissions in the event of fire are suitable for wiring electrical panels and public places, installations of all kinds in public places, individual branching and emergency circuits.

FIRE-RESISTANT CABLES CAT CR1-C1 : Cable meeting standard **CEI 60 331**.

Copper core/ Insulation of the conductive core with mica tape/ Assembly of components with mica/ Outer sheath.



FLAME RETARDANT CABLES CAT C2: **C2 60 332-1 & C2**

Intended for fire safety systems (SSI).

Ensure the connection between fire detectors and security system control units. Solid copper core diameter 0.9/ PVC-C2/ Coating with polyester tape/ Alupe tape shielding/ PVC-C2 sheath.



NON-FIRE PROPAGATION CABLE CAT C1 : Intended for common use in industry, recommended for fixed industrial installations. Solid copper core/ LSOH insulation/ Mica tape/ LSOH sheath.

LABORATORY TEST



USAGES

Signal cables are used for the transmission of commands and signals and ensure the smooth operation of the railway network and the safe movement of passengers and freight. They ensure signal transmission and continuous power supply in all trackside signaling equipment applications.

STANDARDS

- NF F 55 623 –CT 445
- CEI 60331
- CEI 60332

TESTING

Linear resistance.
Insulation resistance.
Rigidity tension.
Reduction factor.
Behavior in fire.

CONSTRUCTION

Solid copper diameter :

1.0-1.2 -1.6mm

Number of conductors :

1 to 28 P / Other pair on order.

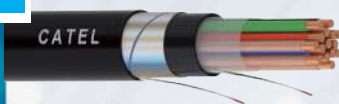
Assembly

Pair-Quarter

Shield/Armor

- **Ringed Copper** : Electromagnetic protection.
- **Steel strip** : Mechanical protection.
- **Aluminum tape** : Electromagnetic protection.
- **Insulation and sheathing materials** : Polyvinyl chloride PVC category C2 and category C1. Polyethylene PE Cross-linked Polyethylene PRS. Halogen-free materials LSOH.

RAILWAY SIGNALING CABLES



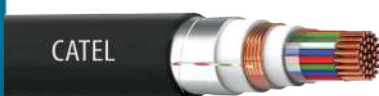
ZPGU CABLE : Designed for connection inside switchgear centers and for short connections outside.

Construction : Solid annealed copper/ Insulation: polyethylene/ Assembly covering/ 1st PE sheath/ ALUPE tape/ PVC outer sheath.



ZPFU CABLE : Laid in long lengths along non-electrified tracks, connects the centralized control station to the switchgear centers.

Construction : Solid annealed copper/ Insulation: polyethylene/ Assembly covering/ 1st sheath/ Steel frame/ Outer sheath.



ZPAU CABLE : Laid in long lengths along the tracks electrified at 25 000 volts alternating. Connects the centralized control station to the switchgear centers.

Construction : Solid annealed copper/ Insulation: polyethylene/ Assembly covering/ 1st sheath/ Anti-induction copper screen/ 2nd sheath/ Steel frame/ Outer sheath.



ZC03 CABLE : Cable laid in gutters along electrified tracks (25KV). Intended for Eurobalise speed control circuits (ERTMS).

Protected against parasitic electromagnetic induction of the catenary.

Construction : Solid annealed copper/ Insulation: polyethylene/ Assembly covering/ 1st sheath/ Corrugated copper tape/ 2nd sheath/ Steel frame/ Outer sheath.



K23 CABLE : Laid along the lines of the 1500 volt electrified tracks.

Construction : Solid annealed copper/ Insulation: polyethylene/ Polyester tape assembly covering/ Alupe tape/ 1st LSOH sealing sheath/ Steel frame/ Outer sheath.



K24 CABLE : Halogen-free cable, laid along the lines of 1500 volt electrified tracks

Construction : Solid annealed copper 0.9/ Insulation: polyethylene/ Polyester tape assembly covering/ Alupe tape/ LSOH outer sheath.



T13 CABLE : Halogen-free cable, laid along the lines of 1500 volt electrified tracks

Construction : Annealed solid copper/ Insulation: polyethylene/ Polyester tape assembly covering/ Alupe tape/ 1st sealing sheath/ Steel frame/ Outer sheath.

TROLLEY WIRE



USAGE

The grooved contact wire is part of the electrification system called catenary. It transmits electricity from the overhead line system to the locomotive. It is part of the systems ensuring the electrical supply of urban transport for high-speed networks.

STANDARDS

NF EN 50149:2013-02

Conductor Section : 107mm². - 150mm².

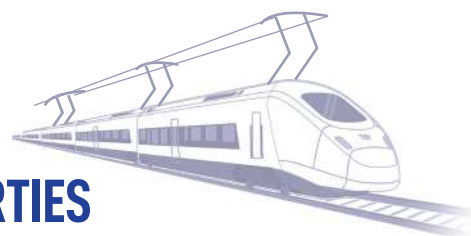
TESTS

MECHANICAL PROPERTIES

Allongement
Résistance à la traction
Masse linéique

ELECTRICAL PROPERTIES

Resistivity
Linear resistance per kilometer



Approved
SNTF

USAGES

Construction & Industry

STANDARDS

- CEI 60 228
- CEI 60 501
- CEI 600 227
- CEI 60 332-1
- CEI 60 332-2

TESTINGS

- Ohmic resistance.
- Dielectric strength voltage.
- Insulation resistance.
- Fire and smoke test.
- Dimensional measurement.
- Mechanical Test



LOW VOLTAGE POWER CABLES

Flexible and rigid wires : Used in powering household appliances/ wiring panels/ domestic circuit equipment in premises.

- **H07V-U** : Rigid copper core - class 1
- **H07V-R** : Semi-rigid copper core - class 2
- **H07V-K** : Flexible copper core - class 5



LV Domestic cables : 300/500V and 450/750V

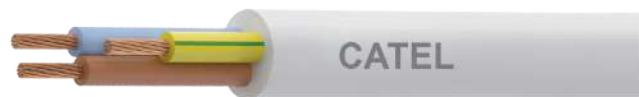
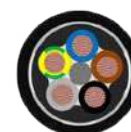
- **H05VV-F /SV1V** : CU class 5/ PVC insulation/ PVC sheath.
- **H05VV-U /VGV /NYM** : CU class 1/ PVC insulation/ PVC/ PVC sheath.
- **H07VV-R /VGV /NYM** : CU class 2/PVC insulation/ PVC sheath.



0.6/ 1KV LV industrial cables : These cables are used for industrial power installations in various fields (general industry, public installations and infrastructures).



- **U1000 VG2V** : Cu class 1&2/ PVC insulation/ PVC sheath.
- **U1000 RVFV** : Cu class 1&2/ XLPE insulation/ PVC sheath/ Steel strap/ PVC sheath.
- **U1000 R02V** : Cu class 2/ XLPE insulation/ PVC sheath.
- **U1000 VGV** : Cu class 1&2/ PVC insulation/ PVC sheath.



- **U1000RZU** : Cu class 1&2/ XLPE insulation/ LSOH sheath.
- **U1000RZK** : Cu class 5/ XLPE insulation/ LSOH sheath.

USAGES

Used for the transmission and reception of digital or analog signals by high or low frequency.

CONSTRUCTION

- Conductor: red copper core.
- Insulation: full polyethylene.
- Red copper braid.
- PVC sheath.

ELECTRICAL PROPERTIES

- Weakening
- Impedance



COAXIAL CABLES



RG58 : Used for transmitting and receiving high frequency signals. Rigid copper core 1x0.8mm/ Full polyethylene insulation/ Red braid/ PVC sheath.

RG6 : Intended for the transmission of analog video signals. Rigid copper core 1X0.72 mm/ Full polyethylene insulation/ Red braid/ PVC sheath.



RG59 : Intended for the transmission of analog and digital video signals for lengths up to 150m. Rigid copper core 1x0.6 mm/ Full polyethylene insulation/ Red braid/ PVC sheath.

RG231 - 21/ KX4 : For the transmission of high frequency signals in radio communication. Rigid copper core 7x0.75 mm/ Full polyethylene insulation/ Red braid/ PVC-C2 sheath.

RG 11 /KX8 : Intended for the transmission of analog video signals. Rigid copper core 7x0.4 mm/ Full polyethylene insulation/ Red braid/ PVC-C2 sheath.

KX6A : Intended for the transmission of analog and digital video signals for lengths up to 150m. Rigid copper core 7x0.2mm/ Full polyethylene insulation/ Red braid/ PVC-C2 sheath.



KX7 (KX6+POWER SUPPLY) : Intended for the transmission of video surveillance signals Rigid copper core 7x0.2mm/ Full polyethylene insulation/ Red braid/ PVC-C2 sheath + flexible electrical cable (class 05 copper core/ Section 0.50mm² or 0.75mm² or 2x0.1mm² or 2x1.5mm²).

USAGES

Used for applications requiring interference-free transmissions.

STANDARDS

- CEI 60228
- CEI 60227
- CEI 60332

TESTINGS

- Ohmic resistance.
- Insulation resistance.
- Dielectric strength voltage.

CONSTRUCTION

Conductor : Class 5 copper core.

- 0.5 mm²
- 0.75 mm²
- 1.0 mm²
- 1.5 mm²
- 2.5 mm²

Insulation : PVC/ XLPE/ LSOH

Ribbon : Polyester laid in a helix

Shielding : Braid.

Outer sheath : PVC/ LSOH.

A WIDE RANGE
OF SPECIAL CABLES
ACCORDING TO YOUR
REQUEST



COMMAND AND CONTROL CABLES



LIYY : Cable without screen or armor for light work in wet and dry environments. Class 5 copper core/ PVC insulation/ PVC sheath.

- **LIYY-JZ** : Black numbered conductor with green/yellow conductor.
- **LIYY-OZ** : Black numbered conductor without green/yellow conductor.
- **LIYY-JB** : Color code to order.



LIICY : For applications requiring protection against electromagnetic fields. Class 5 copper core/ PVC insulation/ Red copper braid/ PVC sheath.

- **LIICY-JZ** : Black numbered conductor with green/ yellow conductor.
- **LIICY-OZ** : Black numbered conductor without green/yellow conductor.
- **LIICY-JB** : Color code to order.



LIHCH : LSOH data transmission & control cable – With braid.

Class 5 copper core/ LSOH insulation/ Red copper braid/ LSOH sheath.

- **LIHCH-JZ** : Black numbered conductor with green/yellow conductor.
- **LIHCH-OZ** : Black numbered conductor without green/yellow conductor.
- **LIHCH-JB** : Color code to order.



LIHH : LSOH unshielded flexible multipolar data transmission cable. Used in indoor industrial applications in places where the emission of toxic fumes may pose a risk to the protection of people or equipment in the event of fire. Class 5 copper core/ LSOH insulation/ LSOH sheath.

SPECIAL CABLES



PROFIBUS CABLE :

Used to connect active equipment and the detectors to a central controller in industrial production applications.

Annealed solid copper core Ø 0.65mm/ Low density polyethylene insulation/ Polyester tape covering/ PVC stuffing/ Red copper braid/ Purple PVC sheath – C2 –LSOH.

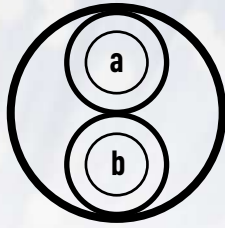


GONDOLA CABLE :

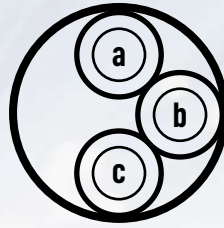
Used for cable transport, this hybrid cable is composed of :

- A fiber optic telecom cable.
- A 16mm² class 2 annealed copper conductor.
- A steel carrier (multi-strand galvanized steel stand).

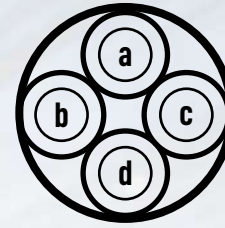
ASSEMBLY METHOD



- Pair -



- Third -



- Fourth -

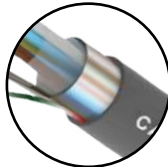
INSULATION AND COVERING MATERIALS

PVC		LSOH
PE-UV		C2
XLPE		RH

PROTECTIVE MATERIALS

Shielding

Aluminum Tape
For electromagnetic protection.



Mica Ribbon
Used as protection in fire resistant cables.



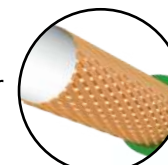
Corrugated copper
To reduce the electromagnetic field.



Copper tape
Used as electromagnetic protection



Red copper braid
Made up of fine crisscrossed wires for electromagnetic protection.



Frame

Corrugated steel
Used as mechanical and rodent protection



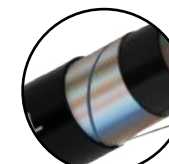
Aramid yarn
Used as mechanical protection.



Fiberglass
Used as rodent protection.



Steel tape
Used as mechanical protection.



Galvanized steel wire braid
Used as mechanical protection





CATEL has four (04) laboratories equipped according to the nature of the tests carried out in order to assure customers of quality cables complying with current international standards.

1. ELECTRICAL AND MECHANICAL TESTING LABORATORY :

Reserved for checking the conformity of raw materials received and checking the product throughout the manufacturing process.

This laboratory provides :

- **Mechanical tests** : On raw materials and finished cable
- **Geometric tests** : Dimensional measurements
- **Physico-chemical tests** : Sizing the density and rheology of polymers.
- **Electrical tests** : Measurement of the electrical resistance of the wire rod and insulated wire.



2. LABORATORY FOR FIRE AND SMOKE BEHAVIOR TESTS :

Fire and smoke tests reinforce the performance and safety criteria essential to fire-retardant or fire-resistant cables.

- IEC 61034: Measurement of the density of smoke released by cables burning under defined conditions.
- IEC 60332-1: Tests of electrical and fiber optic cables subjected to fire – Part 1: Vertical flame propagation tests on insulated conductor or cable.
- IEC 60331: Tests for electrical cables subjected to fire – Circuit integrity.
- IEC 60754: Tests on gases emitted during the combustion of materials taken from cables.

3. FIBER OPTICAL CABLE TESTING LABORATORY :

The tests and measurements applicable to fiber and fiber optic cables are :

• **Fiber tests** :

- IEC 60793-1-40: Measurement of the attenuation coefficient
- IEC 60793-1: Verification of fiber cut
- IEC 60793-1-22: Measurement of fiber length

• **Mechanical test** :

- IEC 60794 -1- 2-E1A: Tensile test
- IEC 60794 -1- 2-E6: Repeated bending test
- IEC 60794 -1- 2-E3: Crush test
- IEC 60794 -1- 2-E7: Torsion test
- IEC 60794 -1- 2-E4: "Shock" impact test

• **Climatic & environmental tests** :

- IEC 60794 -1- 2-F5B: Water penetration test
- IEC 60794 -1- 2-F1: Climatic test "Climate chamber"



4. METALLURGICAL MATERIALS TESTING LABORATORY :

Dedicated to testing the grooved contact wire of the catenary type 107 and 150 mm²:

- **Folding test** : Carried out according to standard NF EN 50149
- **Mechanical test** : Determination of all mechanical characteristics by traction.
- **Electrical test** : Determination of ohmic resistance and resistivity.



EXPORT





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