



IS: 694 	IS: 17048 	IS: 1554 	IS: 7098
CM/L : 6070354	CM/L : 6500061806	CM/L : 6500063810	CM/L : 6500071312

An IS / ISO 9001 : 2015 Company

Make Life Safe with

POWER FLEX[®]

YEARS OF EXCELLENCE

30

1993 ~ 2023

■ CPRI | ERDA | ETDC | RTC | CETL | SiTARC | NTH | SGS | RTRC

POWER FLEX[®]

Wires & Cables



An IS / ISO 9001 : 2015 Company



Kamadhenu Wires established in 1992, is a leading manufacturer of wide variety of wires and cables under the brand name POWER-FLEX®. From the inception it has earned itself the reputation as a manufacturer of high quality wires and cables. The company takes pride in its ability to go the extra mile for a customer no matter how big or small the business may be. This has been possible due to the high level of commitment and dedication shown by its professional and skilled staff coupled with the foresight and vision of its promoters.

Electrical wire and cables are the backbone of any electrical network. Rapid improvements in technology related to production of wires and cables have led to marked improvements in production outputs as well as improvement in quality of products. Kamadhenu Wires has successfully integrated the advances in technology to manufacture products which have become synonymous with high quality and earned itself the reputation of a trusted and reliable business partner.

POWER-FLEX® wires and cables are manufactured at its state of the art manufacturing facility located in the industrial city of Coimbatore, India. The systems at the manufacturing facility are certified for ISO-9001:2015 and the products manufactured meet the relevant National and International Specifications. POWER-FLEX® has been tested and certified by leading electrical testing laboratories all over the country.

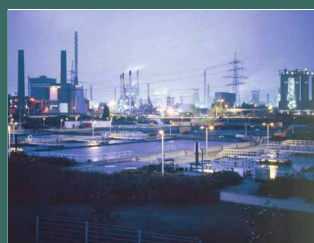
It is testimony to the quality and service standards built into POWER-FLEX® that it is the preferred supplier to a large number of OEM's in different sectors and is approved by leading industries, project consultants, electrical consultants and architects.

Product Range

- Building Wiring Cables
- Single Core Power Cables
- Multi Core Control Cables
- FR PVC Wires & Cables
- FR-LSH PVC Wires & Cables
- HR PVC Wires & Cables
- HFFR Wires & Cables
- Armoured Cables
- Submersible Pump Flat Cables
- Automobile Cables
- Telephone Cables
- Shielded Cables
- Braided Cables
- Co-Axial Cables
- Computer Networking UTP Cables
- Fire Survival Cables
- Fire Alarm Cables
- ROHS Wires & Cables
- Polywrap Winding Wires
- Copper Rounds & Profiles



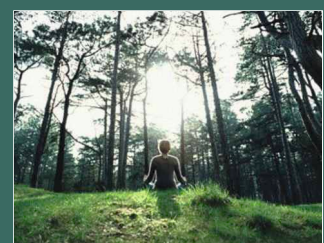
... home to work place



... an answer for every need



... protecting you always



... peace of mind

Power-Flex® Flame-Retardant (FR) PVC Insulated Cables

Conductor

POWER-FLEX® Building wiring cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated FR PVC compound with high oxygen index and temperature index which helps in restricting propagation of flame. The compound confirms to IS:5831 Type A.

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.



Nominal Cross Sectional Area of Conductor	Nominal No./ Dia of Wires	Maximum Overall Diameter	Resistance (Max.) / km. @ 20° c	Current Carrying Capacity#	
				2 Cables, Single Phase	
Sq.mm	No./mm	mm	Ohms	In Conduit/ Trunking Amps	Clipped Direct to Surface or on Cable Tray Bunched & Unenclosed. Amps
1.00	32/0.20*	3.0	19.5	13	14
1.50	30/0.25*	3.4	13.3	16	18
2.50	50/0.25*	4.1	7.98	20	24
4.00	56/0.30*	4.8	4.95	26	30
6.00	84/0.30*	5.3	3.30	33	38

STANDARD COLOURS: Red, Yellow, Blue, Black, Green, Grey & White.

STANDARD LENGTH: 90 Meter Coils in Protective Carton. Project Coils of 180 mtrs. also available.

* As per conductor class 5 of IS : 8130 (latest)

As per IS : 3961 (Part V)

Critical Oxygen Index : ≥ 29%

Temperature Index : ≥ 250°C

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.

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® Flame Retardant Low Smoke Halogen (FR-LSH) PVC Insulated Cables

Conductor

POWER-FLEX® Building wiring cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated FR-LSH PVC compound. The compound is resistant to moisture, oil, alkali and grease and has high insulation Properties and dielectric values. The FR-LSH properties with high Oxygen and temperature index and low acid gas generation help in restricting propagation of flame at high temperatures. The compound confirms to IS:5831 Type A FR-LSH.

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.



Nominal Cross Sectional Area of Conductor	Nominal No./ Dia of Wires	Maximum Overall Diameter	Resistance (Max.) / km. @ 20° c	Current Carrying Capacity#	
				In Conduit/ Trunking	Clipped Direct to Surface or on Cable Tray Bunched & Unenclosed.
Sq.mm	No./mm	mm	Ohms	Amps	Amps
1.00	32/0.20*	3.0	19.5	13	14
1.50	30/0.25*	3.4	13.3	16	18
2.50	50/0.25*	4.1	7.98	20	24
4.00	56/0.30*	4.8	4.95	26	30
6.00	84/0.30*	5.3	3.30	33	38

STANDARD COLOURS: Red, Yellow, Blue, Black, Green, Grey & White, Provided with Orange Tracer line.

STANDARD LENGTH: 90 Meter Coils in Protective Carton. Project Coils of 180 mtrs. also available.

* As per conductor class 5 of IS : 8130 (latest)

As per IS : 3961(Part V)

Critical Oxygen Index : ≥ 29%

Temperature Index : ≥ 250°C

Smoke density (light transmission) : > 40%

Acid gas Generation : < 20%

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.

Power-Flex® Halogen Free Flame Retardant (HFFR) Cable

Conductor

POWER-FLEX® Building wiring cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 5 of IS:8130 (latest)

Insulation

Specially Formulated Halogen Free Flame Retardant (HFFR) compound, (Also called as ZH-FRLS and HFLS) which are composed of polymers on the basis of pure hydrocarbons are used for insulation. The insulation does not burn readily, melt or drip. The use of smoke suppressive chemicals ensures very little smoke is emitted. The absence of chlorine ensures non emission of toxic gases.

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.



Nominal Cross Sectional Area of Conductor	Nominal No./ Dia of Wires	Maximum Overall Diameter	Resistance (Max.) / km. @ 20° c	Current Carrying Capacity#	
				In Conduit/ Trunking	Clipped Direct to Surface or on Cable Tray Bunched & Unenclosed.
Sq.mm	No./mm	mm	Ohms	Amps	Amps
1.00	32/0.20*	3.0	19.5	13	14
1.50	30/0.25*	3.4	13.3	16	18
2.50	50/0.25*	4.1	7.98	20	24
4.00	56/0.30*	4.8	4.95	26	30
6.00	84/0.30*	5.3	3.30	33	38

STANDARD COLOURS: Red, Yellow, Blue, Black, Green, Grey & White.

STANDARD LENGTH: 90 Meter Coils in Protective Carton. Project Coils of 180 mtrs. also available.

* As per conductor class 5 of IS : 8130 (latest)

As per IS : 3961(Part V)

Critical Oxygen Index : ≥ 32%

Temperature Index : ≥ 250°C

Smoke density (light transmission) : > 80%

Acid gas Generation : ≤ 0.5 %

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 : 17048 and IS : 8130 are met.

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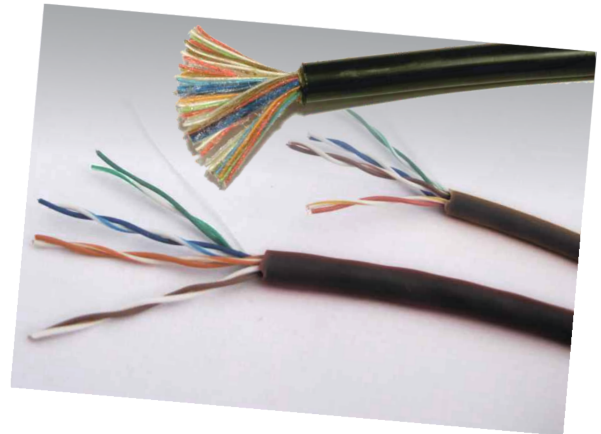
POWER-FLEX®
Wires & Cables

Power-Flex® Telephone and Switch Board Cables

POWER-FLEX® Telephone and Switch Board Cables are widely used for high clarity communication in offices, factories, IT/ITES companies, hotels, hospitals, group housing projects, educational institutions, high rise commercial and residential buildings etc.

POWER-FLEX® Telephone and Switch Board Cables are made of high conductivity electrolytic grade annealed bare copper conductor with nominal diameter of 0.4 mm and 0.5 mm. Special grade PVC as per IS:13176 type 2 is used for insulating with proper colour codes. The insulated cores are twisted together with suitable lay to form a pair. The pairs are bunched together to form pairs in such a way to avoid any cross talk.

The bunched pairs are then overall wrapped with polyester tape and sheathed with grey colour FRPVC compound with high oxygen index and is also provided with nylon rip cord. POWER-FLEX® Telephone and Switch Board Cables are manufactured as per ITD-S/WS 113C & 114C specifications.



Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at twice the rated voltage.

	Conductor dia : 0.4 mm (nom.) Conductor resistance : 143.0 Ω / km (max.) Insulation thickness : 0.17 mm (nom.) Mutual Capacitance : 50 nf / km (max.)		Conductor dia : 0.5 mm (nom.) Conductor resistance : 92.20 Ω / km (max.) Insulation thickness : 0.20 mm (nom.) Mutual Capacitance : 50 nf / km (max.)	
Pair	Sheath Thickness (min.)	O.D (max.)	Sheath Thickness (min.)	O.D (max.)
1	0.6	2.40	0.6	3.10
2	0.6	3.10	0.6	3.90
3	0.6	3.50	0.6	4.20
4	0.6	3.90	0.6	5.10
5	0.6	4.30	0.6	5.60
10	0.6	6.20	0.6	8.20
20	0.7	8.40	0.75	10.50
50	1.0	12.30	1.10	15.20
100	1.4	16.80	1.40	2.40

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

POWER - FLEX®
Wires & Cables

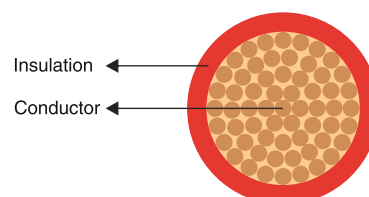
Power-Flex® Single Core Industrial Flexible Cables

Conductor

POWER-FLEX® Single Core Industrial Flexible Cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated compounds. The Single Core Flexible Cables are available with FR/FR-LSH/HR/ HFFR insulations.



Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.

Nominal Cross Sectional Area of Conductor Sq.mm	Nominal No./ Dia of Wires No./mm	Nominal Thickness of Insulation mm	Maximum Overall Diameter mm	Resistance (Max.) / km. @ 20° c Ohms	Current Carrying Capacity@40° c Ambient Amps
0.50	16/0.20	0.6	2.60	39.0	4
0.75	24/0.20	0.6	2.80	26.0	7
1.00	32/0.20	0.6	3.00	19.5	14
1.50	30/0.25	0.6	3.40	13.3	18
2.50	50/0.25	0.7	4.10	7.98	24
4.00	56/0.30	0.8	4.80	4.95	30
6.00	84/0.30	0.8	5.30	3.30	38
10.00	140/0.30	1.0	7.00	1.91	52
16.00	126/0.40	1.0	8.10	1.21	70
25.00	196/0.40	1.2	10.20	0.780	90
35.00	276/0.40	1.2	11.70	0.554	115
50.00	396/0.40	1.4	13.90	0.386	150
70.00	360/0.50	1.4	16.00	0.272	220
95.00	480/0.50	1.6	18.20	0.206	260
120.00	614/0.50	1.8	20.20	0.161	310
150.00	765/0.50	1.8	22.50	0.129	350
185.00	925/0.50	2.0	24.90	0.106	400
240.00	1221/0.50	2.2	28.40	0.0801	480
300.00	1525/0.50	2.4	31.00	0.0641	550
400.00	2035/0.50	2.6	33.20	0.0486	600
500.00	2545/0.50	2.8	37.50	0.0384	660
630.00	3200/0.50	2.8	42.00	0.0287	750

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, IS : 17048 and IS : 8130 are met.

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

POWER-FLEX®
Wires & Cables

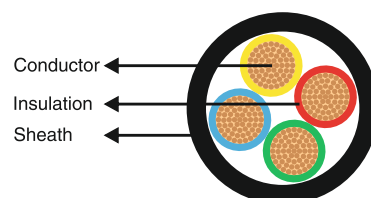
Power-Flex® Multi Core Flexible Cables

Conductor

POWER-FLEX® Multi Core Flexible Cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated FR-PVC compound with high oxygen index and temperature index which helps in restricting propagation of flame. The compound confirms to IS:5831 Type A



Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.

Sheath

In Multi Core Flexible Cables the insulated cores are assembled to form concentric shape. Inner cores are colour coded for easy identification as per National/International colour coding practices. The sheathing is carried out on Highspeed extruders with specially formulated PVC compounds with additional FR properties and they withstand mechanical abrasion in use as well as provide ease of stripping. The FR PVC compounds used for insulation & sheath have high Oxygen & temperature index helping in restricting the spread of flame even at high temp.

Normally the outer sheath for multi core cables will be Black in colour however POWER-FLEX® multi core cables are also available with White/Grey outer sheath as well. These outer sheath colours help in facilitating in cabling for UPS in establishments with large number of computer networks.

POWER-FLEX® manufactures multicore cables in FR-LSH / HFFR combination also.

**POWER - FLEX® PVC insulated and PVC sheathed Industrial copper flexible
2, 3 and 4 core round cable conforming to IS:694 voltage grade upto 1100 volts**

Nominal Cross Sectional Area of Conductor Sq. mm	Nominal No./ Dia of Wires No. / mm	Nominal Thickness of Insulation mm	Nominal Thickness of PVC Sheath mm			Approximate Overall Dia of Cable mm		
			Two Core	Three Core	Four Core	Two Core	Three Core	Four Core
0.50	16/0.20	0.6	0.9	0.9	0.9	6.5	6.9	7.5
0.75	24/0.20	0.6	0.9	0.9	0.9	7.0	7.4	8.0
1.00	32/0.20	0.6	0.9	0.9	0.9	7.3	7.7	8.5
1.50	30/0.25	0.6	0.9	0.9	0.9	7.8	8.4	9.5
2.50	50/0.25	0.7	1.0	1.0	1.0	9.5	10.0	11.0
4.00	56/0.30	0.8	1.0	1.0	1.0	11.0	11.5	13.0
6.00	84/0.30	0.8	1.1	1.1	1.1	12.5	14.0	15.0
10.00	140/0.30	1.0	1.2	1.2	1.3	16.0	17.0	19.0
16.00	126/0.40	1.0	1.2	1.2	1.3	18.6	20.0	21.5
25.00	196/0.40	1.2	1.4	1.5	1.6	23.0	25.0	26.5

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, IS : 17048 and IS : 8130 are met.

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

POWER - FLEX®
Wires & Cables

Power-Flex® Co-Axial Cables for CATV Networks



Conductor

POWER-FLEX® Co-Axial cables are manufactured using Electrolytic Grade 99.97% purity copper which ensures high quality signal transmission.

Insulation

The conductor is insulated with foam PE which acts as a dielectric.

Screen

Aluminium Mylar tape is provided over the insulated conductor to shield the conductor and to ensure disturbance free transmission of signals.

Braid

Generally provided with minimum 60% coverage of ATC (Annealed Tinned Copper) / Al (Alloy).

Sheath

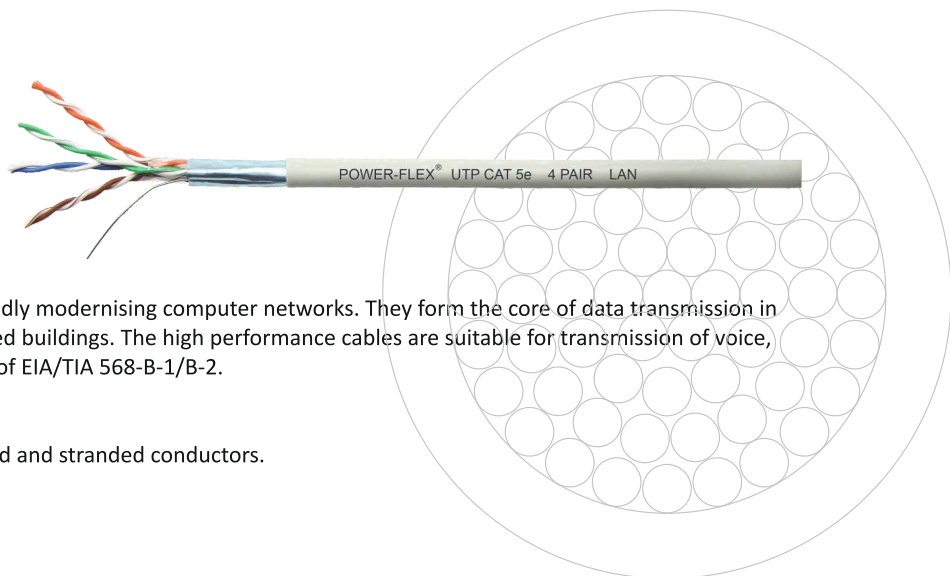
The outer sheath is provided with specially formulated UV & abrasion resistant PVC compound.

Construction Parameters	Cable Type		
	RG 11 F	RG 6 F	RG 59 F
Inner Conductor	ABC	ABC	ABC
Nom. Dia (mm)	1.63	1.02	0.8
Dielectric	Foam PE	Foam PE	Foam PE
Nom. Dia (mm)	7.10	4.50	3.55
Outer Conductor			
First Shield	Al Foil Bonded	Al Foil Bonded	Al Foil Bonded
Second Shield	Tinned Cu/AL Braid	Tinned Cu/AL Braid	Tinned Cu/AL Braid
Nom. Coverage (%)	60	60	60
PVC Jacket	Black	Black	Black
Nom. Dia (mm)	10.30	7.30	6.20

Electrical Parameters	Cable Type		
	RG 11 F	RG 6 F	RG 59 F
Inner Conductor - Max. Resistance (Ω /100m) @ 20° C	0.8	2.1	3.43
Nom. Capacitance (pF/mtr.)	53	53	53
Characteristic Impedance (Ω)	75	75	75
Nom. Velocity Ratio (%)	85	85	85
Minimum Bending Radius (mm)	70	60	60
Maximum Attenuation at 20°C (dB/100m) at	Max.	Max.	Max.
5 MHz	1.2	1.9	2.8
50 MHz	3.2	5.4	6.8
100 MHz	4.3	7.1	9.0
200 MHz	6.1	9.9	12.4
250 MHz	6.7	10.5	13.4
300 MHz	7.38	11.5	14.6
350 MHz	7.9	12.4	15.7
400 MHz	8.5	13.3	16.7
450 MHz	9.0	14.3	17.7
500 MHz	9.5	14.9	18.7
550 MHz	9.9	15.7	19.5
600 MHz	10.4	16.4	20.3
750 MHz	11.9	18.3	22.8
800 MHz	12.4	19.5	24.5
900 MHz	13.0	20.1	24.7
1000 MHz	14.2	21.4	26.6

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® Computer Networking-UTP Cable



POWER-FLEX® CAT 5e / 6 UTP Cables are used in rapidly modernising computer networks. They form the core of data transmission in huge software complexes, industries and multistoried buildings. The high performance cables are suitable for transmission of voice, video and data. The cable meets the requirements of EIA/TIA 568-B-1/B-2.

Conductor

Annealed bare electrolytic grade copper in both solid and stranded conductors.

Insulation

High density Polyethylene.

Pairs

Two insulated conductors are twisted together properly to minimize crosstalk. The four pairs are laid up together with suitable lay length.

Sheath

Outer sheath is provided with FR-PVC having high oxygen index and temperature index.

Colour code

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

Frequency MHz.	Attenuation at (dB/100m at 20°C) Max.		Next Worst Pair Crosstalk (dB) Min.		Structural Return Loss (SRL) dB Min.	
	CAT 5e	CAT 6	CAT 5e	CAT 6	CAT 5e	CAT 6
1.0	2.0	2.0	62.3	77.3	23	20
4.0	4.1	3.8	53.3	61.9	23	23
10.0	6.5	6.0	47.3	62.3	23	25
16.0	8.2	7.8	44.3	55.8	23	25
20.0	9.3	8.5	42.8	51.3	23	25
31.25	11.7	10.7	39.0	47.2	21	23.6
62.50	17.0	15.4	35	43.2	18	21.5
100	22	19.8	32.3	40.4	16	20.1

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® PVC Insulated and Sheathed 3-4 Core Flat Cables Polywrapped Winding Wires and Copper Profiles for Submersible Pump Motors.

Submersible Pump Flat Cables play a very important role in the working of Submersible motors. They work under extreme stress conditions and perform consistently over long periods of time. Even under fluctuating voltage conditions the cable has to perform without major hiccups.

Conductor

POWER-FLEX® Submersible wiring cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The high purity & conductivity ensures superior working of the wires throughout their life. The conductor is drawn from bright electrolytic grade copper and annealed copper are bunched tightly together in heavy duty high speed bunchers in circular construction to get perfect concentric shape without any loose strands.

Insulation

The bunched conductors are insulated with specially formulated PVC compounds. The compound is resistant to moisture, oil, alkali and grease and has high insulation and dielectric values. The insulation is carried out on state-of-the-art high speed double extrusion lines with self centering cross head. Automatic diameter controllers ensures precision centering and perfect concentric insulation. The high quality tooling ensures smooth insulation.

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.

Sheath

The cores are laid down in flat parallel formation and the outer sheath of the cable is extruded from special grade PVC with superior abrasion resistance imperious to water, grease, oil etc.

Polywrapped Winding Wires and Copper Profiles for Submersible Pump Motors.

Winding Wires

Kamadhenu manufactures POWER-FLEX® Polyester and Bi-axially Oriented Polypropylene (BOPP) wrapped copper winding wires. These are used in starter coil winding of borewell and open well submersible motors.



POWER-FLEX® winding wires have the electrolytic grade annealed bare copper conductor wrapped in triple layer with Polyester and BOPP films and heat sealed to ensure perfect concentricity around the conductor for high dielectric qualities with very less leakage current and can with stand operation even at 130° C.

High quality levels are in-built into the wires at every stage of manufacture and the finished product meets the BIS standard IS:8783 (Part 4/Section 3)

Copper Profiles

Kamadhenu manufactures Copper Profiles as per customer requirements and is the preferred supplier to leading submersible motor manufacturers

Selection Guide for Three Core Submersible Flat Cables

HP vs Current : The full load current for submersible pump motors, 3 phase, 50 cycles, 415 - 425 V.

HP	5.0	7.5	10.0	12.5	15.5	17.5	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0
Amp	7.5	11.0	14.9	18.9	22.5	25.2	28.4	35.6	42.3	50.4	58.1	62.1	67.5	73.8	81.0	87.3	93.6	100.8	108.0



Nominal Cross Sectional Area of Conductor Sq. mm	No. of Cores		Current Carrying Capacity@ 40° C Amps	Nominal Thickness of Insulation mm	Maximum Overall Dimensions mm
	No.				
1.5	3		14	0.6	5.8 X 12.5
2.5	3		19	0.7	6.3 X 14.4
4.0	3		26	0.8	7.4 X 17.2
6.0	3		37	0.8	7.9 X 18.7
10.0	3		51	1.0	10.0 X 24.4
16.0	3		68	1.0	11.4 X 28.3

Details of 4 Core and 5 Core Flat Cables will be provided on request.

POWER-FLEX[®] Poly wrapped copper winding wires for Submersible Pump Motors conforming To IS:8783 (Part 4/Section 3)

Conductor Diameter			Overall Diameter
Nominal mm	Minimum mm	Maximum mm	mm
0.40	0.39	0.41	0.75 / 0.80
0.50	0.49	0.51	0.85 / 0.90
0.60	0.59	0.61	0.95 / 1.00
0.70	0.69	0.71	1.05 / 1.10
0.80	0.78	0.82	1.15 / 1.20
0.90	0.88	0.92	1.25 / 1.30 / 1.35
1.00	0.98	1.02	1.35 / 1.40 / 1.45
1.10	1.08	1.12	1.45 / 1.50 / 1.55 / 1.60
1.20	1.18	1.22	1.55 / 1.60 / 1.65 / 1.70
1.30	1.27	1.33	1.65 / 1.70 / 1.75 / 1.80
1.40	1.37	1.43	1.75 / 1.80 / 1.85 / 1.90
1.50	1.47	1.53	1.90 / 1.95 / 2.05
1.60	1.57	1.63	2.00 / 2.05 / 2.15
1.70	1.67	1.73	2.10 / 2.15 / 2.25
1.80	1.77	1.83	2.20 / 2.25 / 2.35

Note : Over all diameter of different sizes can also be supplied as per customer requirements.

For ambient temperature other than 40°C the current rating should be multiplied by the following rating factors

Ambient temperature in °C	25	30	35	40	45	50	55	60	65
Rating Factor	1.09	1.06	1.03	1.00	0.97	0.94	0.82	0.67	0.46

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® Shielded Cables



Conductor

POWER-FLEX® Shielded cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 2 or class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated PVC compound. The compound conforms to IS:5831 Type A

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.

Screen

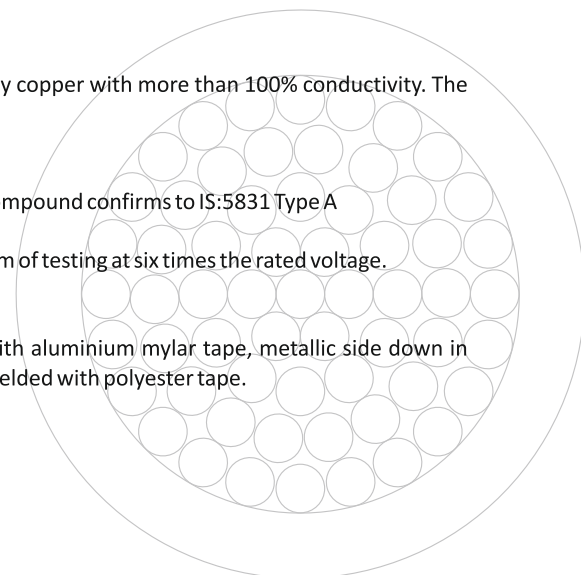
The insulated cores are laid up and shielded with polyester tape, overall screened with aluminium mylar tape, metallic side down in contact with tinned copper drain wire of size 0.5 mm² for reinforcement, then overall shielded with polyester tape.

Sheath

The shielded cable is overall sheathed with PVC Type ST1 of IS:5831.

Options

1. Multi Core shielded together.
2. Multi Pair shielded together.
3. Multi Pair individually and collectively shielded.



Nominal Cross Sectional Area of Conductor Sq. mm	Nominal No./ Dia of Wires No. / mm	Nominal Thickness of Insulation mm	Nominal Thickness of PVC Sheath mm			Approximate Overall Dia of Cable mm		
			Two Core	Three Core	Four Core	Two Core	Three Core	Four Core
0.50	16/0.20	0.6	0.9	0.9	0.9	7.5	7.9	8.5
0.75	24/0.20	0.6	0.9	0.9	0.9	8.0	8.4	9.0
1.00	32/0.20	0.6	0.9	0.9	0.9	8.3	8.7	9.5
1.50	30/0.25	0.6	0.9	0.9	0.9	8.8	9.4	10.5
2.50	50/0.25	0.7	1.0	1.0	1.0	10.5	11.0	12.0
4.00	56/0.30	0.8	1.0	1.0	1.0	12.0	12.5	14.0

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® Braided Cables



Conductor

POWER-FLEX® Braided cables are manufactured using Electrolytic Grade 99.97% purity copper with more than 100% conductivity. The conductors drawn and bunched according to class 2 or class 5 of IS:8130 (latest)

Insulation

The bunched conductors are insulated with specially formulated PVC compound. The compound confirms to IS:5831 Type A

Online spark testers ensure fail proof high voltage test by employing non destructive form of testing at six times the rated voltage.

Screen

The insulated cores are laid up and shielded with polyester tape, overall braided with annealed tinned copper with minimum 65% however generally 85% coverage. Overall shielded with polyester tape.

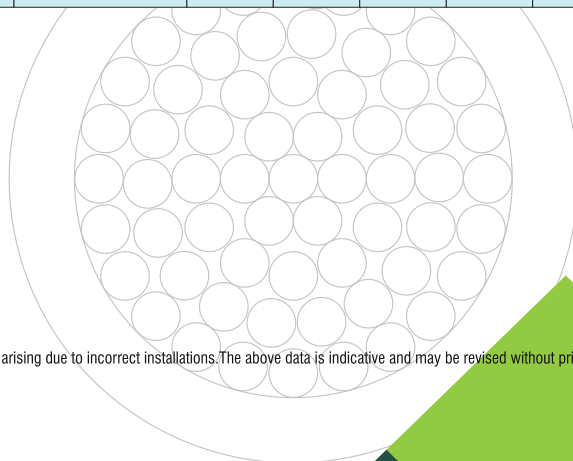
Sheath

The cable is overall sheathed with PVC Type ST1 of IS:5831.

Options

1. Multi Core screened together.
2. Multi Pair screened together.
3. Multi Pair individually and collectively screened.

Nominal Cross Sectional Area of Conductor Sq. mm	Nominal No./ Dia of Wires No. / mm	Nominal Thickness of Insulation mm	Approximate Dia of Laid up Cores mm			Nominal Thickness of PVC Sheath mm			Approximate Overall Dia of Cable mm		
			Two Core	Three Core	Four Core	Two Core	Three Core	Four Core	Two Core	Three Core	Four Core
0.50	16/0.20	0.6	4.0	4.3	4.8	0.9	0.9	0.9	8.0	8.4	9.0
0.75	24/0.20	0.6	4.6	4.8	5.3	0.9	0.9	0.9	8.5	8.9	9.5
1.00	32/0.20	0.6	5.0	5.2	6.0	0.9	0.9	0.9	8.8	9.2	10.0
1.50	30/0.25				6.9			1.0	9.3	9.9	11.0
2.50	50/0.25				8.4			1.0	11.0	11.5	12.5
4.00	56/0.30				9.8			1.1	12.5	13.0	14.5



NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

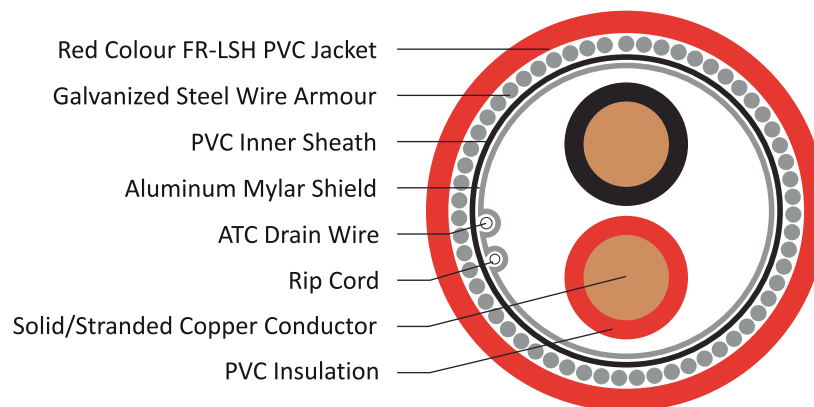
POWER - FLEX®
Wires & Cables

Power-Flex® Fire Alarm Cables

Fire alarm cables are for use primarily in fire detection, voice alarm, and emergency lighting circuits. These cables are designed to continue to operate for a period of time in a fire situation. Fire Alarm cables are used for a variety of life safety devices, and are required to comply with stringent codes and standards.

POWER-FLEX Fire alarm cables are manufactured with Solid/Stranded high conductivity copper conductor, insulated with Flame Retardant(FR) PVC, Cores stranded, with or without Aluminium mylar shield and tinned copper drain wire, Inner sheathed with PVC in Black colour, Armoured with Galvanized steel wire and overall sheathed with high performance Flame Retardant Low Smoke Halogen (FR-LSH) PVC in Red colour.

POWER-FLEX Fire alarm cables are available both with and without aluminium mylar shield, however the use of aluminium mylar shield prevents cross talk and reduces interference between signals.



Applications:

- Addressable control systems
- Alarm notification
- Circuits controlled and powered by the fire alarm system
- Sirens
- Smoke detectors
- Sprinkler and sprinkler supervisory systems
- Strobes

Construction:

Conductor

1.50 - 2.50 - 4.00mm²
Solid/Stranded Copper Conductor according to IS:8130

Insulation

Flame retardant (FR) PVC

Core Identification

2 cores: Red and Black

Overall Screen

Aluminium-Polyester Shield along with ATC Drain Wire

Inner Sheath

PVC Inner sheath in Black Colour

Armour

Galvanized Steel Wire Armour

Outer Sheath

High performance Flame Retardant low smoke halogen (FR-LSH) PVC in Red Colour.

NOTE: Kamadhenu Wires will not be liable for damages arising due to incorrect installations. The above data is indicative and may be revised without prior intimation.

Power-Flex® Unarmoured & Armoured Fire Survival (FS) Cables

Power-Flex® Fire Survival Cables offer high circuit integrity for installations where certain critical circuits are required to continue to operate in the event of fire. It is highly recommended for use by experts in airports, hospitals, theaters, shopping enclaves, oil and petrochemical plants, pharmaceutical units, thermal and power stations, IT parks, mass transit systems to name a few.

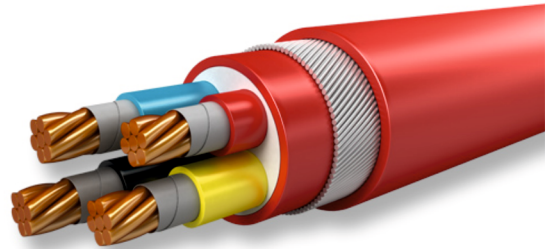
These cables are designed to continue to function and sustain high temperatures for a defined minimum period of time and fire. These cables conform to various BS and IEC specifications such as BS: 7846, BS : 6387 (C,W,Z) and BS: 7211. The performance of the cable under the fire conditions is specified in several international standards listed below:

- Flame propagation test: IEC 60332-1, BS EN 60332-1
- Flame spread test: IEC 60332-1, BS EN 60332-3
- Fire resistance test: IEC 60331, BS 6387
- Resistance to fire with water: BS 6387
- Acid Gas emission test: IEC 60754, BS EN 50267
- Smoke emission test: IEC 61034, BS EN 61034
- Limiting Oxygen index: ASTM D 2863
- Toxicity: NES 713



Single Core & Multi Core unarmoured Fire Survival (FS) Cables

- Conductor : annealed plain stranded copper conductor as per BS EN : 60228 class -2
- Glass mica (Fire resistant) flame barrier tape
- Extruded LS ZH thermoplastic insulation
- Cores stranded together
- Extruded LS ZH thermoplastic outer sheath



Power-Flex® Fire Survival Cables maintain circuit integrity in the following category.

- CWZ C for 950° C +- 40° C under test to flame via direct impingement for 3 Hours
- CWZ W for 650° C under test to flame with direct application of water for 30 Min
- CWZ Z for 950° C +- 40° C under test to flame with direct mechanical shock for 15 Min

Multi Core armoured Fire Survival (FS) cables

- Conductor : annealed plain stranded copper conductor as per BS EN : 60228 class -2
- Glass mica (Fire resistant) flame barrier tape
- Extruded LS ZH insulation
- Cores stranded together
- Extruded LS ZH thermoplastic inner sheath
- Galvanized steel wire armoured
- Extruded with LS ZH thermoplastic outer sheath

Continuous Current Rating and Derating Factors

The continuous current rating and derating factors for PVC Insulated Heavy Duty Cables, given are as per IS:3961 (Part-II) - 1967*

Basic Assumption:

The current ratings are based on the following assumptions of installation conditions:

- i. Maximum conductor temperature : 70° C
- ii. Thermal resistivity of soil : 150° C cm/w
- iii. Thermal resistivity of PVC : 650° C cm/w
- iv. Ground temperature : 30° C
- v. Ambient air temperature : 40° C
- vi. Depth of laying : 75 cm

Method of installation: The current ratings are also based on the following methods of installation:

Singlecore Cables

Type of Installation:

1. Laid direct in the ground
2. In air

Method of Installation

- a. Three cables in close trefoil formation or
 - b. Two cables touching in horizontal formation
- a. Two single core cables are installed one above the other and fixed to a vertical wall as follows:
the distance between the wall and the surface of the cable being 25mm in each case.
- i) Cables of sizes upto and including 185mm² are installed at a distance between centres of twice the overall diameter of the cable.
 - ii) Cables of sizes 240mm² and above are installed at a distance maintaining minimum 90mm between centres.
- The ratings for two cables may be applied with safety in cases where such cables are installed in horizontal formation, on brackets fixed to a wall, either spaced as indicated above or touching throughout.
- b. Three single core cables are installed in trefoil formation touching.

Twin and Multi-Core Cables

Installed singly in ground and in air.

Rating Factor:

The current ratings given in various tables are based on certain assumed conditions described above, however in practice, the conditions may be different. Hence to determine the current rating, the tabulated ratings should be multiplied with the appropriate derating factor or factors.

*Recommended current ratings for PVC insulated and PVC sheathed heavy duty cables.

Rating factor for Depth of laying (Cable laid direct in the ground)

Depth laying cm.	Size		
	Upto 25 mm ²	Above 25 mm ² Upto 300 mm ²	Above 300 mm ²
75	1.00	1.00	1.00
90	0.99	0.98	0.97
105	0.98	0.97	0.96
120	0.97	0.96	0.95
150	0.96	0.94	0.92
180 or more	0.95	0.93	0.91

Rating Factor for Variation in Ground Temperature (Cable laid direct in the ground)

Ground Temperature °C	15	20	25	30	35	40	45
Rating Factor	1.17	1.12	1.06	1.00	0.94	0.87	0.79

Short Circuit Rating

The conductor size in a cable for an installation is also governed by its ability to carry short circuit current of the system. Short circuit ratings are based on the assumption that the duration of short circuit is so small that apparently there is no transmission of heat produced during short circuit, through the insulation and the entire heat is absorbed by the conductor.

The short circuit current ratings (r.m.s. values) of PVC insulated cables aluminium and copper conductors for one second duration are given below. These ratings have been based on the following assumptions.

	Unit	Aluminium	Copper
1) Temperature of conductor just prior to short circuit			
(a) With general purpose insulation	°C	70	70
(b) With heat resisting insulation	°C	85	85
2) Max. permissible temperature of conductor during short circuit	°C	160	160
3) Volumetric specific heat of conductor at 20°C	J / °C. mm	2.5 x 10 ⁻³	3.45 x 10 ⁻³
4) Resistivity of conductor at 20°C	ohm - mm	28.264 x 10 ⁻⁶	17.241 x 10 ⁻⁶
5) Reciprocal of temperature coefficient of resistance of conductor at °C	°C	228	234.5

With the above assumption the short circuit rating (Ish) is given by the following formula :

$$I_{sh} = \frac{K \times A}{\sqrt{t}}$$

Where K-a Constant
A - Nominal area of conductor in mm²
t - duration of short circuit in seconds

Short Circuit Rating in K. Amps for 1 second duration for 1100 Volts Grade cables with PVC and HRPVC insulation

Conductor Size sq. mm	Aluminium		Copper	
	PVC	HR PVC	PVC	HR PVC
1.5	0.114	0.103	0.173	0.156
2.5	0.190	0.172	0.288	0.260
4	0.304	0.274	0.460	0.416
6	0.456	0.412	0.690	0.624
10	0.760	0.686	1.150	1.040
16	1.220	1.100	1.840	1.660
25	1.900	1.720	2.880	2.600
35	2.660	2.400	4.030	3.640
50	3.800	3.430	5.750	5.200
70	5.320	4.800	8.050	7.280
95	7.220	6.520	10.90	9.880
120	9.120	8.230	13.80	12.50
150	11.40	10.30	17.30	15.60
185	14.10	12.70	21.30	19.20
240	18.20	16.50	27.60	25.00
300	22.80	20.60	34.50	31.20
400	30.40	27.40	46.00	41.60
500	38.00	34.30	57.50	52.00
630	47.90	43.20	72.50	65.50
800	60.80	54.90	92.00	83.20
1000	76.00	68.60	115.00	104.00



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