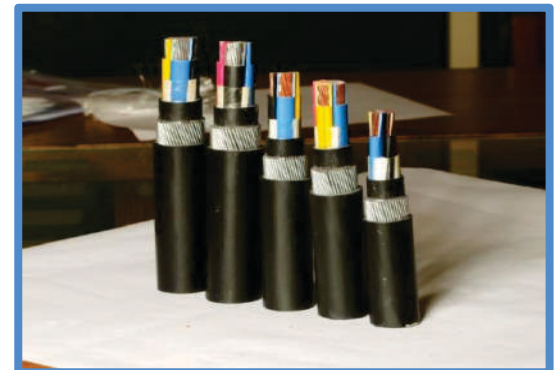


Fast Cables Ltd.

Manufacturing Process



COMPANY PROFILE

Fast Cables Limited is a leading electrical cable and conductor manufacturer in Pakistan. It was established in 1985 and incorporated as an unquoted Public Limited Company in 2009. In the last three decades, Fast Cables has invested heavily in the expansion of its manufacturing capacity and modernization of its plant to ensure the production of a wide range of products. Fast Cables offers superior quality products combined with excellent customer service and is the choice of leading electrical contractors, engineers, consultants and architects.

PRODUCT RANGE

Our product range includes the following, in addition, to custom made cable orders.

Overhead conductors

Grounding conductors

Low Tension (LT) Cables

Power Cables

Control/Screened/Shielded Cables

LSZH Cables

Solar Cables

Indoor Telephone Cables

Coaxial Cables

CERTIFICATIONS



MANUFACTURING PROCESS

- 1. Conductor**
 - i. Wire Drawing**
 - ii. Annealing**
 - iii. Stranding**
- 2. Insulation**
- 3. Laying Up**
- 4. Additional Coverings**
- 5. Outer Sheath**
- 6. Quality Control**



1. CONDUCTOR

1.1 WIRE DRAWING

The first step in manufacturing process consists of reducing the diameter of the copper wire gradually to its final diameter.

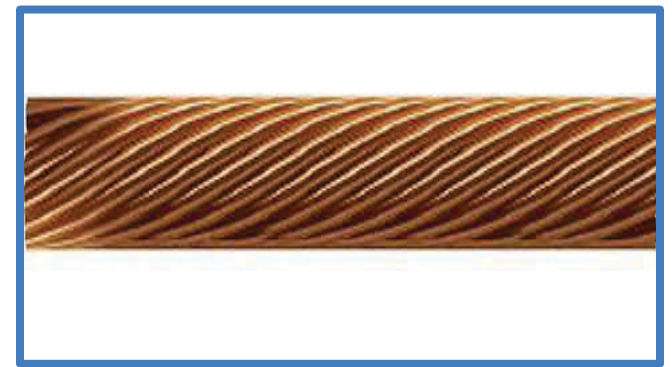
- The copper arrives in large coils. This copper, 8 mm in diameter, is technically known as “**wire rod**”. The diameter of the wire rod is reduced to 2 mm during this process.
- This 2 mm wire is then drawn further to reduce the diameter of the wire to the size needed for each kind of conductor.

1.2 ANNEALING

After the wire-drawing, all the wires undergo a heat treatment called “**annealing**” to increase the ductility and conductivity of the copper.

1.3 STRANDING

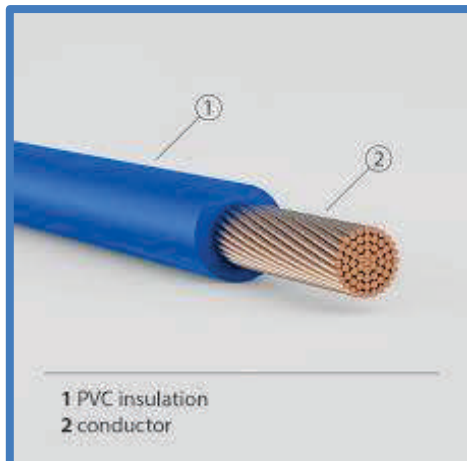
Annealing is followed by a “**stranding**” step in which the copper wires are grouped together to make conductors with different cross-sections, e.g. 0.5 mm² to 240 mm², 400 mm² or even higher for larger current capacities.



2. INSULATION

The next process in the manufacture of electrical cables is the **insulation**. It involves the placement of an insulating cover over the conductor to prevent current leakages.

- The insulating material is added by a process of **extrusion** at high temperature.
- Several insulating materials may be used: PVC, EPR, XLPE, etc.
- The material's insulation capacity and its thickness determine the cable's maximum service voltage.



3. LAYING UP

The operation which allows putting together the various elements of the cable into its core, can be done in one or several steps

Phase wiring is the grouping of different insulated conductors to make a multicore cable.

- The phases can be identified by color or by numbering them.
- A voltage test is also carried out on the whole length of the manufactured cable during this process.



4. ADDITIONAL COVERINGS

In some cases, the cable may require additional elements in order to improve its protection or operation.

- Mechanical coverings, also called **“armour”**, protect the cable from external damage.
- The armour is made from steel or aluminum and can come in the form of metal strips, wires or braids.
- Electrical coverings, also called **“screens”**, insulate the signals that circulate in the cable from possible external interference.



5. OUTER SHEATH

Cables usually have an outer polymer covering for protection. This is called the **“outer-sheath”**. This sheath protects the conductors and their insulation from external elements including mechanical aggression, which may occur during the installation of the cable.

- The outer-sheath is applied like the insulation via a process of **extrusion** at high temperature.
- The sheath may be made from different materials depending on the required protection level, the final flexibility of the cable, the work environment, etc.

6. QUALITY CONTROL

Once the cable is manufactured, Fast Cables verifies the quality of all cables by carrying out rigorous checks before shipping items.

- In order to guarantee the high quality required by Fast Cables' customers, cables undergo extensive quality control checks in our laboratories, thus, ensuring that all the cables are free from defects and are ready to be sold.
- The quality guarantee system ensures that all cables perform as per their specifications.

Cable Tests performed

Stranding Formation (No./Size)
D.C Resistance of conductor
Thickness of insulation
Thickness of bedding
Nominal armour wire diameter
Thickness of sheath
Hi-Voltage
Insulation Resistance (I.R) test

