

Finolex

An IS / ISO 9001 Company



ALSO
AVAILABLE
180 MTS (DOUBLE COIL)
&
270 MTS (TRIPLE COIL)
SPECIAL PROJECT
PACKAGING



Finolex Cables

50
years of leadership
Since 1958

FINOLEX – Flame Retardant (FR) PVC Insulated Industrial Cables

THE FINOLEX GROUP

The Finolex Group is one of India's leading industrial groups and has interests spanning over several areas such as power, telecommunications, petrochemicals, agriculture and education. Finolex Cables Limited, an IS/ISO 9001 company, is the flagship company of Finolex Group. The company manufactures a wide range of cables required for construction, automotive, agricultural, communications, industrial and power sectors at its plants in Pimpri (Pune) Urse (Near Pune), Verna (Goa), and Roorkee (Uttarakhand).

FINOLEX – Flame Retardant (FR) PVC Insulated Industrial Cables

To add to the existing range of electrical wires, Finolex introduces 'Finolex' - Flame retardant (FR) PVC insulated industrial cables, which offer added safety.

Each wire is manufactured using 99.97% pure, electrolytic grade, bright annealed bare copper with more than 100% conductivity for conductor. This copper is manufactured at the company's state-of-the-art plant in Goa. Highest purity and conductivity of copper ensures greater saving of electrical energy and thus helps to reduce electricity bills. The conductor is made of multiple strands of finely drawn copper wires thereby offering greater flexibility which makes these wires ideal for conduit wiring.

The wires are insulated with FR (Flame Retardant) PVC compound, specially formulated and manufactured in-house. A special grade PVC resin manufactured by the group company, Finolex Industries Limited, is used to manufacture this compound. This PVC compound has FR properties of high oxygen and temperature index. These properties help in restricting the spread of fire even at very high temperatures. This special compound also offers high insulation resistance and dielectric strength. Insulation is applied over the conductor by the process of dual extrusion using state-of-the-art extrusion lines. The outer skin determines the colour identification while the inner layer is pure insulation which provides extra protection. All wires are subjected to high voltage spark testing to make sure that there are no weak spots in the insulation.

These ISI marked wires meet the requirements of IS 694 : 1990 with latest amendments with improved fire performance for category C-1. This means extra protection against electrical shocks, short circuits and fires. The wires also have FIA/TAC (Fire Insurance/Tariff Advisory Committee) approval.

Buy only from authorised Finolex outlets to be assured of total quality. If doubt arises about the authenticity of the purchase, please write to the company at the address given below. Send a copy of the cash memo, coil number and a metre-length sample of the cable to enable genuineness tests to be carried out in the laboratory.

These wires are manufactured in our state-of-the-art manufacturing plants at Pimpri (Pune), Urse (Near Pune), Verna (Goa) & Roorkee (Uttarakhand).

The brand Finolex, company name and logo, size of wire, voltage grade FR Type, ISI mark, licence no. are printed at regular intervals on the wire to help in easy identification as shown below.



FR PROPERTIES

Test	Test Method Specified	Specification Values
Critical Oxygen Index	IS:10810 Part 58	Oxygen Index Minimum 29 %
Temperature Index	IS:10810 Part 64	Minimum Temperature Index 250°C
Also meet requirements of Flammability Test as per IS 694:90		

FINOLEX - SINGLE CORE, UNSHEATHED WIRES IN VOLTAGE GRADE 1100V.

Nominal area of copper Conductor	Number / Nominal Diameter of strands	Thickness of insulation (Nominal)	Approximate Overall Diameter of wire	Current carrying capacity # 2 wires, single phase		Resistance (Max.) per km. @20°C
				In conduit / Trunking	Unenclosed - clipped directly to a surface or on cable tray	
Sq.mm	mm	mm	mm	Amps	Amps	Ohms
0.75	24/.2**	0.6	2.3	6	7	26.0
1.0	14/.3*	0.7	2.7	11	12	18.10
1.5	22/.3*	0.7	3.1	13	16	12.10
2.5	36/.3*	0.8	3.7	18	22	7.41
4.0	56/.3**	0.8	4.3	24	29	4.95
6.0	84/.3**	0.8	4.8	31	37	3.30

Standard Colours: Black, Red, Blue, Yellow and Green (for earthing). Supplied in 90 metre lengths

As per IS 3961 (Part V) - 1968

BIS licence Nos. CM/L-0382242 & CM/L-7306463

* As per conductor Class 2 of IS 8130 : 1984

** As per conductor Class 5 of IS 8130 : 1984



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Cables Limited

AN IS/ISO 9001 COMPANY

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Finolex gets people together

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Chennai : Tel: 044-28230341, 28269322 Fax: 28265768 | **Chandigarh** : Tel:
0172-5014396, 2637334 | **Coimbatore** : Tel: 0422-2233939 Fax: 2233940
| **Goa** : Tel: 0832-2782003, 2782065 Fax : 2783909 | **Guwahati** : Tel: 0361-
2417628, 2410955 | **Indore** : Tel: 0731-2802646, 4065593 Fax: 4021263 | **Jai-
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2408390 Fax: 2539107 | **Kolkata** : Tel: 033-24192494, 24192495 Fax: 22871051
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: Tel: 020-27475963, 27506200 | **Raipur** : Tel: 0771-2885595 Fax: 2525800
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Sample card available on request



Finolex

An IS / ISO 9001 Company



FLAMEGARD – Flame Retardant Low Smoke Cables



Finolex Cables
50
years of leadership
Since 1958

FLAMEGARD - Flame Retardant Low Smoke & Halogen Electrical Wires

For the first time in India, Finolex brings 'Flamegard' – Flame Retardant Low Smoke and Halogen (FR-LSH) electrical wires. Flamegard is manufactured by using electrolytic grade copper for conductor to ensure superior conductivity. Insulated with FR-LSH Grade PVC compound formulated and manufactured in-house. In case of fire, Flamegard wires has special flame retardant, low smoke emitting and toxic fumes suppressing properties, with improved fire performance for category C-2 as per IS 694 : 1990 with latest amendments.

During fire, ordinary PVC insulated wires give out thick black smoke and toxic fumes of hydrochloric acid gas. This impairs visibility and hampers rescue operations. Flamegard wires, on the contrary, not only emit very little smoke and toxic gases, but also retards the spread of fire. It is thus ideal for concealed and conduit wiring in multi-storied high rise buildings such as hotels, banks, hospitals, factories, commercial and residential complexes, etc. where the density of people is high.

Flamegard wires go through rigorous tests to ensure the highest standards of quality. It is also backed by the Tariff Advisory Committee and Fire Insurance Approval.

For unique identification these wires are provided with an orange stripe, on request.

These wires are manufactured in our state-of-the-art manufacturing plants at Pimpri (Pune), Urse (Near Pune), Verna (Goa) and Roorkee (Uttarakhand).

FLAME RETARDANT v/s FR-LSH ELECTRICAL WIRES

Electrical safety is a function of five characteristics viz. smoke, hazardous gas generation, rate of heat release, flame spread and rate of burning. In case of fire in a closed space, trapped people are unable to find the exit due to emission of thick black smoke and loose consciousness due to the inhalation of toxic fumes before they can be evacuated to safety.

The advantages of low smoke and low acid gas generation are additional and critical features available with Finolex FR-LSH Flamegard wires in comparison with FR (Flame Retardant) wires which do not provide these properties.



IS:694



CM/L-7525273
CM/L-0382242
CM/L-7306463
CM/L-8944096

Flamegard- Single Core, Unsheathed Cables in Voltage grade 1100 v

Nominal area of Conductor Sq. mm.	Number/ Nom. Dia. of Wire mm.	Thickness of Insulation (Nom.) mm.	Approx. Overall Diameter mm.	Current carrying capacity# 2 cables, single phase		Conductor Resistance (Max.) per Km. @20°C Ohms.
				In conduit/ Trunking Amps.	Unenclosed - clipped directly to a surface or on a cable tray Amps.	
1.0	14/.3*	0.7	2.6	11	12	18.10
1.5	22/.3*	0.7	2.9	13	16	12.10
2.5	36/.3*	0.8	3.6	18	22	7.41
4.0	56/.3**	0.8	4.0	24	29	4.95
6.0	84/.3**	0.8	4.7	31	37	3.30

Standard Base Colours: Black, Red, Blue, Yellow and Green (for earthing), provided with orange stripe on request.

Supplied in 180/270 metre lengths

as per IS:396 (Part V) 1968

*As per conductor Class 2 of IS : 8130/1984

**As per conductor Class 5 of IS 8130/1984

THE FLAMEGARD ADVANTAGE

TEST	FUNCTION	TEST METHOD SPECIFICATION	TYPICAL VALUES	
			FLAMEGARD WIRES	ORDINARY PVC INSULATED WIRES
Critical oxygen index	To determine percentage of oxygen required for supporting combustion of insulating material at room temperature	IS 10810 Part 58	More than 29%	23%
Temperature index	To determine at what temperature normal oxygen content of 21% in air will support combustion of insulating material	IS 10810 Part 64	More than 250°C	150°C
Acid gas generation	To ascertain the amount of Hydrochloric acid gas evolved from insulation of wire under fire	IS 10810 Part 59	Less than 20%	45-50%

Also meets requirements of Flammability test as per IS 694:1990

Sample card available on request



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All information given herein is in good faith. Finolex shall not be liable for any damages arising out of incorrect use or interpretation. The Company reserves the right to change any of the above specifications without any prior notice.

Finolex



CAT 5E LAN CABLE



CAT 5E+ LAN CABLE



CAT 6 LAN CABLE



CAT 6+ LAN CABLE

**BANDWIDTH AND SPEED
IN THE ULTIMATE
LAN CABLING SOLUTIONS**



CATEGORY 5 ENHANCED UNSHIELDED TWISTED PAIR (UTP) LAN CABLE

Description : 4 Pair Unshielded Twisted Pair (UTP) Category 5 Enhanced LAN Cable

Part Number : 321105048

Standard Length : 305 Meters (1000 Feet)

Packaging : Tangle free cable pack in laminated corrugated box and UL listing & verification status label

Application :

This Category 5 E, four pair cable is a high-speed, high performance, 100 ohm impedance cable capable of carrying high bit-rate signaling for extended distances in horizontal cabling. Signal amplifiers are not required for a length of 328 feet (100 M). Applications can include Voice, ISDN, ATM 155 Mbps, ATM 622 Mbps 100 Mbps TPDDI, Fast and Giga Ethernet, 100 Mbps TP-PMD, 1000 BASE-T

Physical Specification :

Conductor : 24 AWG
Annealed bare solid copper

Insulation : High Density Polyethylene
Core Colour : Pair 1 : White - Blue
Pair 2 : White - Orange
Pair 3 : White - Green
Pair 4 : White - Brown

Sheath : Fire Retardant PVC Compound (FRPVC)

Approx. Cable OD : 5.5 mm

Sheath Colour : Grey

Operating Environment : Indoor

Flame Rating : 60 deg. C As per UL 1581 CMX



Listed & Verified

Comparative Performance : Advantage Finiolex

Frequency (MHz)	Attenuation Max. dB/100 mtrs. @ 20 deg. C		Return loss (dB) Min		NEXT (dB) Min		PS NEXT (dB) Min		PS ELFEXT (dB) Min		ACR (dB) Min	
1	2.04	1.94	20.00	35.42	65.00	79.56	62.00	76.00	60.80	64.23	63.50	77.98
10	6.47	6.26	25.00	36.18	50.00	62.46	47.00	61.72	40.80	55.55	44.50	56.46
16	8.25	8.01	25.00	35.94	47.00	61.72	44.00	56.79	36.70	52.81	39.80	54.43
20	9.27	8.99	25.00	37.34	46.00	61.38	43.00	58.54	34.70	49.13	37.50	52.46
31.25	11.72	11.38	23.64	36.08	43.00	55.93	40.00	52.79	30.90	47.65	32.30	44.62
62.5	16.99	16.34	21.54	33.89	38.00	49.85	35.00	47.46	24.80	43.84	23.10	34.22
100	21.98	20.69	20.11	31.14	35.00	47.72	32.00	46.48	20.80	41.72	15.50	30.74

■ CAT 5 E Specification

■ Typical Cable Performance

Electrical Performance : (At 100MHz)

Standards : TIA/EIA 568 B.2, UL Listed & verified for CAT 5 E

Impedance : 100 +/- 15 ohm

(NVP) Velocity of Propagation : 65% min @ 100 MHz

Delay Skew : 45 ns /100 mtrs. @ 20 deg. C max.

Propagation Delay : 538 ns / 100 mtrs. @ 100 MHz @ 20 deg. C max.

DC Resistance : 9.38 ohm / 100 mtrs. @ 20 deg. C max.

Mutual Capacitance : 5.60 nf / 100 mtrs. max.

CATEGORY 5E+ UNSHIELDED TWISTED PAIR (UTP) (200 Mhz) LAN CABLE

Description : 4 Pair Unshielded Twisted Pair (UTP) Category 5E+ LAN Cable

Part Number : 321115048

Standard Length : 305 Meters (1000 Feet)

Packaging : Tangle free cable pack in laminated corrugated box and UL listing & verification status label

Application :

This Category 5E+, four pair cable is a high-speed, high performance, 100 ohm impedance cable capable of carrying high bit-rate signaling for extended distances in horizontal cabling. Signal amplifiers are not required for a length of 328 feet (100 M). Applications can include Voice, ISDN, ATM 155 Mbps, ATM 622 Mbps, 100Mbps TPDDI, Fast and Giga Ethernet, and IEEE 802.3/5/12, 100 BASE VG (100 BASE NE), 100 BASE-T Mbps TP-PMD, 1000 Base-T, Higher Headroom, Higher Bandwidth, Higher Speed.

Physical Specification :

Conductor : 24 AWG Annealed bare solid copper
Insulation : High Density Polyethylene

Core Colour : Pair 1 : White - Blue
Pair 2 : White - Orange
Pair 3 : White - Green
Pair 4 : White - Brown

Sheath : Fire Retardant PVC Compound (FRPVC)

Approx. Cable OD : 5.5 mm

Sheath Colour : Blue

Operating Environment : Indoor

Flame Rating : 60 deg. C As per UL 1581 CMX

Electrical Performance : (At 250 MHz)

Standards : TIA/EIA 568 B.2, Extended to 200 MHz

Impedance : 100 +/- 15 ohm

(NVP) Velocity of Propagation : 65% min.

Delay Skew : 45 ns /100 mtrs. @ 20 deg. C max.

Propagation Delay : 537 ns / 100 mtrs. @ 200 MHz @ 20 deg. C max.

DC Resistance : 9.38 ohm / 100 mtrs. @ 20 deg. C max.

Mutual Capacitance : 5.60 nF / 100 mtrs. max.



Listed & Verified

Comparative Performance : Advantage Finiolex

Frequency (MHz)	Attenuation Max. dB/100 M. @20 deg. C		Return loss (dB) Min		NEXT (dB) Min		PS NEXT (dB) Min		ELFEXT (dB) Min		PS ELFEXT (dB) Min		ACR/NEXT (dB) Min	
1.00	2.04	1.92	20.00	44.60	65.31	85.66	62.31	76.60	63.75	73.46	60.75	71.30	63.51	85.17
10.00	6.50	6.19	25.00	43.86	50.31	75.54	47.31	62.39	43.75	58.61	40.75	57.93	44.51	69.36
16.00	8.20	7.89	25.00	38.12	47.25	74.16	44.25	60.59	39.67	57.48	36.67	56.81	40.75	65.86
20.00	9.30	8.85	25.00	37.54	45.80	68.72	42.80	59.92	37.73	52.43	34.73	50.38	37.60	62.52
31.25	11.70	11.17	23.64	36.89	42.89	64.56	39.89	57.73	33.86	48.79	30.86	47.99	32.49	54.43
62.50	17.00	16.08	21.54	35.25	38.38	63.34	35.38	52.87	27.83	45.09	24.83	44.28	26.68	49.26
100.00	22.00	20.67	20.11	40.28	35.31	54.77	32.31	48.49	23.75	43.65	20.75	42.76	18.31	36.62
120.00	24.30	22.81	19.55	33.22	34.10	53.26	31.10	46.62	22.20	42.85	19.20	41.69	12.20	34.82
140.00	26.50	24.81	19.08	31.62	33.10	52.68	30.10	45.78	20.80	42.64	17.80	41.56	9.30	32.30
149.10	27.50	25.67	18.89	35.22	32.70	51.55	29.70	43.15	20.30	42.08	17.30	41.06	8.00	27.86
155.50	28.10	26.27	18.77	33.30	32.40	50.80	29.40	42.98	19.90	41.66	16.90	40.96	7.10	26.52
180.00	30.50	28.47	18.32	32.12	31.50	47.51	28.50	40.68	18.60	39.92	15.60	38.76	4.00	24.56
200.00	32.40	30.17	18.00	31.20	30.80	46.63	27.80	40.08	17.70	39.85	14.70	38.12	1.60	23.77

■ CAT 5 E+ Specification

■ Typical Cable Performance of CAT 5 E+ (200 MHz Giga lan cable)

FINOLEX 25 PAIR CAT-5 LAN CABLES – INDOOR AND AERIAL

The 25 pair Cat-5 LAN cable for indoor application consists of a solid bare annealed copper conductor of 24 AWG (0.5 mm), insulated with High Density Polyethylene compound, colour coded, paired as per colour combinations given in the table. Twenty-five such pairs are twisted together to form a laid up cable, a nylon binder is applied helically. The cable is jacketed with a special FR PVC compound formulated and manufactured in-house which has high Oxygen and Temperature Index. The colour of the jacket is grey. The cable is ideal for use in vertical backbone structured cabling.

In case of aerial cable, a polyester tape is applied round the 25 pairs, along with a poly laminated aluminium tape applied with an overlap. It is then jacketed along with a stranded galvanized steel wire strength member with a black coloured polyethylene compound. The cable construction forms the 'Figure 8' when seen in a cross section. The cable is most suited for outdoor installations.

The above cables are ideal for voice as well as data transmission and are suitable for broadband application. These cables generally conform to TIA/EIA-568 B.2 specification.

Stringent quality control at every stage from raw material through manufacturing upto the finished product guarantees high quality and long life under extreme operating conditions. These are available in wooden reels of 305 mtrs. length.

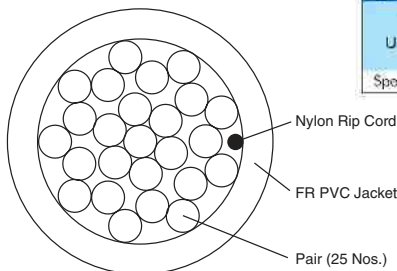
- Salient Features :**
- Low Attenuation
 - Low Crosstalk
 - Low Return Loss

The specified parameters of Cat 5 LAN Cable

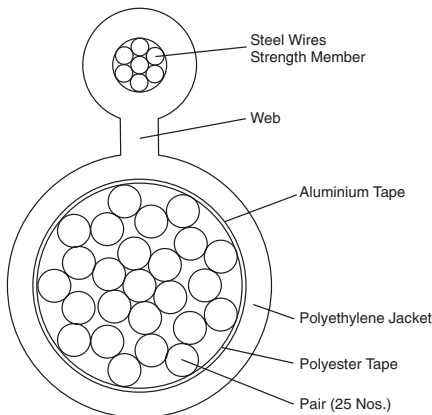
Specified values for HF parameters				
Freq.	SRL (Min.)	Attenuation at 20°C (Max.)	NEXT (Min.)	Avg. Characteristic Impedance
MHz	dB	dB/100m	dB/100m	ohm
0.772	—	1.80	64	100 ± 15
1.00	23.00	2.00	62	
4.00	23.00	4.10	53	
8.00	23.00	5.80	43	
10.00	23.00	6.50	41	
16.00	23.00	8.20	44	
20.00	23.00	9.30	42	
25.00	22.03	10.40	41	
31.25	21.06	11.70	39	
62.50	18.05	17.00	35	
100.00	16.01	22.00	32	

Specified values for LF parameters				
Max. Unit No.	Condu. Resistance Ohm/100m at 20°C	Resistance Unbalance (%)	Mutual Capacitance nF/100m	Capacitance Unbalance pF/100m
Spec. (Max.)	9.38	5.00	5.60	330.00

INDOOR CABLE



AERIAL CABLE



Physical Parameters	Indoor Cable	Aerial Cable ('Figure 8' construction)
	Conductor	24 AWG (0.5mm) solid annealed bare copper
Insulation	High density polyethylene	
Jacket	FR PVC	Polyethylene
Thickness of Jacket Nominal (mm)	1.0	2.0
Messenger Wire	—	7 wires of 1.2mm galvanized steel
Approx. Overall Diameter (mm)	13.75	—
Dimension of Web Nominal (mm)	—	2.5 x 2.5 (height x width)

Colour combination					
Pair No.	Tip	Ring	Pair No.	Tip	Ring
1	Black	Orange	14	Red	Slate
2	Black	Green	15	Black	Blue
3	Black	Brown	16	Violet	Green
4	Black	Slate	17	Violet	Brown
5	White	Blue	18	Violet	Slate
6	White	Orange	19	Violet	Blue
7	White	Green	20	Violet	Orange
8	White	Brown	21	Yellow	Brown
9	White	Slate	22	Yellow	Slate
10	Red	Blue	23	Yellow	Blue
11	Red	Orange	24	Yellow	Orange
12	Red	Green	25	Yellow	Green
13	Red	Brown			

FINOLEX CABLES LIMITED

Finolex Cables Limited, the flagship company of the Finolex Group, today, is India's leading manufacturer of electrical and telecommunication cables. It manufactures a wide range of wires and cables for diverse application areas. The company has, over the years, established its reputation as an innovative leader and quality manufacturer by continuously upgrading technology, modernizing manufacturing facilities and maintaining the highest standards in quality and service.

The company has expanded from its first plant at Pimpri in Pune to a plant at Urse and a new plant at Goa. All the plants are accredited with IS/ISO 9001. In addition the plant at Urse and Goa have been recently awarded IS/ISO 14001 certification.

Finolex Cables takes pride in being the only company in India that is able to offer 'Total Cable Solutions'. The product portfolio includes PVC electrical cables, Flexible cables for industry, cables for the agricultural and automobile sectors and LT Power & Control cables. Its communication cable range includes Jelly Filled Telephone cables, Co-axial Trunk, Branch & Drop cables for Cable Television, Lan cables and Copper and Fiber Components from Leviton of U.S.A. for structured cabling.

The backward integration of the group into manufacturing PVC Resin at Finolex Industries, Ratnagiri and 99.97% electrolytic grade Continuous Cast Copper rods at its plants in Goa puts Finolex Cables in a unique position of having total control on the quality of its products.

The copper and PVC meet the highest standards of purity. This forms the core of every quality cable manufactured by Finolex.

OPTINET STRUCTURED CABLING SYSTEMS

Finolex Cables Ltd. brings you Optinet, a high-quality, end to end cabling solution featuring a complete range of Finolex Cables and Components. Optinet is designed to provide a no-risk cabling system with ample headroom that not only meets but exceeds industry requirements. Optinet seamlessly merges every aspect of your complete cabling system from connectors to cable to wallplates to patch panels and accessories. The Optinet Cabling System is distinguished by quality design and manufacturing. Finolex offers a variety of services that enhance the value of the system, including **consultancy, site evaluation, network planning, training, site audits and a 25-year Performance Warranty**. All combining to make Optinet the finest Structured Cabling System available in India.



OptiNet
STRUCTURED CABLING SYSTEMS
Connections you can rely on

Finolex

RG6 CCS



For DTH & Drop Cable Applications

Co-Axial Copper Clad Cables



An IS/ISO 9001 Company

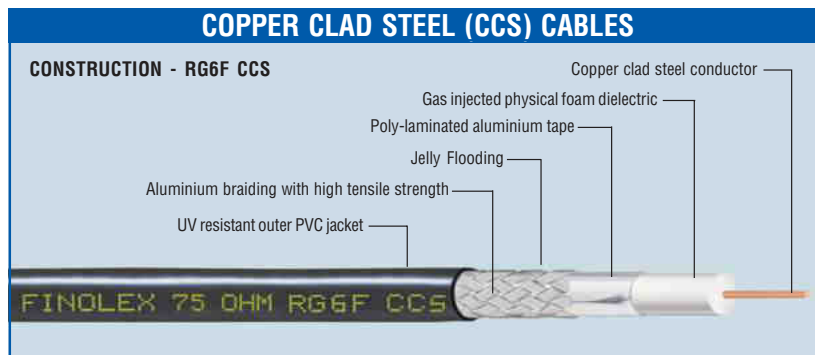
GAS INJECTED PHYSICAL FOAM CO-AXIAL CABLES WITH SPECIAL COPPER CLAD STEEL (CCS) CONDUCTOR

Finolex co-axial cables used for DTH and CATV networks are designed for optimum performance and value for money. The arithmetic is very simple. The cables offer higher bandwidth, so your customers can receive the maximum number of channels with a high level of picture and sound quality. These cables are uniquely designed for specialised applications. This translates to more happy customers, larger cable TV networks and more profits for the cable operators. The cable is with central conductor of Copper Clad Steel (CCS) which offers high mechanical strength and hence can support longer span without stretching. The cable withstands all mechanical abuses during operations. Due to the principle of skin effect, the copper cladding over steel conductor carries signal without any loss of signal quality.

WORLD-CLASS DESIGN & TECHNOLOGY

- Nitrogen gas injected physical foam dielectric manufactured by using imported polyethylene. The gas injected foam is far superior to the chemical foam.
- Stringent raw material, in-process and final testing ensures consistent quality which guarantees reliable and long-lasting performance.
- UV and abrasion resistant outer jacket is of a special grade PVC compound in black colour that is formulated in-house using PVC resin manufactured by Group company - Finolex Industries, Ratnagiri.
- Cable is sequentially marked along the length at every metre.
- Each length of the cable is 100% tested on an imported Hewlett Packard high frequency computerised Network Analyser, for Attenuation, Impedance, and Structural Return Loss (SRL) up to 1 GHz.
- Complete manufacturing of cable is done in-house on ultra-modern imported machinery.

PARAMETERS		RG6F CCS
A. CONSTRUCTION		
1	Inner Conductor	Copper Clad Steel
2	Nominal Diameter (mm)	1.02
3	Dielectric	Foam PE
4	Nominal Diameter (mm)	4.57
Outer Conductor		
5	First	Bonded Al Tape
6	Second	Al Braid
7	Nominal Coverage (%)	60
8	Flooding Compound	Jelly
9	Jacket	PVC (Black)
10	Nominal Diameter (mm)	7.0
11	Bending radius, Minimum (mm)	65
B. ELECTRICAL		
1	Nominal Capacitance (pf/mtr.)	53
2	Nominal Impedance (Ohm)	75
3	Nominal Velocity Ratio (%)	85
C. ATTENUATION (@ 20°C)		
FREQUENCY MHz		dB/100m Max.
55		5.20
211		9.50
400		13.30
600		16.45
750		18.35
865		19.95
1000		21.45



Finolex



Jelly Filled Telecommunication Cables



An IS / ISO 9001 Company

POLYETHYLENE INSULATED JELLY FILLED TELEPHONE CABLES



Effective communication plays a vital role in the economic growth of any country. Keeping this in mind, FINOLEX is the pioneer Indian company to enter the Telecommunication field by manufacturing polyethylene insulated Jelly Filled Telephone Cables (PIJF), that meet exacting standards of the Indian Telephone Department.

Finolex Cables Ltd., has ultra-modern plants at Urse (near Pune) and Verna (Goa) with sophisticated equipment, to manufacture these cables, which have been supplied to the Department of Telecommunication for over fifteen years. Besides, prestigious Public Sector Undertakings such as MTNL, Defence, Railways, Steel Plants and Fertilizer Units are also on our valued list of satisfied customers.

Over the years, FINOLEX has developed the facilities to manufacture and test Jelly Filled Telephone Cables conforming to international specifications and standards of U.S. (Bell and REA), Singapore, U.A.E., Saudi Arabia, Iran, Cyprus, Nepal, Sri Lanka, Russia, Nigeria, Sudan, etc.

CABLE CONSTRUCTION

Conductor :

Each conductor consists of a round wire of annealed high conductivity copper, smoothly drawn with uniform diameter and resistance.

Insulation :

Each conductor is insulated with either solid medium/high density polyethylene or Foam Skin polyethylene insulation. The conductor is insulated uniformly in various colours with extremely tight tolerances to help the cable meet the electrical and transmission requirements of specification.

Pairs :

Individual insulated conductors are twisted together with a uniform lay to form a pair. The length of the lay of each pair is different from that of the adjacent pair to enable the cable to meet the capacitance unbalance and cross talk requirements of the specifications. The pairs have specific colour combination for easy identification.

Units :

The twisted pairs are stranded in a single unit of 10, 20 and 25 pairs and wrapped helically with an identification colour binder. For higher pairage cable, a number of units are stranded together to form a super unit. A coloured identification binder is wrapped around the super units for easy identification.

Jelly Filling :

These units or super units are then laid up to form the core of the cable. During this operation a water resistant filling compound is introduced to fully fill the interstices of the laid up core. This filling compound acts as a dielectric between the pairs as well as a moisture barrier. The filling compound is compatible with polyethylene insulation whereby the cable's electrical and physical characteristics are not affected.

Solid polyethylene insulated cables without moisture resistant filling compound as an *Air Core Cable* can also be manufactured.

Core Wrap :

The Jelly Filled laid up cable is then covered with a layer of non-hygroscopic polyester tape to contain the jelly. This also acts as a mechanical protection to the cable core, and as a dielectric.

Aluminium Poly-Laminate Screen :

An aluminium tape coated on both sides with polyethylene is applied longitudinally over the core wrap. This helps in preventing electrical interference induced by other Power Cables laid in parallel. It also acts as a moisture barrier.

Inner Sheath :

A tight-fitting sheath of black virgin polyethylene is then extruded over the Aluminium Polyaminated Screen, which offers protection to the cable.

Bedding And Armouring :

A double polyethylene tape is applied helically over the inner sheath with a suitable overlap. This acts as a bedding for the steel tape. The cable is then helically armoured with double galvanized steel tapes with a suitable overlap. This offers mechanical protection to the cable.

Outer Jacket :

A tight-fitting jacket of specially formulated black virgin polyethylene is extruded over the armoured cable. This acts as a mechanical protection and protection against ultra-violet rays.

Marking :

The company's name, cable size, year of manufacture and the telephone handset emblem is put on the outer jacket for identification. There is also a number marking printed on the cable progressing sequentially at every one meter.

Testing :

Each cable drum is tested on a computer controlled automatic testing Bridge, for the electrical and transmission parameters, before the cable is offered to the customer.

SPECIAL CABLES

Foam Skin Cable

Foam Skin Cable is a technologically upgraded version of Jelly Filled Telephone Cables. These are of two types - Air Core and Filled Type. The conductor is insulated with Foam polyethylene coated by dual extrusion, providing a protective layer of solid colour skin insulation.

As a result, there is considerable saving in raw material, and the cable size is reduced. Since the wire diameter is smaller, the overall diameter of the cable is proportionately smaller, thereby enabling larger of pairs/cables to be accommodated in smaller ducts. The electrical parameters, however, remain the same.

FINOLEX is the first company in India to manufacture and obtain type approval for these cables, for the Mahanagar Telephone Nigam Ltd. (MTNL).

Quad Cable

In this type, four wires are twisted to form two pairs and two circuits. The diameter of a single wire is reduced in this configuration, but the electrical parameters remain unchanged. This cable is basically used for Trunk/Carrier communication.

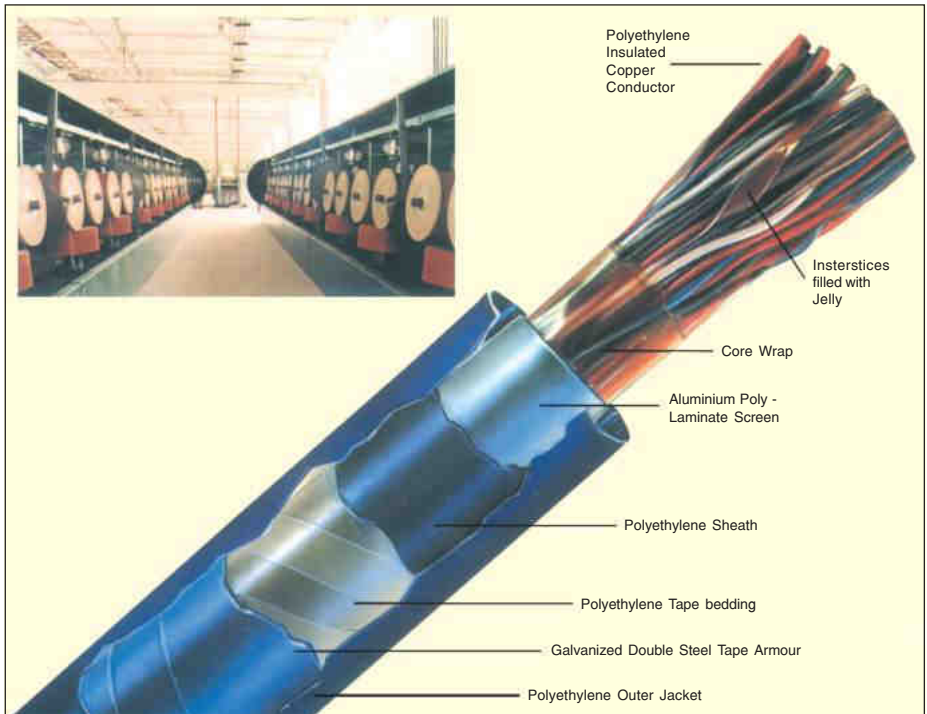
PCM (Pulse Code Modular) Cable

This cable is a high frequency cable, divided in two compartments, one to carry the signal and the second to bring back the signal. It withstands more circuits on the same pair.

Constructionally it consists of 4 mil polyolefin coated flat aluminium screen which divides the cable core in two compartments. The integral screen/shield is formed in a manner such that it shields the compartment and isolates each compartment. Additionally, one more aluminium shield is applied over the cable core to prevent electrical interference from outside sources. The cable design satisfies the original requirements of two cables under one sheath for Pulse Code Modular carrier application.

Cables are generally manufactured for 24 channel in 772 KHz transmission and 48 channel of 1,576 KHz transmission.

Further details about various other combinations of cable constructions are available on specific request.



ELECTRICAL CHARACTERISTICS

TEST PARAMETERS	VALUES AS PER INDIAN DOT				TEST PARAMETERS	VALUES AS PER INDIAN DOT			
FOR SOLID PIJF CABLES					FOR FOAM SKIN PIJF CABLES				
1) Conductor diameter (Nom) mm	0.40	0.50	0.63	0.90	1) Conductor diameter (Nom) mm	0.40	0.50	0.63	0.90
2) Conductor Resistance for Cable Ω /Km at 20°C	135 \pm 8	86 \pm 6	58 \pm 4	28 \pm 2	2) Conductor Resistance for Cable Ω /Km at 20°C	135 \pm 8	86 \pm 6	58 \pm 4	28 \pm 2
3) Resistance Unbalance					3) Resistance Unbalance				
Ind. max. %	3.0	2.5	2.0	2.0	Ind. max. %	3.0	2.5	2.0	2.0
Avg. max. %	1.5	1.0	1.0	1.0	Avg. max. %	1.5	1.0	1.0	1.0
4) Mutual Capacitance at 800/1000 Hz					4) Mutual Capacitance at 800/1000 Hz				
Ind. max. nF/Km	_____ 52 \pm 4.5 _____				Ind. max. nF/Km	_____ 52 \pm 4.5 _____			
Avg. max. nF/Km	_____ 52 \pm 3.0 _____				Avg. max. nF/Km	_____ 52 \pm 3.0 _____			
5) Insulation Resistance M Ω /Km min.	_____ 5000 _____								
6) Capacitance Unbalance at 800/1000 Hz					FOR PCM CABLES				
a) Pair to Pair	Ind. max. pF/Km	_____ 200 _____			1) Conductor diameter (Nom) mm	0.63			
	Avg. max. pF/Km	_____ 50 _____			2) Conductor Resistance for Cable Ω /Km at 20°C	58 \pm 4			
b) Pair to Ground	Ind. max. pF/Km	_____ 3000 _____			3) Resistance Unbalance				
	Avg. max. pF/Km	_____ 750 _____			Ind. max. %	2.0			
7) Attenuation @ 150 KHz Avg max. dB/Km	12.0	8.25	6.3	4.4	Avg. max. %	1.0			
Cross Talk at 150 KHz					4) Mutual Capacitance at 800/1000 Hz				
i) NEXT	min. dB	_____ 55 _____			Ind. max. nF/Km	52 \pm 4			
ii) ELFEXT	Ind. min. dB/Km	_____ 55 _____			Avg. max. nF/Km	52 \pm 2			
	RMS min. dB/Km	_____ 67.8 _____							

● Cable conforms to respective DOT specifications

MANUFACTURING CAPABILITY TO INTERNATIONAL SPECIFICATIONS

Some of the overseas telecommunication authorities whose telephone cable specifications we can match are as follows :

Organisation	Country
Bahrain Telecommunications Company (BATELCO)	Bahrain
Telecommunications Authority	Cyprus
Telecommunications Company of Tehran (TCT)	Iran
Iraq Telecommunications Post (ITP)	Iraq
Telekom Malaysia	Malaysia
Nepal Telecommunications Corporation (NTC)	Nepal
Nigerian Telecommunications Ltd. (NTL)	Nigeria
Oman Telecommunicatons (Omantel)	Oman
Pakistan Telegraph & Telephones (PTT)	Pakistan
Qatar Telecommunications (Q-Tel)	Qatar
SOVBUNKER	Russia
Saudi Telecom Company (STC)	Saudi Arabia
Singapore Telecom	Singapore
Department of Telecommunications	Sri Lanka
Sudan Telecom Co. (Sudatel)	Sudan
Public Telecommunications Establishment (PTE)	Syria
The Emirates Telecommunications Corporation Ltd. (ETISALAT)	U.A.E.
Public Telecommunications Company (PTC)	Yemen

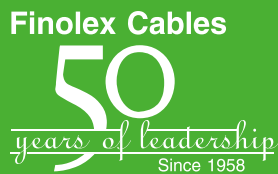
Finolex

An IS / ISO 9001 Company



Also available in PVC insulation

3 Core Flat XLPE Cables



THE FINOLEX GROUP

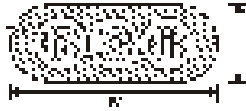
The Finolex Group is one of India's Leading industrial groups and has interests spanning over several areas such as power, communications, petrochemicals and agriculture. The group has its own manufacturing units for vital raw materials. Electrolytic grade copper rods are manufactured at Copper Rod Division of Finolex Cables Limited, Goa and PVC resin at Finolex Industries Limited, Ratnagiri.

Finolex Cable Limited, an IS/ISO 9001 company, is the flagship company of the Finolex Group. As India's leading manufacturer of electrical and communications cables, it also offers a wide range of products for construction, automotive, agriculture, communication, industries and power sectors. Finolex has four manufacturing facilities viz. at Pmpri (Pune), Urse (near Pune), Verna (Goa), and at Rourkee (Uttaranchal). The High Voltage Power Cables are manufactured at Urse. In an endeavor to provide total electrical solution, the product range of Finolex Cables Limited now includes various types of electrical cables with Copper or Aluminum Conductor, Communication cables (LAN, Co-axial, Optic Fibre), EC grade Copper rod, PVC Sheets, Compact Fluorescent Lamps (CFL) and a wide range of Electrical Switches.

3 CORE FLAT CABLES WITH COPPER CONDUCTOR XLPE INSULATION AND HR PVC SHEATH

Technical Data

Copper Conductor -
XLPE insulation of cores (Red, Yellow, Blue)
HRPVC Sheath (Black)



- **Conductor:** Flexible annealed electrolytic grade bare copper
- **Insulation:** Cross linked Polyethylene (XLPE)
- **Sheath:** Heat Resistant PVC Type ST2 (as per IS 5831 1984)
- **Voltage Grade:** Upto and including 1100V AC 50Hz 3Ph
- **Temperature:** Max conductor temperature of 90°C
- **Specification:** Generally as per IS 7098 (Part 1) 1988

Sr. No.	PARAMETER	Size (Sq. mm)							
		2.5	4.0	6.0	10.0	16.0	25.0	35.0	
1	Conductor construction (No./mm)	36/0.3	56/0.3	84/0.3	140/0.3	226/0.3	354/0.3	495/0.3	
2	Conductor Resistance at 20°C (Ω/km) Max.	7.41	4.95	3.3	1.91	1.21	0.780	0.554	
3	Insulation Thickness(mm)	Nom.	0.7	0.70	0.70	0.70	0.90	0.90	
4	Sheath Thickness(mm)	Nom.	1.0	1.0	1.1	1.2	1.3	1.6	
5	Overall Dimensions (mm) Approx.	Width (W)	12.7	14.9	16.9	20.3	23.8	29.6	33.6
		Height (H)	6.0	6.6	7.4	9.1	10.4	12.9	14.4

The number of wires and its diameter in the conductor will be such as to satisfy requirement of the conductor resistance as per IS 8130 : 1984.

Current Carrying Capacity (Amps)

Sr. No.	CABLE TYPE	Size (Sq. mm)						
		2.5	4.0	6.0	10.0	16.0	25.0	35.0
1	PVC Insulation	18	26	31	42	57	72	90
2	XLPE Insulation	30	37	46	66	85	113	139

Ambient Temperature (Deg.C)	25	30	35	40	45	50
Factor	1.18	1.12	1.06	1.00	0.94	0.88

Finolex make three core flat cables are best suited for submersible application and manufactured with conductor using annealed bare copper wires of electrolytic grade, bunched properly to ensure desired flexibility. The conductor is further insulated with thermoset type Cross Linked Polyethylene (XLPE) insulation with uniform thickness with each of the core colours in red, yellow and blue by using most modern machinery and extrusion techniques. The sheath with uniform thickness of Heat and Moisture Resistant type PVC (Grade ST2) compound formulated and manufactured inhouse, is extruded over these coloured cores in a flat formation. The colour of the sheath is black. The cables undergo stringent quality checks during raw materials, in process and final testing as per the laid down specification and the quality norms. The cables are available progressive sequential marking, company name, size & voltage printed on sheath. Following are the advantages offered by XLPE insulated cable over the PVC insulated cables:

- **Higher current rating:** It can withstand continuous conductor temperature of 90 °C as against 70 °C for PVC. This means higher current carrying capacity and hence it is possible to use one size lower than that of PVC for the same current. These cables can withstand extreme voltage fluctuations
- **Higher overload capacity:** It can withstand up to 130 °C during emergency overloading as against 120 °C for PVC. Hence, in case of emergency it can sustain for longer period of time compared to PVC
- **Higher short circuit rating:** It can withstand up to 250 °C under short circuit condition as against 160 °C for PVC
- **Lighter in weight and smaller bending radius:** It has lower density than PVC which makes them lighter in weight and hence the bending radius is smaller than that of PVC
- **Lower Di-electric constant and power factor:** It results in saving in power losses which means saving in costs.
- **Better impact, abrasion, corrosion resistance:** It is safer than PVC cables against mechanical damage, abrasion & corrosion
- **Easier jointing and termination:** It requires no special skills or equipment for jointing and termination
- **Application:** These cables enjoy longer and trouble free life and are ideally suitable for giving the power connection in submersible pump motors used mainly for Agriculture purpose.

Sample card available on request



Finolex
Cables Limited
AN IS/ISO 9001 COMPANY

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Finolex gets people together

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All information given herein is in good faith. Finolex shall not be liable for any damages arising out of incorrect use or interpretation. The Company reserves the right to change any of the above specifications without any prior notice.

Finolex

MORE THAN
100%
CONDUCTIVITY



An IS / ISO 9001 Company

Single and Multicore Flexible Cables

PVC compound insulated single core and multi core flexible cables have a wide range of application in machine tools, appliances, control panels, machinery and industries of every nature.


The conductors, drawn from 99.97% bright electrolytic grade copper with more than 100% conductivity, are annealed and bunched together. The conductors are insulated with a PVC compound with high insulation resistance and dielectric strength, formulated and manufactured in-house.

In case of multicore cables, the insulated cores are laid up to form the core assembly. The inner cores are coded for ease of identification as per National/International coding practices. The sheathing is provided with a specially formulated PVC compound to facilitate not only ease in stripping but also to withstand mechanical abrasion while in use. These PVC compounds used for insulation and sheathing have a high oxygen and temperature index. These properties help in restricting the spread of fire even at very high temperatures.

The single core and multicore sheathed cables are manufactured as per IS 694 : 1990, in sizes from 0.5 sq. mm. to 50 sq. mm. in single core, and in sizes 0.5 sq.mm. to 4.0 sq. mm. upto 5 cores. These sizes carry the prestigious ISI mark and are duly approved by FIA/TAC. The rest of the sizes generally conform to IS 694 : 1990.

Cables as per BS 6004 and BS 6500 are also available for the export market. Special purpose cables in screened construction can also be made available.

**TABLE 1 : SINGLE CORE / MULTICORE FLEXIBLE CABLES AS PER IS 694 : 1990
VOLTAGE GRADE UPTO 1100 VOLTS**

AREA Sq.mm.			0.5	0.75	1.0	1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0	50.0
CONDUCTOR	NO. & SIZE OF WIRE (Nom.)	No./mm	16/2	24/2	32/2	30/25 OR 48/2	50/25 OR 80/2	56/3	84/0.3	80/4 OR 140/3	126/4	196/4	276/4	396/4
	RESISTANCE (MAX.) @ 20°C	Ohms/km	39.0	26.0	19.5	13.3	7.98	4.95	3.30	1.91	1.21	0.780	0.554	0.386
	CURRENT RATING DC or AC	Amps	4	7	12	15	20	27	35	46	62	80	102	138
INSULATION	THICKNESS (Nom.)	mm	0.6	0.6	0.6	0.6	0.7	0.8	0.8	1.0	1.0	1.2	1.2	1.4
SINGLE CORE UNSHEATHED	OVERALL DIAMETER (Approx.)	mm	2.00	2.30	2.45	2.75	3.50	4.10	4.75	6.30	7.25	8.80	10.35	12.25
SINGLE CORE SHEATHED	SHEATH THICKNESS (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	OVERALL DIAMETER (Approx.)	mm	4.00	4.25	4.50	4.80	5.45	6.30						
TWIN FLAT SHEATHED	OVERALL WIDTH (Approx.)	mm	6.2	6.7	-	-	-	-						
	OVERALL HEIGHT (Approx.)	mm	4.0	4.25	-	-	-	-						
2 CORE	SHEATH THICKNESS (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	OVERALL DIAMETER (Approx.)	mm	6.1	6.7	7.0	7.6	9.1	10.5						
3 CORE	SHEATH THICKNESS (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	OVERALL DIAMETER (Approx.)	mm	6.4	7.1	7.4	8.0	9.6	11.4						
4 CORE	SHEATH THICKNESS (Nom.)	mm	0.9	0.9	0.9	1.0	1.0	1.0						
	OVERALL DIAMETER (Approx.)	mm	6.9	7.7	8.1	9.2	10.7	12.4						
5 CORE	SHEATH THICKNESS (Nom.)	mm	0.9	0.9	1.0	1.0	1.0	1.1						
	OVERALL DIAMETER (Approx.)	mm	7.5	8.3	9.1	9.9	11.7	13.8						

Note : The conductor construction given above is indicative only and will be such that all requirements of strand diameter and conductor resistance as per IS 694 and IS 8130 are met.

**TABLE 2 : SINGLE CORE FLEXIBLE CABLES GENERALLY CONFORMING TO IS 694 : 1990
VOLTAGE GRADE UPTO 1100 VOLTS**

AREA sq.mm.			70.0	95.0	120.0	150.0	185.0	240.0
CONDUCTOR	NO. & SIZE OF WIRE	No./mm	360/.5	475/.5	608/.5	750/.5	925/.5	1221/.5
	MAX RES. @20°C	Ohms/km	0.272	0.206	0.161	0.129	0.106	0.0801
	CURRENT DC/AC	Amps	214	260	305	355	415	500
INSULATION	THICKNESS (Nom.)	mm	1.4	1.6	1.6	1.8	2.0	2.2
	O.D. (Approx.)	mm	13.9	15.9	17.8	19.8	22.0	26.0

TABLE 3 : FLEXIBLE MULTICORE CABLES (6 CORES TO 19 CORES) GENERALLY CONFORMING TO IS 694 : 1990, VOLTAGE GRADE UPTO 1100 VOLTS

CORES	AREA sq.mm	0.5	0.75	1.0	1.5	2.5	4.0
6	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	0.9 8.1	1.0 9.4	1.0 9.8	1.0 10.7	1.1 12.9	1.2 16.0
7	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	0.9 8.1	1.0 9.4	1.0 9.8	1.0 10.7	1.1 12.9	1.2 16.0
8	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.0 9.4	1.0 10.4	1.0 10.9	1.1 12.2	1.2 14.6	1.3 17.0
10	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.0 10.5	1.1 11.9	1.1 12.5	1.1 13.7	1.3 16.7	1.4 19.5
12	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.0 10.8	1.1 12.3	1.1 12.9	1.1 14.1	1.3 17.3	1.4 20.5
14	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.1 11.5	1.1 12.8	1.1 13.5	1.2 15.0	1.3 18.1	1.4 22.5
16	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.1 12.1	1.2 13.7	1.2 14.4	1.2 15.8	1.4 19.3	1.5 24.0
19	SHEATH THICKNESS (Nom.) mm OVERALL DIAMETER (Approx.) mm	1.1 12.7	1.2 14.4	1.3 15.1	1.3 16.8	1.4 20.3	1.5 25.5

TABLE 4 : THREE & FOUR CORE FLEXIBLE CABLES FOR VOLTAGE GRADE UPTO 1100 VOLTS

		AREA sq.mm.	6.0	10.0	16.0	25.0	35.0	50.0	70.0	95.0	120.0	
	NO. & SIZE OF WIRE	No./mm	84/3	140/3 OR 80/4	226/3 OR 126/4	354/3 OR 196/4	495/3 OR 276/4	703/3 OR 396/4	360/5	475/5	608/5	
	CONDUCTOR	MAX. RES @20°C	Ohms/Km	3.30	1.91	1.21	0.78	0.554	0.386	0.272	0.206	0.161
		CURRENT	Amps	31	42	57	72	91	120	165	200	225
INSULATION	THICKNESS	mm	0.8	1.0	1.0	1.2	1.2	1.4	1.4	1.6	1.6	
3-CORE	SHEATH THICKNESS (Nom.)	mm	1.3	1.4	1.4	1.5	1.6	2.0	2.2	2.4	2.5	
	O.D. (Approx.)	mm	13.3	16.9	19.1	23.0	26.3	31.7	38.5	45.0	49.0	
4-CORE	SHEATH THICKNESS (Nom.)	mm	1.4	1.4	1.4	1.6	1.7	2.0	2.2	2.4	2.5	
	O.D. (Approx.)	mm	14.7	18.6	21.0	25.5	29.2	33.4	40.0	46.5	51.0	

Finolex PVC insulated single core flexible cables in grey and white colour are ideal for use in cabling for UPS in establishments that have large computer networks. These unique colours can help identify the cabling for UPS wiring in the circuit and are available in sizes 0.5 sq. mm to 6.0 sq.mm. These cables conforming to IS 694 : 1990, carry the prestigious ISI mark and are duly approved by FIA/TAC. **These cables can also be made available with FR or FRLS insulating compound on request.** Technical details as per Table 1.

SPECIAL!
For UPS
Cabling

TABLE 5 : COLOUR CODING

Type	COLOURS	
	Core	Sheath
Single Core Unsheathed	Red; Yellow; Blue; Black; White & Grey	
Single Core Sheathed	Black	Black
Twin Twisted	Red & Black	
Twin Flat Sheathed	Red & Black	Black
2 Core Round Sheathed	Red & Black	Black
3 Core Round Sheathed	Red; Black & Yellow/Green for earth	Black
4 Core Round Sheathed	Red; Yellow; Blue & Yellow/Green for earth	Black
5 Core Round Sheathed	Red; Yellow; Blue; Black & Grey	Black

Note : Any required colour can be provided on specific request.

CABLES FOR OVERSEAS MARKETS

Finolex cables have been used in many countries for over two decades. Cables can be offered to British or equivalent standards. Specifications for a representative single core range are given below :

TABLE 6 : SINGLE CORE UNSHEATHED CABLES AS PER BS 6004

Nominal Cross-Sectional Area of Conductor mm ²	Radial Thickness of Insulation (Nom.) mm	Cables with Rigid (Solid / Stranded) Copper Conductor				Cables with Flexible Copper Conductor			
		Cable Code	Conductor Construction (No./mm)	Conductor Resistance (Max.) at 20 °C ohm/km	Overall Diameter (Max.) mm	Cable Code	Conductor Construction (No./mm)	Conductor Resistance (Max.) at 20 °C ohm/km	Overall Diameter (Max.) mm
0.50	0.6	H05V-U	1/0.80	36.0	2.3	H05V-K	16/0.2	39.0	2.6
0.75	0.6	H05V-U	1/0.97	24.5	2.5	H05V-K	24/0.2	26.0	2.8
1.0	0.6	H05V-U	1/1.13	18.1	2.7	H05V-K	32/0.2	19.5	3.0
1.5	0.7	H07V-R	7/0.53	12.1	3.3	H07V-K	30/0.25	13.3	3.4
2.5	0.8	H07V-R	7/0.67	7.41	4.0	H07V-K	50/0.25	7.98	4.1
4	0.8	H07V-R	7/0.85	4.61	4.6	H07V-K	56/0.3	4.95	4.8
6	0.8	H07V-R	7/1.04	3.08	5.2	H07V-K	84/0.3	3.30	5.3
10	1.0	H07V-R	7/1.35	1.83	6.7	H07V-K	80/0.4	1.91	6.8
16	1.0	H07V-R	7/1.70	1.15	7.8	H07V-K	126/0.4	1.21	8.1
25	1.2	H07V-R	7/2.14	0.727	9.7	H07V-K	196/0.4	0.780	10.2
35	1.2	H07V-R	7/2.52	0.524	10.9	H07V-K	276/0.4	0.554	11.7
50	1.4	H07V-R	19/1.78	0.387	12.8	H07V-K	396/0.4	0.386	13.9
70	1.4	H07V-R	19/2.14	0.268	14.6	H07V-K	360/0.5	0.272	16.0
95	1.6	H07V-R	19/2.52	0.193	17.1	H07V-K	475/0.5	0.206	18.2
120	1.6	H07V-R	37/2.03	0.153	18.8	H07V-K	608/0.5	0.161	20.2
150	1.8	H07V-R	37/2.25	0.124	20.9	H07V-K	750/0.5	0.129	22.5
185	2.0	H07V-R	37/2.52	0.0991	23.3	H07V-K	925/0.5	0.106	24.9
240	2.2	H07V-R	61/2.25	0.0754	26.6	H07V-K	1221/0.5	0.0801	28.4

Note : The conductor construction given above is indicative only, and will be such that all requirements of BS 6360 are met.

- Harmonized code designations are described below :

Cable Code	Type of Conductor	Voltage Grade
H05V-U	Solid	300 / 500 V
H05V-K	Flexible	300 / 500 V
H07V-R	Stranded	450 / 750 V
H07V-K	Flexible	450 / 750 V

- Solid Conductors are as per Class 1, Stranded Conductors are as per Class 2 and Flexible Conductors are as per Class 5 according to BS 6360.
- Cables up to and including 10 mm² can be offered with Solid Conductor also (harmonized code H07V-U).

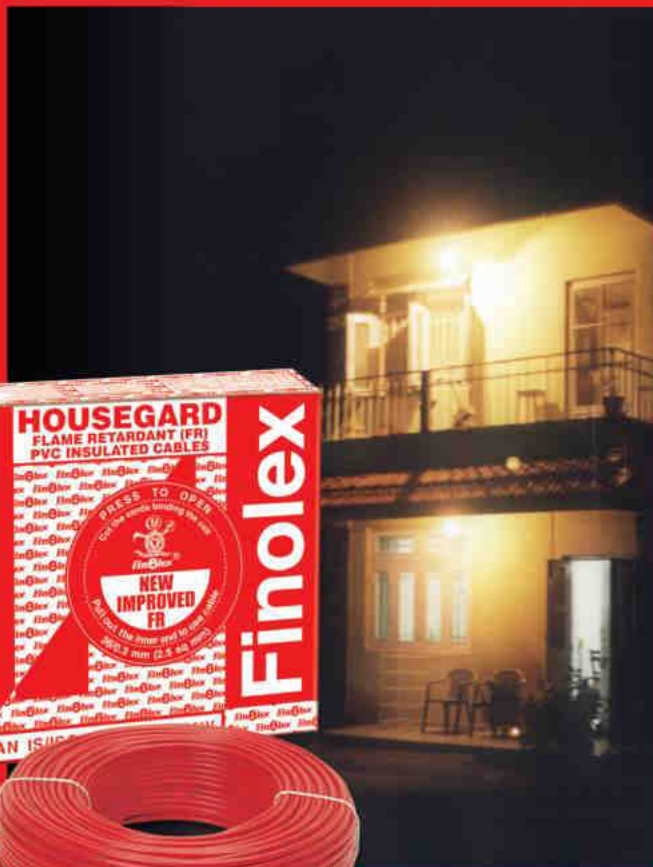
Other types of cables offered to overseas markets include :

- Multicore sheathed cables as per BS 6004 or BS 6500, with stranded (Class 2) or Flexible (Class 5) conductors.
- HR PVC Insulated winding wires for submersible pump motors
- PVC Insulated and sheathed three core flat cables and three core round double sheathed cables for submersible pumps
- HR PVC Insulated single core flexible cables as per BS 6231 Type CK
- PVC Insulated auto and battery cables as per DIN 72551, JIS C 3406, JASO D 611, ISO 6722 and IS 2465.
- PVC Insulated and sheathed power and control cables as per BS 6346 and IEC 60502
- XLPE Insulated and sheathed power cables as per BS 5467 and IEC 60502

All information given herein is in good faith. Finolex shall not be liable for any damages arising out of incorrect use or interpretation. The Company reserves the right to change any of the above specifications without any prior notice.

Finolex

MORE THAN
100
CONDUCTIVITY



An IS / ISO 9001 Company

HOUSEGARD – Flame Retardant PVC Insulated Cables

HOUSEGARD – PVC Insulated Electrical Wires

To add to the existing range of electrical wires, Finolex introduces 'Housegard' - PVC insulated electrical wires, which offer added safety.

Each wire is manufactured using 99.97% pure, electrolytic grade, bright annealed bare copper with more than 100% conductivity. This copper is manufactured at the group company's state-of-the-art plant in Goa. Better purity and conductivity of copper ensures greater saving of electrical energy and thus helps to reduce electricity bills. The conductor is made of multiple strands of finely drawn copper wires thereby offering greater flexibility which makes these wires ideal for conduit wiring.

The wires are insulated with PVC compound, specially formulated and manufactured in-house. A special grade PVC resin manufactured by the group company, Finolex Industries Limited, is used to manufacture this compound. This PVC compound has a high oxygen and temperature index. These properties help in restricting the spread of fire even at very high temperatures. This special compound also offers high insulation resistance and dielectric strength. Insulation is applied over the conductor by the process of dual extrusion using state-of-the-art extrusion lines. The outer skin determines the colour identification while the inner layer is pure insulation which provides extra protection. All wires are subjected to high voltage spark testing to make sure that there are no weak spots in the insulation.

**ALSO AVAILABLE
180 MTS (DOUBLE COIL)
&
270 MTS (TRIPLE COIL)
SPECIAL PROJECT
PACKAGING**

These ISI marked wires meet the requirements of IS 694 : 1990. This means extra protection against electrical shocks, short circuits and fires. The wires also have FIA/TAC (Fire Insurance/Tariff Advisory Committee) approval.

The company name, size of wire, voltage grade and logo are printed at regular intervals on the wire to help in easy identification as shown below.

Buy only from authorised Finolex outlets to be assured of total quality. If doubts arise about the authenticity of the purchase, please write to the company at the address given below. Send a copy of the cash memo and a metre-length sample of the cable to enable genuineness tests to be carried out in the laboratory.

These wires are manufactured in our state-of-the-art manufacturing plants at Pimpri (Pune) and Verna (Goa).



HOUSEGARD – SINGLE CORE, UNSHEATHED WIRES IN VOLTAGE GRADE 1100 V.

Nominal area of copper Conductor Sq.mm	Number / Nominal Diameter of strands mm	Thickness of insulation (Nominal) mm	Approximate Overall Diameter of wire mm	Current carrying capacity # 2 wires, single phase		Resistance (Max.) per km. @20°C Ohms
				In conduit / Trunking Amps	Unenclosed - clipped directly to a surface or on cable tray Amps	
0.75	24/.2**	0.6	2.3	6	7	26.0
1.0	14/.3*	0.7	2.7	11	12	18.10
1.5	22/.3*	0.7	3.1	13	16	12.10
2.5	36/.3*	0.8	3.7	18	22	7.41
4.0	56/.3**	0.8	4.3	24	29	4.95
6.0	84/.3**	0.8	4.8	31	37	3.30

Standard Colours: Black, Red, Blue, Yellow and Green (for earthing). Supplied in 90 metre lengths

As per IS 3961 (Part V) - 1968

BIS licence Nos. CM/L-0382242 & CM/L-7306463

* As per conductor Class 2 of IS 8130 : 1984

** As per conductor Class 5 of IS 8130 : 1984

Finolex

270/180 Metres Special Project Packaging



An IS / ISO 9001 Company

HOUSEGARD – Flame Retardant PVC Insulated Cables

HOUSEGARD – 180 / 270 M SPECIAL PROJECT PACKAGING

Each Housegard wire is manufactured using 99.97% pure, electrolytic grade, bright annealed bare copper with more than 100% conductivity, supplied by the Group Company - Finolex Wire Products Ltd., Verna, Goa. The wire is insulated with a Flame Retardant (FR) PVC compound with a high oxygen and temperature index, specially formulated and manufactured in-house. A special grade PVC Resin manufactured by Finolex Industries Ltd. is used in formulating this compound. These ISI marked wires meet the requirements of IS 694 : 1990 and are approved by FIA /TAC.

ADDITIONAL FR PROPERTIES		
Test	Specification	Specified Values
Critical Oxygen Index	ASTM-D 2863	Oxygen Index Minimum 29%
Temperature Index	ASTM-D 2863 & BICC Hand Book Chapter No. 6	Minimum Temperature Index 250°C
Also meets requirements of Flammability Test as per IEC 60332-1		

The need of the day is new circuitry and additional points to accommodate modern gadgets. Add to this, large scale projects undertaken nowadays. Since the size of constructions is not only larger but also more widespread, there is a surge in the need for electrical wires of longer lengths. Finolex is a major supplier of electrical wires to such big construction projects. Finolex electrical wires enjoy approvals from architects, electrical contractors, consultants and builders, for whom the quality of electrical wires is of utmost importance.

Finolex now introduces two new lengths - 270 metre coils (triple coils for sizes 1.0 , 1.5 and 2.5 sq.mm) and 180 metre coils (double coils for sizes 4.0 and 6.0 sq.mm) to suit the requirement of big housing projects.

Housegard with longer lengths has many advantages.

ECONOMICAL

This longer length is more economical as less leftover pieces are generated from each coil after wiring thereby reducing scrap. The inventory of leftover coil length is also reduced to a great extent.

SAFE

In case of bigger construction projects, longer connections are required. With Housegard, due to the longer length, the number of joints in electrical conduits are reduced, ensuring safe and jointless wiring in electrical installations.

Hence additional safety in wiring is ensured.

STORAGE SPACE SAVING

Since each coil is of longer length and more compact, more wires can be accommodated in the same storage area, thus making optimum use of available storage space.

These longer length coils are manufactured on high precision computerised coiling machine which ensures exact length and compactness. They are further poly-wrapped and packed in specially designed sturdy master cartons.



HOUSEGARD – SINGLE CORE, UNSHEATHED WIRES IN VOLTAGE GRADE 1100 V.

Nominal area of copper Conductor Sq.mm	Number / Nominal Diameter of strands mm	Thickness of insulation (Nominal) mm	Approximate Overall Diameter of wire mm	Current carrying capacity # 2 wires, single phase		Resistance (Max.) per km. @20°C Ohms
				In conduit / Trunking Amps	Unenclosed - clipped directly to a surface or on cable tray Amps	
1.0	14/.3*	0.7	2.7	11	12	18.10
1.5	22/.3*	0.7	3.1	13	16	12.10
2.5	36/.3*	0.8	3.7	18	22	7.41
4.0	56/.3**	0.8	4.3	24	29	4.95
6.0	84/.3**	0.8	4.8	31	37	3.30

Standard Colours: Black, Red, Blue, Yellow and Green (for earthing). Supplied in 180/270 metre lengths

As per IS 3961 (Part V) - 1968

BIS licence Nos. CM/L-0382242 & CM/L-7306463

* As per conductor Class 2 of IS 8130 : 1984

** As per conductor Class 5 of IS 8130 : 1984