

You be the judge!



“Quality is remembered long after the price is forgotten.”

You decide the quality of cables and wires your customers use, isn't it only fair that you provide them the best? When you choose quantity over quality, you put your customers at risk and your reputation too. Quantity may mean short-term benefits, but, only quality can guarantee you a long-term relationship with your esteemed customer, which obviously results in repeat sales. It also helps build a positive reputation in the market that boosts sales. And you can count on Polycab to assist you in your decision-making process.

Read for yourself how quality cables & wires can make a difference to you as well as your customer's life.

PVC Cable Manufacturers

With the introduction of PVC insulated cables in the power field, the number of units manufacturing PVC cables increased rapidly, mainly because the production techniques were comparatively simpler and the investments were also much less. This gave rise to many small scale and medium scale manufacturers to take up cable production. These units have mushroomed in the country in the past two decades, and have together created a market for their products which are much cheaper in price.

Approval and Selection of Vendors

Users find themselves in a fix while selecting a reliable competent vendor for their supplies of cables as quite a few units have obtained the ISI certification mark as well. Government and semi-government organizations are the largest users of electric cables and these organizations invariably decide their tenders on the basis of lowest prices, subjected as per the technical specifications and ISI mark of the cables. Also, it is customary to rely on the ISI certification mark as a third party assurance to quality.

Selection of vendors involves many factors, those which come under the commercial nature like financial position, performance of deliveries, sources of raw material and relationship with their main vendors. Under the sources of raw material factors, there are many aspects which are to be seriously considered by the end users before selecting the manufacturer to be your electric cable vendor.

Proper Planning

Planning is most effective part of job execution for high productivity. Perfect planning always helps to reduce number of job changes, job setting time and hence a low scrap generation. Effective planning of production results from long run of the running product with maximum automation, resulting in consistent quality product.

Conventionally in cable industry following manufacturing plans are to be undertaken –

- Appropriate machineries
- Operator skill
- Reduced changes of product sizes
- Usage of appropriate raw material
- Proper planning of raw material at production shop floor
- Product to be suitable or compatible with the machine
- High automation
- Preventive maintenance of the machineries
- Proper material handling system

The ideal productivity depends on good planning by taking care of all above parameters, during the preparation of manufacturing plan to avoid generation of scrap. Usage of pre-tested material:- It is always advisable to use correct grade & batch of material to avoid unnecessary trouble during the production. Sometimes inferior grades or contamination with foreign particles as well as atmospheric moisture, may have adverse effect on the finished product which may be avoided by pre-testing during the operation / production.

Parameters (causes) to minimize the scrap

- Improper technology adaptation
- Lack of training
- Improper usage of proper tools
- Selection of poor quality raw material
- Lack of monitoring & process control
- Instability of the process
- Negligence in work
- Poor maintenance
- Inadequate quality control
- Malfunctioning of ancillary equipment

Processing of Raw Material

QC released raw material are issued on the shop floor for manufacturing of the cable of stipulated sizes.

The materials are fed into respective machines for manufacturing cables under controlled conditions and pre-set parameters. The operators are instructed adequately for the specific manufacturing process with applicable standards. They monitor at regular intervals for better control of the process. The lines are equipped with several auto testing facilities by which the wire & cable gets tested online to maintain the quality. Major online testing performed are diameter control, thickness control, high voltage test etc. for stringent process control as well as quality control. A visual testing is also carried out by the operator for colour shade, surface quality, printing quality as well as concentricity.

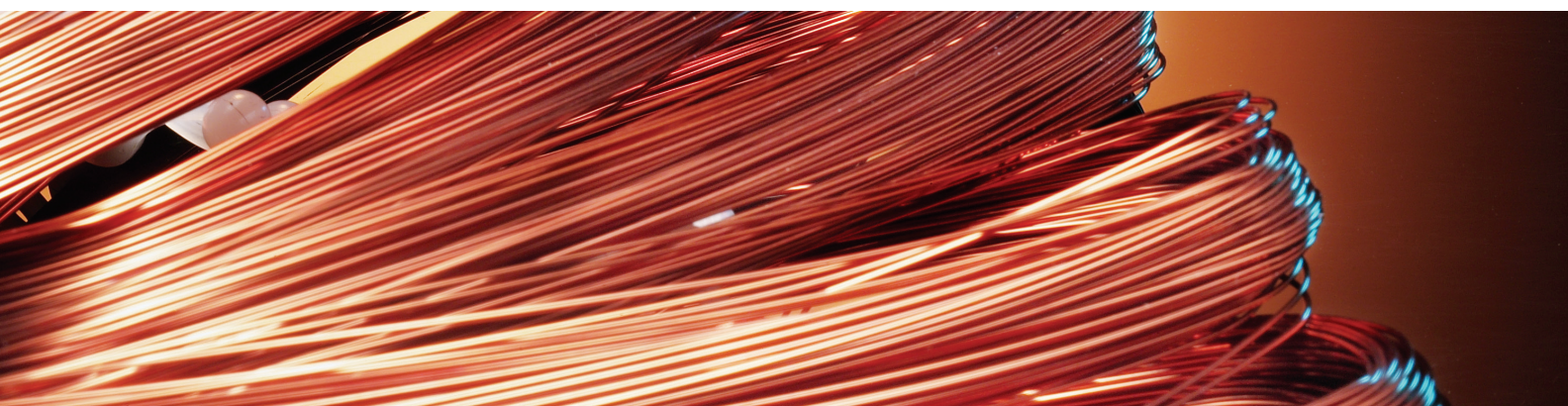
Performance of Electric Cables by the Quality of Raw Materials Used

Generally, most of the cables function for as many years as the cable vendors provide warranty / guarantee. These cables begin to breakdown early, if the raw materials used while manufacturing are of poor quality or are sourced from non-reputed vendors.

Metal purity & virgin PVC ensures cable longevity. For good cables, the life is 30 years or more. Cables manufactured with impure metals & recycled PVC have reduced life as well as increased losses of power during transmission.

To understand this important aspect in detail and to maximize the value for money to the end users we need to look at the raw materials used by “few” and “other” cable manufacturers.

| Few | Others |
|---|--|
| <p>The copper in a good quality house wire, for example, has to be at least 99.97% pure for high electrical conductivity. Impurities as low as five-hundredth of a percent (0.05%) of phosphorous or eight one hundredth of a percent (0.08%) of iron reduces copper conductivity by 33%. These losses are additive when several different impurities are present together.</p> | |
| <ul style="list-style-type: none">• Few cable manufacturers in our country use the best quality EC grade copper (Made from copper concentrate which comes from copper mines).• Copper is purified (99.97% purity) by electrolysis. A solution of copper sulphate & sulfuric acid is used as an electrolyte in this electrolysis method.• This is most recommended as it has the least amount of impurities that affect the conductivity of the cable conductor. | <ul style="list-style-type: none">• Other small and medium manufacturers in India, procure commercial grade copper (recycled) which have high content of impurities in them (92% purity or below).• This copper is made from the recycled process wherein copper scrap is then melted by ordinary furnaces and converted into wire bars, which is then made into copper rod.• The rod (famously know in India as Super D) is procured by other small and medium cable manufacturers.• These cables that are made by using (Super D) copper with very high impurity contents have very high resistivity.• This resistivity leads to a huge loss of power during transmission, increasing the power consumption by 30%.• It also has been found in some cases that these manufacturers (to show to customers) take pure copper from reputed manufacturers and swap it with recycled copper manufacturers (the rate difference between RC grade pure copper and Super D copper is ₹60 /kg) |
| <p>Let's put this into a cost price perspective of cables. This is effectively ₹0.565 / sq mm / meter. Hence for a 3C x 1.5 sq mm cable it is 1.5 x 3 = 4.5 sq mm, which is 4.5 x ₹ 0.565 = ₹2.54 / meter (cost difference)*. *Rates keep changing according to market fluctuations.</p> | |





Aluminium

- Electrolyte pure EC grade aluminium is made from bauxite.
- It must first be refined into aluminium oxide or alumina.
- Smelting is a process for extracting aluminium metal from aluminium oxide (alumina). This process separates aluminium metal for removal and casting.
- This aluminium is then converted into ingots, which are then melted and rolled into wire rods. These rods are then drawn into wires and strands converting them into conductors to be used in cables.
- These finished conductors have 99.7% aluminium purity which is required to transmit electricity and is used by few manufacturers.
- We also have other manufacturers that use commercial grade ingots (Aluminium scrap melted in ordinary furnaces to convert into ingots).
- This is rolled into rods and further drawn into wires and strands to make cable conductors. But, this conductor has a higher resistivity and leads to higher power consumption.
- Price difference in EC grade aluminum and commercial grade = *₹ 5 /kg

Let's put this into a cost price perspective of cable.

This is effectively ₹0.15 / sq mm / meter.

Hence for a 3C x 120 sq mm cable it is $120 \times 3 = 360$ sq mm, which is $360 \times ₹ 0.15 = ₹ 54/-$ meter (cost difference).

Steel

- Electrolyte grade steel wires for armouring are made from iron ore taken from mines and is processed into billets to make wire rods and is further processed to make them into steel wires.
- These wires pass through the process of pickling, pre-drawing and are then galvanized and coated as per IS-3975.
- All the reputed GI steel wire manufacturers follow this manufacturing pattern and only few cable manufacturers use this GI steel wire.
- Steel wires for armouring are also made by certain manufacturers by using scrap, fluxes and ferro-alloys as raw materials and then melted in a furnace to further make ingots and wire rods which then form wire rods. It is then processed to make steel wires and galvanized steel wires / strips with nearly 50% less zinc coating than required.
- There are other cable manufacturers who use the GI steel wire in their cables.
- The cost saving is to the tune of *₹ 9000 /- ton.



PVC

- PVC compound for cable grade has to be manufactured by mixing PVC resin with various required plasticizers and stabilizers as per required grades for insulation, inner sheath, outer sheath and FRLS properties.
- Very few manufacturers of cables in India use this PVC compound as their raw material.

- PVC compound can also be manufactured by using PVC scrap which comes in the form of granules.
We have other manufacturers in India who use this compound as raw material in their cable manufacturing.
- The manufacturers also uses the same grade of PVC compound for insulation and sheathing, although, as per requirements the grades should be different.
- This type of compound has lower resistance value and affects the life of the cable. Within just a span of 5 to 7 years these types of cables start developing cracks.

| Description | Few Manufacturers * | Other Manufacturers ** |
|--|---------------------|------------------------|
| Life cycle of the cables | 30 years and more | 5 to 7 years |
| Consumption of power (100 unit) | 100% | 130% |
| Saving on price due to raw materials used (by few / other manufacturers) | 0 | 5 to 7% |

R.B.D. (Rod Breakdown Machine) - RBD consists of several wire drawing cones. Approved copper rod received in 8 mm form is fed into RBD machine & draw down 1.80 mm wire with help of specially made tungsten & diamond-tipped dyes & with special lubricants.

M.W.D. (Multi-Wire Drawing) - Wire received from RBD machine is fed into MWD machine for drawing further down to 0.2 mm to 0.5 mm as desired. Several especially made diamond-tipped dyes are required to draw down the wire into such thin sizes. Several precautionary measures are taken to make such thin wires.

Online annealing in both RBD & MWD ensures uniformity of diameter, resulting in uniform resistance of the final wire drawn.

Bunching

The drawn wires from MWD machine are then fed into bunching machine based on sizes required. Different sizes of wire have different configuration with respect to number of wires, diameter, pitch & electrical resistance.

Twists are formed in the bunching machine to give a circular shape to the conductor.

The wire produced in bunching machine is wound in suitable bobbin to be used in further process.

Extrusion

The circular conductor so formed in bunching machine is fed into the extruder to coat it with insulating compound in a pre-decided thickness & concentricity, cooled down in chilled water & immediately coiled online or wound in a reel / drum.

* CCI, UCL, POLYCAB, GLOSTER, RPG, FINOLEX, HAVELLS, PRIMECAB, RR KABLE, ANCHOR

** HUNDREDS OF CABLE MANUFACTURERS WHO HAVE MUSHROOMED IN THE COUNTRY

Thus all the unaware buyers are at twice the loss - because they buy these ordinary cables at a 5-7% lower cost. Also, users get a substandard cable which will lead to a higher running cost in terms of power consumption.

You be the judge!

Just for 5% on the cost of cable you want to take a big risk in your project? And what is the % saving for this in your total project cost? The question is, is it worth jeopardizing your reputation?

Follow us on:

www.facebook.com/PolycabInd twitter.com/PolycabIndia www.linkedin.com/company/345999?trk=tyah

www.polycab.com

Head Office

POLYCAB WIRES PVT. LTD.

Polycab House, 1st Floor, 771, Pandit Satawalekar Marg, Mahim (W), Mumbai - 400 016, Maharashtra.
Tel.: 022-24327070 - 74, 67351400 | Fax: 022-24327075 | Email: info@polycab.com

Branch Offices

Ahmedabad

M/s. Polycab Wires Pvt. Ltd., 406 / A, Zodiac Square, Opp.Gurudwara, Thaltej Cross Road, SG Highway, Ahmedabad - 380 054.

Andhra Pradesh

M/s. Polycab Wires Pvt. Ltd., 401 / A, 4th Floor, Suryakiran Complex, S. D. Road, Secunderabad - 500 003.
Tel.: 040-66326228 / 30962600 | Email: andhra@polycab.com

Delhi

M/s. Polycab Wires Pvt. Ltd., 0-13, 3rd Floor, Lajpat Nagar II, New Delhi - 110 024.
Tel.: 011 - 29841721-24 | Email: pwpldelhi@polycab.com

Karnataka

M/s. Polycab Wires Pvt. Ltd., #104 / 6, 5th Block, 5th Cross, SSI Area, Rajajinagar, Bengaluru-560 010.
Tel.: 080-23102172
Email: pwplbangalore@polycab.com / karnataka@polycab.com

Rajasthan

M/s. Polycab Wires Pvt. Ltd., F-85, Kartarpura Industrial Area, Near 22 Godam, Jaipur- 302 010, Rajasthan.
Tel.: 0141-2214455, 4041391 | Email: pwpljaipur@polycab.com

Tamil Nadu

M/s. Polycab Wires Pvt. Ltd., Old No. 5 / 2, New No. 9 / 2, Gopalkrishna Road, T Nagar, Chennai - 600 017.
Tel.: 044-42022775 / 32969257 | Email: pwpl@chennai@polycab.com

Kolkata

M/s. Polycab Wires Pvt. Ltd., Poddar Court, 5th Floor, Gate No. 3, 18, Rabindra Sarani, Kolkata - 700 001.
Tel.: 033-32929603 / 602 | Fax: 033-2419-7706 | Email: pwplkolkata@polycab.com

Pune

M/s. Polycab Wires Pvt. Ltd., 36, Sangam Project, Off. Indian Air Lines, Near RTO (Pune), Dr. Ambedkar Road, Pune - 411 001.
Tel.: 09623486951/ 09370570522 | Fax: 020-26058277 | Email: pune@polycab.com



POLYCAB

India's No.1 Cables & Wires Company