

Fast Cables Ltd.

Manufacturing Process



COMPANY PROFILE

FAST’s journey began nearly four decades ago with a mission to promote industrialization in Pakistan and contribute towards the socio-economic uplift of fellow citizens.

Initially our focus was on the manufacturing of electrical Cables and Conductors under the Fast Cables brand, which has become a household name due to its premium (“REAL”) quality and reliability. The confidence reposed by architects, engineers, and end users in the FAST brand, led to our expansion in the Metals, PVC, and Lights business verticals.

PRODUCT RANGE

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

Building Wires & Cables

Low Voltage Power Cables

Control & Instrumentation Cables

Communication Cables

LSZH & Fire-Resistant Cables

Solar Cables

Aerial Bundled Cables

Medium Voltage Cables

Overhead Conductors

CERTIFICATIONS



Solutions



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.

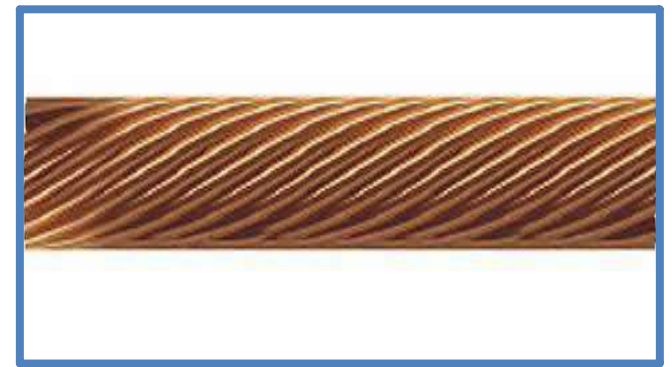
- The copper arrives in large coils. This copper, 8 mm in diameter, is technically known as **“wire rod”**. The diameter of the wire rod is reduced to 2 mm during this process.
- This 2 mm wire is then drawn further to reduce the diameter of the wire to the size needed for each kind of conductor.

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

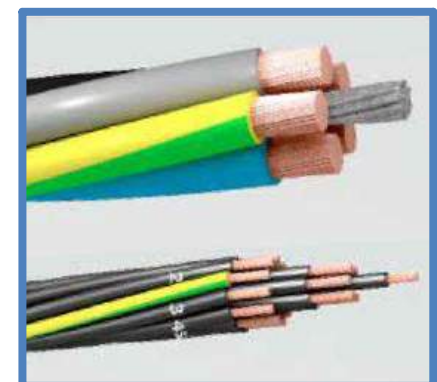
Annealing is followed by a **“stranding”** step in which the copper wires are grouped together to make conductors with different cross-sections, e.g. 0.5 mm² to 240 mm², 400 mm² or even higher for larger current capacities.



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, XLPE, LSZH, XLPO etc.
- Cable's maximum service voltage is primarily determined by the quality, type and thickness of its insulation, as insulation plays a critical role in ensuring safety, reliability, and performance



3. LAYING UP

Laying up is a crucial step in multi-core cable manufacturing, where individual insulated conductors are twisted or stranded together to form a compact and organized cable core. This process ensures mechanical strength, flexibility, and proper conductor arrangement within the cable

Steps of Laying Up Process includes

1. Loading Insulated Conductors
2. Stranding/Twisting
3. Filling (If required)
4. Taping (Optional)
5. Final Inspection & Tension Control

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

The outer sheath of a cable is a protective layer that serves as the first line of defense against external environmental and mechanical stresses. It encases the inner components, shielding them from moisture, chemicals, UV radiation, abrasion, and physical impact. Made from materials such as PVC, PE, LSZH, or HDPE. The outer sheath also enhances the cable's durability, flexibility, and protection in case of fire, depending on the application. In addition to protection, it helps maintain the structural integrity of the cable, ensuring longer service life and reliable performance in diverse operating conditions, from underground installations to harsh industrial environments.

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

Some of the tests are listed below:

- Conductor Resistance Test
- High Voltage Test
- Insulation Resistance Test
- Partial Discharge Test
- Tensile Strength & Elongation Test
- Bending Test
- Abrasion Resistance Test
- Flame Retardancy Test
- Smoke Density Test
- Halogen Acid Gas Emission Test
- Circuit Integrity Test