



**CAVEL an EU product MADE IN ITALY**

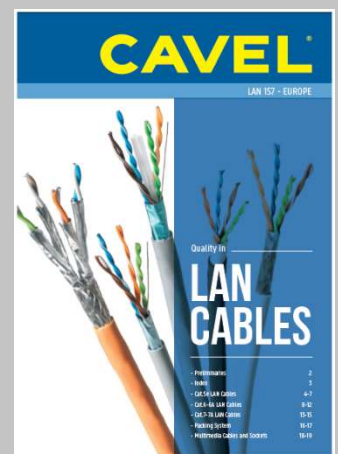
# ***Indeed, one manufacturer of coaxial cables MADE IN ITALY, close to Milan.***

## **Company profile**

Despite the globalisation moved to Far East and mainly to China the world's factories, still there is one factory of 15.000 sqm including several building, extended over a ground of 50.000 sq.m, into the countryside of the Pavia province, surrounded of rice fields 'cause it is side to the Ticino river, employing 70 people,... still manufacturing with success coaxial cables for the Italian domestic market and their European customers.

The company named Italiana Conduttori and producing cables under the CAVEL brand, is located in Gropello Cairoli, some 30 km south of Milan along the motorway en route to Genoa and it has been established since 1968. Initially, the production started into a rented industrial building while during the time the company has achieved continuous growth and major recognition in both the Italian and the international markets reaching the current size.

New buildings have been added year by year, including a two floor block of offices to lodge the administration and the commercial activities. The oldest building today recovers the raw materials stock and the drawing department while the core of the production plants includes an efficient laboratory dedicated to the Quality System Management as well the Research and Development activities.



## Products profile

The costs of designing and building TV distribution networks necessitate products with better performance integrity and longer life. To meet these expectations, CAVEL coaxial cables have been designed to comply with new technological demands. More effective screening techniques have been developed and dimensions reduced, while at the same time enhancing mechanical strength and increasing durability.

This has been made possible due to the use of nitrogen gas injected physical foam insulation technology, used for the production of coaxial cables dielectric. Our service to installers has been improved by the introduction of CABLEBOX dispensers, offering environmental and health and safety benefits as well as a wide range of connectors and tools as complementary items.

In recent decades, the updating of our coaxial cable design, the improved quality of raw materials and the acquisition of modern production equipment allowed to the company to guarantee all coaxial cables produced under the CAVEL brand for a period of 15 years. Both the Certificate and Conditions of Warranty can be downloaded from our website: [www.cavel.com](http://www.cavel.com)

## Quality in coaxial cables

Italiana Conduttori has been producing CAVEL coaxial cables for over 40 years. The safety and reliability of CAVEL products are guaranteed by: the careful selection of suppliers with proven integrity in the supply of quality raw materials; the use of the best scientific equipment for analysis, development, testing and control at all stages of production; the attainment of Quality Accreditation UNI EN ISO 9002, on April 30th 1996, issued by the CSQ Italian national certification body and the international certification network IQNet. This certification has since been updated to UNI EN ISO 9001:2008 obtained on 18.11.2010.

All coaxial cables produced conform to major international specifications such as: IEC, CEI, UTE, BS, DIN and MIL; in particular today they conform on all respects to the most specific EN-50117 Specs.



## Production skills and quality features

Our proverbial quality and the long lasting of our cables base on three topic features that the company has acquired by the experience of many years of production activity. They are:

- the wire drawing facility,
- the sophisticated skin-foam-skin physical foam dielectric extrusion,
- the PIB protection on the foam dielectric.

These skills will be shortly better explained with more details in the following notes.

## Wire drawing

Since 1988 a plain copper wire drawing plant was created in the factory. This, in order to improve the qualitative standard of one of the most important cable's component which is the inner conductor.

Step by step this activity grew up to the nowadays capacity of producing the whole amount of plain copper wires in use for our production. We can draw and anneal copper wires to obtain a conductors range of diameters from 0,31 mm up to 3,40 mm. All sizes are checked out during the process in terms of: diameter, tensile strength, elongation at break, out of roundness and surface cleanliness, the latter so important in cables used in HF transmissions due to the so called electromagnetic skin effect.



## What is a “physical gas injected” dielectric?

In 1996 CAVEL introduced the new technology of the physical gas injection (nitrogen) for the expansion of the foam dielectric. This technology was firstly introduced in Europe by Pope in Netherland whose industrial plant already belonged to Belden (USA). Our company was the second in Europe managing the physical extrusion of foam dielectric and since the beginning we started with the most sophisticated version of the physical foam extrusion, which is the so called “skin-foam-skin” technology.

Before this new technology was introduced the blowing up of the foam PE dielectric insulation was made by chemical powders. They were blended together with Low Density solid Polyethylene (LDPE) which decomposed the powders into gas under the effect of the extrusion temperature. That method limited the mechanical strength of the dielectric and jeopardised the life of the attenuation values, mainly due to the presence of moisture in the environment. By contrast, an insulation made with nitrogen gas physically injected into High Density Polyethylene (HDPE) produces a foam dielectric that grants to cables much better mechanical, electrical and ageing performance, almost equivalent to that of a solid PE dielectric.

This is particularly beneficial where a coaxial cable is exposed to crushing, squashing and bending manoeuvres during installation. Gas injection also ensures a longer life span and stable attenuation values.

In accordance with the EN50117-1 Specs.-Paragraph 5.3.5 which prescribes: 3 cycles of 24h at -40°C and 24h at 70°C, we even add 95% relative humidity to the third cycle and further tests show that attenuation increases less than 5% over original values.

### Skin-Foam-Skin extrusion

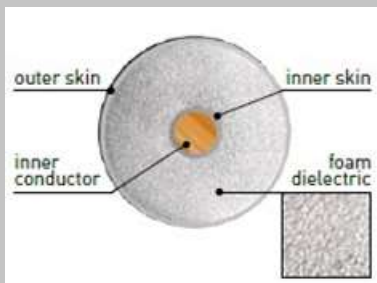
Firstly CAVEL cables are extruded by physical foam PE gas injection with the aim of reducing their rate of ageing, which is mainly due to moisture ingress. In addition, this extrusion ensures optimal performance thanks to Skin-Foam-Skin technology. It consists of a triple extrusion made of:

- one 1st layer of solid PE skin covering the inner conductor
- the 2nd section formed by the main extrusion of physical foam PE gas injected dielectric
- the final 3rd layer, also of solid PE skin, covering the dielectric.

Thanks to this technology, the first PE layer protects the inner conductor against any longitudinal moisture ingress so that no conductor oxidation may occur; this is in addition to the adhesion of a suitable dielectric over the inner conductor. Furthermore, the stronger geometry of the dielectric section improves the eccentricity of the inner conductor, especially in the presence of cable bends; this results in extended stability of the electrical parameters. The outer skin also preserves the integrity of the cable against longitudinal moisture ingress; this is in combination with PIB protection, as explained in further detail below.

### PIB protection

An exclusive protection system consisting of a layer of Poly-Iso-Butylene (PIB) covering the dielectric of cables not provided with bonded Al film foil. It acts as an additional moisture barrier and ensures excellent attenuation stability throughout the life span of the cable.



**A company that respects nature**

**Raw materials**

CAVEL is compliant with the EU RoHS Directive banning the use of certain hazardous chemical substances. In the past the industry used lead primarily in PVC sheath compounds as a thermal stabiliser. In accordance with the RoHS Directive, we discontinued the use of lead and its derivatives in all products since March 2005.



In addition, Regulation 1907/2006 covering the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) came into force on 1 June 2007. Pursuant to the REACH Regulation, our company is categorised as a downstream “user of substances” and as a “producer of article”.

For further information please visit our website and download our Declaration of Conformity to the RoHS Directive, as well as our Declaration in accordance with the REACH Regulation.

**CAVEL respect the environment**

Until recently, coils in a box or non-returnable cardboard and plastic reels were the most popular means of packaging TV coaxial cables. In spite of some inconveniences, these packages were accepted as the norm.

Today, due to environmental studies and concerns, the concept of recycling has become a paramount issue, prompting CAVEL to develop a total solution in terms of efficiency, economy and ecology.

This has led to the introduction of a revolutionary product - the CABLEBOX dispenser - a design based on the concepts of reduction and reutilisation. Since 1997 this item were designed and launched on the market. It was thought with the purpose of making easier the job for the installers. Indeed this item joined the target and also introduced a new concept of ecological consciousness; the REDUCTION of packing materials. This is the case of the shrunk packed coils suitable to be unwound by the CABLEBOX dispenser.





## Ethical products

From the start of the II World War six decades have passed. In this span of time the human being consumed more resources than in the whole previous past history. The waste of resources can be considered a kind of crime towards the future generations. We believe that the technology knowledge must drive to the saving of resources although achieving the necessary characteristics.

On this purpose, same as per the packing material reduction, we have the target to pursue the design and construction of cables providing the best features with just the right necessary amount of raw materials, this as a contribution to stop the era of the compulsive consumption.

**Lionello Loris Bronzo**

General Manager

CAVEL – Italiana Conduttori Srl    Gropello Cairoli, 01.02.2021

