



PVC Insulated Wires and Cables



Rajtex Power Products Pvt. Ltd. is one of the fastest growing names in the field of wires and cables. Driven by our commitment for quality, our product and services are rated and accepted as one of the best.

Rajtex was established in 1987, by a group of eminent and experienced entrepreneurs & technocrats, with a vision to provide wires and cables of superior quality and all possible ranges at most competitive prices.

Our team is well qualified and experienced members work continuously and diligently at ultra-modern production facility and fully equipped testing lab to achieve a common goal, which is:

To exceed customer expectation by continuous improvement in Men, Machines, Methods, Materials and environment.

Rajtex is an ISO:9001-2015 certified organization by MLR for Manufacturer of Electric wires and cables.

Our nationwide dealer and distributors network, delivers value of money and satisfaction. Our complete range of wires and cables makes us a ONE-SOURCE solution provider.



- ◆ Power and Control Cable
- ◆ FR/FRLS/HR PVC Cables and Wires
- ◆ Co-axial Cable
- ◆ Telephone Cable
- ◆ CAT-6 Cable
- ◆ Submersible Cable
- ◆ Crane Application Cable
- ◆ Mining Cable Specially designed for Stone mines
- ◆ Rubber Cable
- ◆ Trailing Cables
- ◆ Extra Soft Cables (Import substitute)
- ◆ Music Wire
- ◆ Drop Wire
- ◆ Welding cable
- ◆ Hook-up wire
- ◆ Instrumentation Cable
- ◆ Special purpose Wires/Cables as per customer requirement.

romex wires and cables for your sweet home

Rajtex provide the complete wire & cable solution for Indian homes covering each and every application. We ensure that each wire and cable is manufactured with same care with which you built your home. Rajtex Wire and cables give you same sense of security, which your children feel in your presence.

Romex wires and cables are results of diligent efforts into research and development and rigorous quality check to make sure only the best reaches your home. Each meter of Romex wire and cable has to pass stringent quality tests & then only it qualifies to reach your home. All Romex wires and cables comply with all national and international standards.

Our specially formulated FR (Fire retardant) PVC makes fire retardency and it help reducing fire accidents. Our FRLS (Fire retardant low smoke) PVC is a step ahead in this direction, it is not only resists propagation of flame but also emit very little smoke when it burns and contains very less HCL/Toxic gases.

Rajtex has uncompromising commitment to quality and reliability, we are manufacturing wires & cables for all your needs, you do not have to go anywhere else.



Conductor – This is central part of cable, which carries current or signal through its metal, generally Copper or Aluminium. In some cases Tin coated Conductor is also used. Conductor also determines the size of cable. Size of cable is nothing but cross sectional area of conductor. For example, a Cable of size 1.5 Sq mm has conductor of cross sectional area 1.5 Sq mm.

Insulation – This is the polymer layer applied directly over conductor. Function of this layer is to electrically isolate one conductor from the other or from surroundings and absorb electric shocks.

Core – Conductor along with its insulation is collectively called a core.

Sheathing – (optional) Used only in multicore cables. This is a layer of polymer applied over twisted cores. Its function is to hold the cores together, provide perfect roundness for armoring and braiding, and to provide mechanical strength to cable.

Armouring – (optional) Helical wrapping of wire or strips (steel) to provide mechanical protection to cable. Shielding (optional) Metal tape or braiding applied over electric cores to prevent signal interference and signal leakage.

Outersheath - (optional) Outer Jacket of polymer on cable, functions as protection against dust, oil, moisture, abrasives and other hostilities.

How to select Wires and Cables suiting to your requirement

Following steps should be taken to select wire and cable;

- ◆ Know the required current that the cable will be carrying during normal operation.
- ◆ To calculate the current rating, divide the power (in watts) by supply voltage. If power is given in HP (horse power) multiply it by 746 to obtain power in watts.
- ◆ Select the appropriate cable size, which has current rating more than the required current rating.
- ◆ The current ratings given in tables are at an ambient temp. of 40 Deg.C. Multiply this rating with rating with suitable temperature correction factor. The table of temperature correction factor is given below.
- ◆ After temperature correction, cable's current rating should be more than required current rating. If not then, choose a size higher than previously chosen and carry out step 4 and 5 again.

TEMPERATURE CORRECTION FACTOR

Air Temperature	15	20	25	30	35	40	45	50
Rating factor (PVC)	1.40	1.32	1.25	1.16	1.09	1.00	0.90	0.80
Rating factor (HR PVC)	1.28	1.22	1.17	1.12	1.06	1.00	0.94	0.87

There are four criteria's which should be kept in mind while selecting Wires and

- ◆ Safety
- ◆ Life
- ◆ Energy Saving
- ◆ Cost

SAFETY

Most of fire accidents are caused due to electricity and most of these are caused by short circuits. Choosing good quality wires with suitable current ratings can minimize these accidents.

At the time of short circuit, a very high surge of current flows through the circuit for a flash of second. Poor quality wire have poor quality of PVC insulation with uneven thickness. At points where insulation thickness is low, cables are not capable of withstanding short circuit current and hence get ruptured or catch fire. Poor quality of PVC also results in propagating such fire.

LIFE

Wires and cables once installed, requires lot of time and efforts to replace. Hence it is very important that wires and cables should have long operational life and uniform electrical and physical properties through this period.

Many, manufacturers use impure and reprocessed material as conductor. This conductor due to its poor electrical properties, presence of impurities gets heated up on passing of current. Low quality of PVC, made from secondary plasticizer (major ingredient in PVC), when subjected to this heat over a long period of time, gets deteriorated and develops cracks and losses its original finish and colour, and eventually leads to failure of cable.



ENERGY SAVING

Low grade wires and cables have lower cost but have higher power losses and hence prove to be costlier in the longer run. Made from poor impure grade of copper, such cables have high resistance (ability to resist flow of current) which increase power loss.

Electrical power loss is measured in units of KWH (Kilo watt hour)

Given by equation:

$$P = \frac{I^2RT}{1000}$$

This cost can be minimized by using cable with lower resistance. Lower resistance not only saves power but also decreases voltage drop and ensure safety of your costly equipment's and gadgets.

ECONOMY / COST

Generally, wires and cables manufacturers procure raw material (conductor and PVC Compound) from other vendors or from open market. Hence final cost of finished products also includes profit margins of other vendors and middlemen.

Production running on power supplied by electricity companies (State Electricity Boards) have more rejections and wastages, as power supply is prone to voltage fluctuation and failure which breaks the continuity of production and results in rejection and wastage.

Why Romex Wires and Cables are better choice

- ◆ Romex uses only electrolytic grade conductor which 99.9% pure, and hence resistance and heat generation within the cable in minimum.
- ◆ Romex is one of few manufacturers who carryout annealing and wire drawing in-house. A time consuming process, but allow us to ensure that every meter of conductor meets our strict quality criteria.
- ◆ In addition the standards under which we design and manufacture our PVC compound are among strictest in the industries. The results is comprehensive range of PVC compound catering to all standard or customized operations and environments with unparalleled performance.
- ◆ Our ultra-modern plant and machinery help us to lower wastage and rejection, and to achieve enviable productivity.
- ◆ Our team is specialized testing professionals for each wire and cable, using fully equipped laboratory and high precision testing instruments to check conformity to national and international standards.
- ◆ PVC used for insulation developed and manufactured in house, specifically for Indian conditions, has high thermal stability and ability to withstand very high temperatures. Use of primary plasticizer makes sure that cable do not lose its physical properties even when subjected to high temperature.
- ◆ Romex use only FR grade virgin PVC from best chemicals and primary plasticizers. Fr GRADE PVC is specially formulated with ingredients, which help improving fire resistance and thermal stability.
- ◆ Specially designed two-layer design, with inner layer made from neutral PVC and ultra-thin colored layer for colour identification increases resistivity of insulation and increases life of cable.
- ◆ Our production runs on 100% self-generated power and modern electric distribution system, which filter out even minutes fluctuation in voltage and hence reduces wastage and also ensure uniformity in insulation, which is an important aspect in cable safety.



Owing to our consistent efforts for quality and providing the best, we have developed exhaustive range of domestic wires and cables suitable to Indian homes and varied conditions. Manufactured with best quality of conductor (electrolytic grade copper, 99.99% pure) and finest grade of indigenously developed PVC Compound, **Romex Wires and Cables give maximum safety at no extra cost.**

CONSTRUCTION

Conductor : Bare annealed copper.
 Insulation : Double layer FR grade
 PVC insulation with inner layer of neutral
 PVC and very thin outer layer of colour PVC.
 Standard : IS-694
 Size : 0.5 sq.mm to 50 Sq.mm

APPLICATIONS

Romex Single core wires can be used in duct, conduit, or Aerial wiring for electric power in:

- ◆ Houses
- ◆ Buildings
- ◆ Flats
- ◆ Factories
- ◆ Apartments
- ◆ Hospitals

Used with UPS, inverter, battery, control panels etc.

SILENT FEATURES

Electrolytic Grade copper having 99.99% purity and maximum conductivity to ensure minimum power losses and maximum safety.

Bunching of copper in uniform lay & diameter that makes stripping & crimping of wires easier & minimizes losses.

Indigenously developed PVC compound formulated from finest ingredients and produced in house. High thermal stability & insulation resistance makes it suitable for use in Indian environment.

Double insulation, with primary insulation from virgin PVC, coated with ultra-thin colour layer. This features enhances safety, and ensures proper colour identification.

SINGLE CORE ELECTRIC WIRE WITH FLEXIBLE COPPER CONDUCTOR REF: IS:694/1990 ISI MARKED

Area of Conductor Sq.mm	No. of Strand / Dia of strand No./(mm)	Insulation Thickness Nominal (mm)	Approx. Overall Diameter (mm)	Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)
0.50	16/0.20	0.70	2.30	39.00	4
0.75	24/0.20	0.70	2.50	26.00	7
1.0	32/0.20	0.70	2.70	18.10	11
1.5	30/0.25	0.70	3.00	12.10	14
2.5	50/0.25	0.80	3.60	7.41	19
4.0	56/0.30	0.80	3.60	4.95	26
6.0	84/0.30	0.80	5.10	3.30	33
10.0	140/0.30	1.00	6.20	1.910	45
16.0	224/0.30	1.00	7.30	1.210	60
25.0	354/0.30	1.20	9.20	0.780	75
35.0	495/0.30	1.20	10.30	0.554	95
50.0	707/0.30	1.40	12.50	0.386	125



Whenever fire break-out in any building/complex, the burning of wire emanates, the toxic, black smoke, which causes injury and subsequently becomes fatal to the human life. This compelled us to develop FRLS (FIRE RETARDANT LOW SMOKE) Wires. These wires are quite safe during the fire break-out.

CONSTRUCTION

Conductor : Bare / annealed tinned copper
 Insulation : Double layer insulation FRLS grade PVC
 Standard : IS:694 (Under Consideration)
 Size : 0.50 sq.mm to 50 sq.mm

APPLICATIONS

“Romex FRLS wires are ideal for use in densely populated areas:-

- ◆ Houses
- ◆ Buildings
- ◆ Flats/Apartments
- ◆ Factories
- ◆ Theaters
- ◆ Hospitals
- ◆ Educational Institutions

Used with UPS, Invertors, battery, Control panels etc. as well as areas where safety is a major criteria.

SALIENT FEATURES

- Excellent fire retardant properties.
- Self Extinguishing
- During Fire : very less toxic fumes emitted.
- Quite Lesser amount of non-corrosive smoke emitted.

TECHNICAL DATA

Nominal Cross Section Area of the Conductor Sq.mm	Nos./Nominal Dia of Strand (No./mm)	Nominal Thickness of Insulation (mm)	Approx. Overall Diameter (mm)	Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)	
					2 Wires, In Conduit / Trunking	1 Phase # Clipped Directly to surface or on Cable Tray
1.0	32/0.20	0.70	2.80	18.10	11	12
1.5	30/0.25	0.70	3.10	12.10	13	16
2.5	50/0.25	0.80	3.80	7.41	18	22
4.0	56/0.30	0.80	4.30	4.95	24	29
6.0	84/0.30	0.80	5.20	3.30	31	27



Test	Function	Specification	Specified Values & Test	Obsd. Values
Critical Oxygen Index	To determine percentage of oxygen required for supporting combustion at room temperature of insulating material.	ASTM-D-2863	Oxygen Index : Minimum 29% Test sample 7 to 15 cm long by 6.5 ±0.5 mm wide & over 3 ± 0.5 mm thick in a minimum concentration of oxygen and nitrogen mixture will just support candle like burning at room temperature	More than 32
Temp. Index	To determine at what temp. normal oxygen content of 21% in air will support combustion of insulating material.	ATM-D-2863	Temperature Index : minimum 250°C The aforesaid procedure at various temperatures & then extrapolating to 250°C	Around 285°C
Smoke Density	To determine the visibility (light transmission) under fire of insulating material	ASTM-D-2843	Light Transmission : minimum 40% The test sample is exposed to flame at 40 psi pressure for 4 minutes. The light absorption data are plotted on a graph as smoke density (%) versus time.	Around 45%
Acid Gas Generation	To ascertain the amount of hydrochloric acid gas evolved from PVC insulation of wire under fire conditions.	IEC 754 - I	Hydrochloric acid gas released: 20% max. 0.5-1 gram of the material from the wire insulation/sheath is burnt in a ceramic tube inside a tubular furnace at 800°C. The volume of corrosive gases (HCL) present in the combustion products are analyzed chemically	Around 15%
Flammability test on group of cables	To determine flame propagation of wires in installed condition.	IEE-383	In total 20 minutes of burning 8ft wire length samples with flame temp of app 1500°F. The burning of wires should not go to the top.	Satisfactory
Flammability test	1) To determine ignition resistance & flame propagation under specified conditions.	Swedish standard No. SS-424-17	From test sample of 850 mm length. The un-burnt portion shall be more than 300 mm from the top.	Satisfactory
	2) To determine ignition resistance & flame propagation under specified conditions.	IEC- 332-1	In the calculated time duration of burning the wire sample of 600 mm 25 mm length the length of un-burnt portion to be min 50 mm from the top.	Satisfactory
	3) To determine ignition resistance and flame propagation, especially for bunch of wire under specified conditions.	IEC-332-2	From test sample of 3.5 mtrs length effected portion during burning, shall not reach 2.5 mtrs above from the bottom edge of the burner.	Satisfactory

The voltage fluctuation is a very common phenomenon. Due to this, the current in the wire increases abnormally which causes over heating of wire and subsequent damage to wire may occur.

Our Heat Resistant Wires can withstand upto 105°C operating conductor Temperature. Romex HR Wires have 30% more current carrying capacity in comparison to FR wires.

CONSTRUCTION

Conductor : Bare / annealed tinned copper

Insulation : Double Layer insulation HR grade PVC insulation

Size : 0.5 sq mm to 150 sq.mm

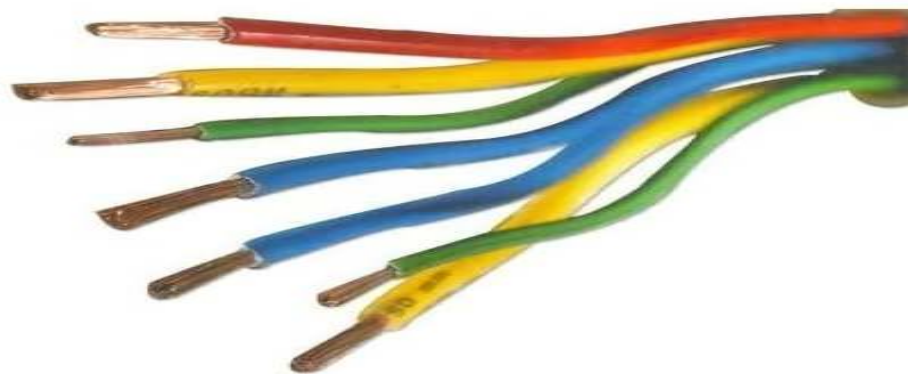
MAIN FEATURES OF ROMEX HEAT RESISTANT (105°C) WIRES :

- ◆ Higher operating temperature.
- ◆ Higher current capacity.
- ◆ Excellent insulation resistance & high di-electric strength.
- ◆ Excellent heat resisting properties.

APPLICATIONS

HR Wires are required when the operating temperature is on higher side.

Cross Sectional Area of Conductor Sq.mm.	No. of Strand / Dia of strand No./(mm)	Insulation Thickness Nominal (mm)	Approx. Overall Diameter (mm)	Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)
0.50	16/0.20	0.60	2.40	39.00	5
0.75	24/0.20	0.60	2.60	26.00	8
1.0	32/0.20	0.60	2.70	18.10	13
1.5	30/0.25	0.60	3.00	12.10	17
2.5	50/0.25	0.70	3.60	7.41	24
4.0	56/0.30	0.80	4.30	4.95	31
6.0	84/0.30	0.80	5.10	3.30	40



To provide one stop shop for all your domestic cable needs, Rajtex is manufacturing service wire and cables specifically for Indian Homes. Connection cables are used to connect electric circuits with power distribution lines (poles). Romex service cables utilize only aluminium wires drawn and annealed in-house. Use of aluminium lowers the weight and overall cost of cable too.

Romex service cables are available for both single phase and three phase connections. For single-phase electricity connection. Rajtex manufacture twin flat cables with solid aluminium conductors. Being flat in shape, Twin flat cables are not only easier to install but also cost less. For three phase electric connection, Rajtex manufacture 4 core service cable with aluminium conductors.

CONSTRUCTION

Twin Flat

Conductor : Aluminium
Insulation : PVC
Outersheath : PVC
Size : 2.5 Sq.mm to 16 sq.mm
two core flat

Four Core

Conductor : Stranded / Solid /
Shaped Aluminum
Insulation : PVC
InnerSheath : PVC
Armouring (Optional) GIWire/Strips
Outersheath : PVC

APPLICATIONS

Twin Flat

For connecting single phase power supply to electric mains from electricity distribution lines (Poles) or transformers.

Four Core

For connecting three-phase power circuit to electricity distribution line supply.

SALIENT FEATURES

Solid, Stranded and compacted aluminium conductors for better electrical properties and lower cost.

Indigenously developed PVC compound formulated from finest ingredients and produced in house. High thermal stability & insulation resistance makes it suitable for use in Indian environment.

Outer sheath PVC specially formulated for hot indian environment, resistance to sunlight, water and lower thermal expansion.

TWIN FLAT PVC INSULATED CONNECTION WIRES WITH ALUMINIUM CONDUCTOR REF:IS 694/1990 ISI MARKED

Area of the Conductor Sq.mm	Nos./Nominal Dia of Strand (No./mm)	Nominal Thickness of Insulation (mm)	Approx. Overall Dimensions		Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)
			Height (mm)	Width (mm)		
2.5	1/1.78	0.75	5.80	9.30	12.1	18
4.0	1/2.24	0.85	6.60	10.70	7.41	23
6.0	1/2.76	0.85	7.30	12.10	4.61	30
10.0	3.57	1.05	8.80	14.90	3.08	40
16.0	4.51	1.05	10.40	17.70	1.91	51

PVC INSULATED 4 CORE ALUMINIUM CONNECTION WIRES REF: 694/1990 ISI MARKED

Area of Conductor Sq.mm.	Nom. Insulation Thickness (mm)	Nom. Sheath Thickness (mm)	Approx. Overall Diameter (mm)	Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)
2.5	0.70	1.00	10.80	12.10	18
4.0	0.80	1.10	12.20	7.41	23
6.0	0.80	1.20	15.50	4.61	30
10.0	1.00	1.30	17.00	3.08	40
16.0	1.00	1.40	20.00	1.91	51
25.0	1.20	1.60	22.50	1.20	70
35.0	1.20	1.70	25.00	0.868	86
50.0	1.40	1.80	29.00	0.641	105

Romex is one of the most unique & versatile product. An example of our fine workmanship, is our flexible cable for submersible pump motors. Widely accepted & acclaimed, it enjoys the reputation of being the best in industry.

CONSTRUCTION

Conductor : Stranded bare annealed electrolytic grade copper

Insulation : Specially formulated FR PVC

Outer Sheath : Specially formulated PVC

Size : 1.0 to 95.0 Sq mm three core in both flat and round shape (Round submersible cable can be specially asked for.)

Standard : IS 694.

APPLICATION

PVC, insulated multistrand annealed bare copper conductor, three core flat cable.

SALIENT FEATURES

- ◆ Bright annealed electrolytic grade copper having 99.99% purity and maximum conductivity to ensure minimum power losses.
- ◆ Cores are insulated on modern & precision machine using specially formulated PVC compound having very high thermal properties.
- ◆ Indigenous PVC compound provides better ageing properties, higher operating temperature & enhance insulation characteristics.
- ◆ Outersheath for Submersible Cables is designed to fit closely, maintain flexibility, resist water absorption, abrasions, oil, grease and other environmental effects.

Area of the Conductor Sq.mm	Nos./Nominal Dia of Strand (No./mm)	Nominal Thickness of Insulation (mm)	Sheath Thickness Nominal (mm)	Approx. Overall Dimensions		Resistance at 20°C Max. Ohm/km	Current Rating (Amp.)
				Height (mm)	Width (mm)		
1.0	32/0.20	0.6	0.9	10.5	5.0	18.1	11
1.5	30/0.25	0.6	0.9	12.0	5.6	12.1	14
2.5	50/0.25	0.7	1.0	14.0	6.6	7.14	18
4.0	56/0.30	0.8	1.0	16.5	7.4	4.95	26
6.0	84/0.30	1.0	1.1	18.0	8.0	3.30	31
10.0	140/0.30	1.0	1.20	22.5	9.6	1.91	42
16.0	224/0.30	1.0	1.30	26.5	11.0	1.21	57
25.0	354/0.30	1.2	1.50	32.5	13.5	0.780	72
35.0	495/0.30	1.2	1.60	36.0	15.0	0.554	90
50.0	703/0.30	1.4	1.70	45.5	18.3	0.386	115





Rajtex

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