

UNIWIRES CABLES



The Power...ahead of Power UNIWIRES CABLES INDIA PVT. LTD.

An ISO 9001 : 2015 & ISO 14001 : 2015 Company

Website : www.uniwirecables.com

ISO 9001:2015



Registration Certificate

This is to certify that
The Quality Management Systems
of

UNIWIRES CABLES INDIA PVT. LTD.

Carried out at following site:

A - 590 D, RIICO INDUSTRIAL AREA, PHASE - I,
BHIWADI - 301 019, DISTT. ALWAR (RAJASTHAN)
(INDIA)

for their

QUALITY MANAGEMENT SYSTEM ISO 9001:2015

Scope of Activities covered by this Certificate:

MANUFACTURING & SUPPLY OF LT PVC / XLPE
INSULATED, COPPER / ALUMINIUM CONDUCTOR,
UNARMoured / ARMoured PVC SHEATHED
CABLES UPTO 630 SQUARE MM

CERTIFICATE NO. : IAS/QMS/C2396 IAS-UIC NUMBER : MSCB-120-4421-4
ISSUED ON : 21/12/2018 1ST SURVEILLANCE DUE ON: 21/11/2019
VALIDITY DATE : 20/12/2021 2ND SURVEILLANCE DUE ON: 21/11/2020

THE VALIDITY OF CERTIFICATE IS SUBJECT TO REGULAR SURVEILLANCE AUDIT ON OR BEFORE ABOVE MENTIONED DATES AND IT'S ONLY VALID AFTER SUCCESSFUL SURVEILLANCE WITH CONTINUATION LETTER ISSUED BY CCPL

AUTHORISED BY
CHAIRMAN / DIRECTOR
CARE CERTIFICATION PRIVATE LIMITED
THIS IS SINGLE-SITE CERTIFICATION
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HEAD OFFICE : KEMP HOUSE, 160 CITY ROAD, LONDON, EC1V2NX, UNITED KINGDOM
INDIA OFFICE : 134-A, 2ND FLOOR, TAIMOOR NAGAR, N.F.C., NEW DELHI - 110 065

THE CERTIFICATE REMAINS THE PROPERTY OF CCPL AS PER CERTIFICATION AUDIT CONTRACT

CCPL is accredited by International Accreditation Service (IAS) United States of America



Certificate of Registration

This is to certify that
The Management Systems of

UNIWIRES CABLES INDIA PVT. LTD.

Carried out at following site:

A - 590 D, RIICO INDUSTRIAL AREA, PHASE - I,
BHIWADI - 301 019, DISTT. ALWAR (RAJASTHAN)
(INDIA)

for their

ENVIRONMENTAL MANAGEMENT SYSTEM ISO 14001:2015

Scope of Activities covered by this Registration:

MANUFACTURING & SUPPLY OF LT PVC / XLPE INSULATED,
COPPER / ALUMINIUM CONDUCTOR, UNARMoured /
ARMoured PVC SHEATHED CABLES UPTO 630 SQUARE MM

CERTIFICATE NO. : DAPL/EMS/EDB1002
ISSUED ON : 03/03/2020 1ST SURVEILLANCE DUE ON: 03/02/2021
VALIDITY DATE : 02/03/2023 2ND SURVEILLANCE DUE ON: 03/02/2022

THE VALIDITY OF CERTIFICATE IS SUBJECT TO REGULAR SURVEILLANCE AUDIT ON OR BEFORE ABOVE MENTIONED DATES AND IT'S ONLY VALID AFTER SUCCESSFUL SURVEILLANCE WITH CONTINUATION LETTER ISSUED BY DAPL

TO VERIFY THE STATUS OF THE CERTIFICATE, PLEASE VISIT IAFSEARCH CERT WEBSITE <https://www.iafcertsearch.org/>

AUTHORISED BY
CHAIRMAN / DIRECTOR



DELANO ASSESSMENT PRIVATE LIMITED

www.delanoassessment.com

172, BLOCK - 3, GANGA SHOPPING COMPLEX, SECTOR - 29, NOIDA - 201301 (U.P.)

THE CERTIFICATE REMAINS THE PROPERTY OF DAPL AS PER CERTIFICATION AUDIT CONTRACT



FROM THE DESK OF MD

Welcome to the world of **UNIWIRE**® Cables !

The changing world order and all round country's economic growth offers many challenges & opportunities . Smart technology, environmental-friendly manufacturing and product innovation are key to our success in today's competitive marketplace. We have the vision, the commitment and the expertise to become a leader in our field. For us, leadership does not mean the biggest, but amongst the best – in terms of quality of our products, the value advantage and all round satisfaction we provide to our customers in our dealings.

Quality and Quantity Assurance shall continue to be the driving force at **UNIWIRE**® Cables. We shall consistently focus on updated technology and competitiveness to continue to remain the preferred supplier to our valued customers.

The company is managed by a extremely focussed ,growth oriented , motivated and enterprising team of highly professional, technically qualified and very well experienced personnel having proven expertise in the cable industry and management experts from leading manufacturing and industry background under the overall proficient guidance & supervision of the Board of Directors.

We passionately follow the philosophy of building long term relationship with our associates, customers, suppliers and employees and have strong bonds of trust and mutual understanding.

I take this opportunity to specially thank our valued customers, whose continued patronage and confidence in our products inspires us to extend the best of quality products & services and enables us to provide value for their money.

Give us an opportunity and you shall feel the difference!

Sunil Rai

B. Com. (Hons.), LLB
F.C.A, F.C.S., M.B.F. (ICAI)
Managing Director

INTRODUCTION

With the rich heritage of over 30 years of experience in dealing in electrical cables we at **UNIWIRE**® CABELS have now taken off as manufacture of Power, Control and Instrumentation cables under the Registered brand name of '**UNIWIRE**'

The company's to plants, are accredited to ISO:9001-2015 set up on a sprawling 66,500 sq. feet of land in Bhiwadi (Rajasthan), nearly at a distance from 65 kilometers from new delhi, in our efforts to manufacture an outstanding product, a state-of-art infrastructure equipped with latest machineries and testing equipments has been created at its manufacturing units. We have an integrated cable manufacturing plant with facilities right from wire drawing to packaging of the finished products under one roof.

UNIWIRE®S R&D laboratory is equipped with modern equipment and testing facilities to cater for R&D and testing as per national and international standards. Perfect statistical quality control procedures are strictly observed from procuring of raw material right up to the shopping of finished product.

Excellent quality of cables is maintained by strict quality control at every stage of manufacturing and by virtue of stringent test conducted as per the relevant specifications at our laboratory under the supervision of qualified engineers. We ensure products to be of international quality with third party guarantee of BIS (ISI mark) and are also getting approvals of other independent agencies.

The company is manned by a team of highly experienced, qualified engineers and professionals, technicians, testing experts, quality checkers and management people who put in their constant efforts to provide the best range of high quality wires and cables to a large number of clients.

We adopt a modern approach in terms of technology and capability enabling us to deliver products of global standards of quality. We have set high standards for ourselves and thereby make the customer's experience a pleasurable one. Our aim is to excel in all areas of operations through constant improvements and to create a congenial working environment to ensure long lasting and cordial business relations with our customers/vendors and commiment to environmental issues and society as a whole.

ABOUT US

UNIWIRES Cables India Pvt. Ltd. (**UNIWIRES**), enjoy an undisputed leadership in manufacturing and supplying a wide spectrum of durable cables and wires with rich heritage of over 30 years. We have emerged as a reputed manufacturer and supplier in the wires and cables industry with a foresighted vision, a pioneering spirit, innovative approach, the expertise of a highly motivated and professional team, excellent infrastructure facilities, sales network and after sales service together synergised for the ultimate expression of customer satisfaction, quality and safety and emergence of the Registered brand name '**UNIWIRES**'.

With a modest beginning of manufacturing with wires & cables, **UNIWIRES** has set up a most modern unit in Rajasthan at Bhiwadi, nearly at a distance from 65 kilometers from new delhi, in 2007 and the second unit in 2019 with provision for sufficient backup of power.





'**UNIWIRES**' is certified for :



ISO 9001:2015 (Quality Management System) and
ISO 14001:2015 (Environmental Management System)

'**UNIWIRES**' is having following four BIS licenses:



-  IS 1554 Part-I:1988 (PVC insulated (heavy duty) electric cables: Part-I for working voltages upto & including 1100V)
-  IS 7098 Part-I:1988 (Cross linked Polyethylene Insulated PVC Sheathed Cables: Part-I for working voltages upto & including 1100V)
-  IS 14255:1995 (Aerial Bunched Cables for working voltages upto and including 1100V)
-  IS 694:2010 (PVC Insulated Cables for working voltages upto and including 1100V)

'**UNIWIRES**' supplies wide variety of cables with PVC / XLPE / Zero Halogen / HDPE / PE & other insulations for Power, Control, Instrumentation, Thermocouple Extension / Compensating Cables, Cio-axial Cables, Aerial Bunched Cables, Networking (LAN) Cables, CCTV Cables, Multi Core Shielded Cables, Ribbon Cables, Telephone Cables, Microphone Cables, Speaker Cables, Screened and Signalling cables, Fire Survival Wires/Cables & many more. All these cables can be supplied in PVC / FR / FR-LSH / Zero Halogen or other outer sheath as per ISI / International Standards / Customer Specifications.

Professionally managed, with continuous updating of technology and strict management systems, '**UNIWIRES**' strives for maximum customer satisfaction. Over the years, it has attained a significant position on the industrial map of India. We have a team of well-qualified technical personnel, quality management set-up and well-equipped plant with the latest equipments for manufacturing of flawless products for the exact need of the customers. We are constantly upgrading our production and testing facilities by undertaking expansion cum modernization plans as per requirement.

Our Products are third party type tested by NABL accredited laboratories and cater to the requirements of different sectors such as Telecommunications, Power, Oil, Gas, Petrochemicals, Fertilizers, Cement, Steel, Railways, Medical, Automotive, Electronics and more. Our relentless pursuit of delivering the best quality is driven by a team of experts, which has placed us amongst the prominent Cable Manufacturers in India.

'**UNIWIRES**' is respected for its high standards of quality, excellent service level, competitive pricing and a unique and innovative spirit. With the latest technology and quality management system, we are inspired and well-positioned to meet the changing needs of our customers. We have the resources to diversify and enhance our product lines and services. We understand the need for change. We are well planned for the future & the challengers to meet the marketing opportunities.

Our R&D department works closely with customers to constantly improve its products and technologies and to develop customized and industry-specific solutions.

We have built a very good record of accomplishment of performance since its inception and have been continuously on the move to improve its performance and to achieve excellence in all the spheres of activities. In a very short span of time, we have achieved substantial growth with regard to turnover as well as superior quality of the products and customer satisfaction.

Quality Policy

Quality Policy to grow with customers by providing full customer satisfaction through Product quality, support and timely deliveries.

Our Quality Policy is defined and strongly driven by the following management principles and behaviors:

Build a mutually profitable relationship with our customers, ensuring their long-term success, through the understanding of their needs.

Achieve our commitment for Quality, Reasonable Price and Service.

Promote Research and Development, use of Best Preventive Practices at all levels and ensure reliable risk management.

Continual Improvement and Innovation based upon efficient business process, well-defined measurements.

Promote Teamwork and use of Common language and processes.

Develop staff Competencies, Creativity, Empowerment and Accountability through appropriate development programs and show strong management involvement and commitment.

Effectiveness of Quality Management System by regular Internal Quality audits, Management reviews and Compliance with all the requirements of ISO 9001:2000.

Complying all pollution control norms using Eco-Friendly practices.

Ensuring highest level of safety for employees.

Customer Focused

Satisfy our customers' needs and expectations.

Make commitment that we fully understand and believe that we can meet.

Meet all commitment to customers on time.

Performance Driven

Verify that our products and services meet agreed requirements

Monitor, benchmark and continuously improve our business, products and services, organization and employees' performance

Sustain and develop business growth that is achieved by teamwork's and a process of continuous improvement.

We are dedicated to become the leader in providing quality services, which meet or exceed the expectations of our customers.

Everyone in the Company is Accountable for Fully Satisfying our customers by Meeting their Needs and Expectations.

Our vision is to create an integrated and collaborative work environment and empower our people to turn 'UNIWIRES**' into an ever-growing enterprise.**

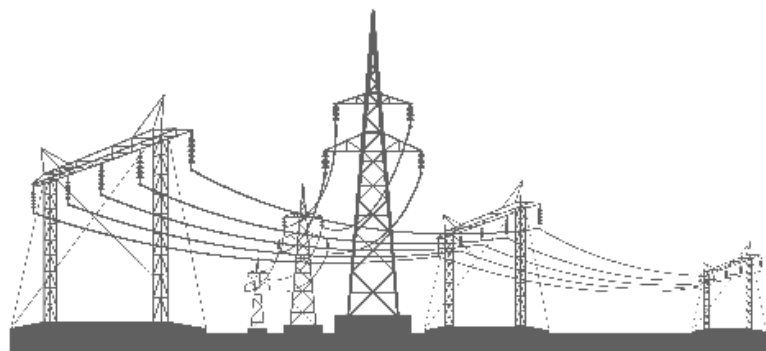
LT (XLPE) POWER CABLES

Power Cables with XLPE Insulation for power transmission, with Voltage grade 650/1100 volts (U/U) with or without HR/FRLS properties. Conforming to standard specification like IS 7098 (Pt-1), IEC 502.

Range of LT Power cables from single core (upto 600 sq. mm) & Multicore upto 3.5/4 core with Aluminium / Copper (Solid Standard Circular/Compacted/Sector Shaped Conductor with XLPE Insulation, taped/extruded inner sheath, Galvanized Steel Wire/Strip/Double Helical Steel tape (Aluminium wire armouring for single core cable with usually black outer sheath or as per purchaser specification.



SHORT CIRCUIT RATING for 1 Sec.			MAXIMUM A.C/D.C RESISTANCE OF CONDUCTOR IN OHM / KM										
Nom. C/S Area of Cond.	Aluminium conductor	Copper Conductor	Nom. C/S Area of Cond.	Minium No. of Wires				Max. D.C Resistance				Max. A.C Resistance	
				Circular Conductor (Non Compacted)		Compacted Circular/ Shaped Conductor		Copper	Aluminium	Copper	Aluminium	Copper	Aluminium
				Copper	Aluminium	Copper	Aluminium						
Sqmm	K Amps	K Amps	Sqmm	Copper	Aluminium	Copper	Aluminium	Ohm/Km	Ohm/Km	Ohm/Km	Ohm/Km		
1.5	0.141	0.215	1.5	3	3	-	-	12.1	15.49	18.18	23.17		
2.5	0.235	0.358	2.5	3	3	-	-	7.41	9.48	12.1	15.49		
4	0.376	0.572	4	7	3	-	-	4.61	5.9	7.41	9.48		
6	0.564	0.858	6	7	3	-	-	3.08	3.94	4.61	5.90		
10	0.940	1.430	10	7	7	-	-	1.83	2.34	3.08	3.94		
16	1.504	2.288	16	7	7	-	-	1.15	1.47	1.91	2.44		
25	2.350	3.575	25	7	7	6	6	0.727	0.931	1.20	1.54		
35	3.29	5.01	35	7	7	6	6	0.524	0.671	0.868	1.111		
50	4.70	7.15	50	19	19	6	6	0.387	0.495	0.641	0.820		
70	6.58	10.01	70	19	19	12	12	0.268	0.343	0.443	0.567		
95	8.93	13.59	95	19	19	15	15	0.193	0.247	0.320	0.410		
120	11.28	17.16	120	37	37	18	15	0.153	0.196	0.253	0.324		
150	14.10	21.45	150	37	37	18	15	0.124	0.159	0.206	0.264		
185	17.39	26.46	185	37	37	30	30	0.0991	0.1268	0.1640	0.2099		
240	22.56	34.32	240	61	37	34	30	0.0754	0.0965	0.1250	0.1600		
300	28.20	42.90	300	61	61	34	30	0.0601	0.0769	0.1000	0.1280		
400	37.60	57.20	400	61	61	53	53	0.0470	0.0602	0.0778	0.0996		
500	47.00	71.50	500	61	61	53	53	0.0366	0.0468	0.0605	0.0774		
630	59.22	90.09	630	91	91	53	53	0.0283	0.0362	0.0469	0.0600		
800	75.20	114.40	800	91	91	53	53	0.0221	0.0283	0.0367	0.0470		
1000	94.00	143.00	1000	91	91	53	53	0.0176	0.0225	0.0291	0.0372		



LT (XLPE) POWER CABLES

Nom. Area of conductor Sqmm	LT XLPE CABLES 1.1 KV GRADE						
	Capacitance				Reactance at 50 Hz		
	Single Core Cable		Twin Core Cable	Multi Core Cable	Single Core Cable		Twin & Multicore Cable
	Unarmoured mF/Km	Armoured mF/Km	mF/Km	mF/Km	Unarmoured (Ohm/Km)	Armoured (Ohm/Km)	(Ohm/Km)
1.5000	0.1900	-	0.0510	0.1500	0.1550	-	0.1070
2.5000	0.2400	-	0.0580	0.1800	0.1420	-	0.0850
4.0000	0.2900	-	0.0650	0.2200	0.1320	-	0.0927
6.0000	0.3400	-	0.0710	0.2500	0.1270	-	0.0884
10.0000	0.4300	0.3200	0.0810	0.3100	0.1140	0.1340	0.0837
16.0000	0.5100	0.3800	0.0880	0.3600	0.1080	0.1250	0.0808
25.0000	0.4900	0.3800	0.0890	0.4100	0.0103	0.1200	0.0805
35.0000	0.5700	0.4400	0.0960	0.4700	0.0986	0.1140	0.0783
50.0000	0.5800	0.4600	0.0980	0.5000	0.0937	0.1080	0.0750
70.0000	0.6300	0.5100	0.1000	0.5300	0.0900	0.1020	0.0740
95.0000	0.7300	0.5900	0.1100	0.6100	0.0865	0.1000	0.0724
120.0000	0.7400	0.6100	0.1100	0.6300	0.0841	0.0968	0.0712
150.0000	0.7300	0.6100	0.1100	0.6000	0.0839	0.0941	0.0716
185.0000	0.6900	0.5900	0.1100	0.6000	0.0836	0.0932	0.0718
240.0000	0.7400	0.6400	0.1100	0.6300	0.0813	0.0900	0.0710
300.0000	0.8000	0.6900	0.1200	0.6700	0.0795	0.0881	0.0705
400.0000	0.8300	0.7000	0.1200	0.6700	0.0787	0.0873	0.0704
500.0000	0.8300	0.7100	0.1200	0.6900	0.0779	0.0859	0.0702
630.0000	0.8700	0.7500	0.1100	0.7300	0.0785	0.0843	0.0698
800.0000	0.9200	0.7800	-	-	0.0755	0.0826	-
1000.0000	0.9400	0.8100	-	-	0.0752	0.0825	-

Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)

LT XLPE CABLES																
1 Core 1.1 KV Aluminium/Cooper conductor XLPE Armoured/Unarmoured Power Cable																
Cross Sectional Area (Nom.)	Unarmoured				Armoured						Unarmoured					
	Nom. Thickness of Insulation	Nom. Thickness of PVC Outsheath	Overall dia (app.)	Thickness of insulation (nom.)	Nominal Dimension of Armour		Min. Thickness of outer		overall dia. (app.)		Net. Wt. of cable		Net. Wt. of cable			
					wire	Strip	wire	strip	wire	strip	conductor	Wire		Strip		
Sqmm	mm	mm	mm	sqmm	mm.	mm	mm	mm	mm	mm	Kg/Km	Kg/Km	Kg/Km	Kg/Km	Kg/Km	Kg/Km
25	0.9000	1.8	12.0000	1.2000	1.4000	-	1.2400	-	14.0000	-	180	330	250	390	-	-
35	0.9000	1.8	13.0000	1.2000	1.4000	-	1.2400	-	15.0000	-	210	420	290	490	-	-
50	1	1.8	15	1.3	1.4	-	1.2400	-	17	-	270	550	350	620	-	-
70	1.1	1.8	16	1.4	1.4	-	1.2400	-	19	-	350	750	440	830	-	-
95	1.1	1.8	18	1.4	1.6	4x0.8	1.4	1.4	22	21	440	1010	580	1120	540	1080
120	1.2	1.8	20	1.5	1.6	4x0.8	1.4	1.4	24	23	530	1250	680	1360	640	1320
150	1.4	2	22	1.7	1.6	4x0.8	1.4	1.4	25	24	650	1540	790	1630	740	1580
185	1.6	2	24	1.9	1.6	4x0.8	1.4	1.4	28	26	790	1900	950	2000	890	1940
240	1.7	2	27	2	1.6	4x0.8	1.4	1.4	30	30	980	2440	1150	2530	1090	2470
300	1.8	2	30	2.1	1.6	4x0.8	1.56	1.56	33	32	1180	3030	1380	3120	1320	3060
400	2	2.2	33	2.4	2	4x0.8	1.56	1.56	38	36	1510	3850	1800	4020	1650	3870
500	2.2	2.2	36	2.6	2	4x0.8	1.56	1.56	41	39	1870	4870	2160	5010	2000	4850
630	2.4	2.2	40	2.8	2	4x0.8	1.72	1.72	46	44	2340	6230	2690	6383	2510	6200
800	2.6	2.4	47	3.1	2	4x0.8	1.88	1.72	51	48	2950	7940	3350	8080	3110	7830
1000	2.8	2.6	51	3.3	2.5	4x0.8	2.04	1.88	56	54	3660	9910	4250	10170	3820	9740

Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)

LT (XLPE) POWER CABLES

LT XLPE CABLES																	
2 Core 1.1 KV Aluminium/Copper conductor XLPE insulated Unarmoured / Armoured Power Cables																	
Unarmoured					Armoured						Net WT. of Cables						
Cross sectional area (nom.)	Thickness of insulation (nom.)	Min. Thickness of XLPE innersheath	Nom. Thickness of XLPE outersheath	Overall dia. (app.)	Nominal size of Armour	Minimum Thickness of outer sheath		Overall dia with armour		Net WT. of Cables							
						Wire	Strip	Wire	Strip	Unarmoured			Armoured				
						mm	mm	mm	mm	mm	mm	mm	mm	Al. (Kg/km)	Cu (kg/km)	Al. (kg/km)	Cu. (kg/km)
4	0.7	0.3	1.8	13	1.4	-	1.24	-	15.6	-	-	152	173	425	523	-	-
6	0.7	0.3	1.8	14	1.4	-	1.24	-	16.7	-	-	185	227	490	610	-	-
10	0.7	0.3	1.8	16.3	1.4	-	1.24	-	18.2	-	-	228	300	63	745	-	-
16	0.7	0.3	1.8	14.2	1.4	-	1.4	-	17.3	-	-	230	420	575	770	-	-
25	0.9	0.3	2	19.3	1.6	4x0.8	1.4	1.4	21.3	19.7	400	700	760	1040	570	860	
35	0.9	0.3	2	20.1	1.6	4x0.8	1.4	1.4	22.1	20.5	450	900	880	1280	670	1070	
50	1	0.3	2	22.4	1.6	4x0.8	1.4	1.4	24.2	22.8	590	1160	1040	1580	810	1350	
70	1.1	0.3	2.2	24.7	1.6	4x0.8	1.56	1.56	27.5	25.5	750	1580	1280	2070	1020	1800	
95	1.1	0.4	2.2	28.2	2	4x0.8	1.56	1.56	30.9	28.4	980	2120	1710	2790	1250	2340	
120	1.2	0.4	2.2	30.1	2	4x0.8	1.56	1.56	33	30.2	1170	2620	1990	3360	1490	2860	
150	1.4	0.4	2.2	33.3	2	4x0.8	1.72	1.72	36.5	33.9	1390	3170	2290	3990	1740	3430	
185	1.6	0.5	2.4	37	2	4x0.8	1.88	1.72	40	37	1720	3950	2730	4840	2090	4200	
240	1.7	0.5	2.6	40.5	2.5	4x0.8	2.04	1.88	44	40.2	2160	5090	3580	6360	2560	5340	
300	1.8	0.6	3	45.8	2.5	4x0.8	2.2	2.04	50.1	45.9	2630	6320	4190	7680	3050	6540	
400	2	0.6	3	49.1	2.5	4x0.8	2.36	2.36	54.2	50.2	3300	8010	5040	9500	3810	8270	

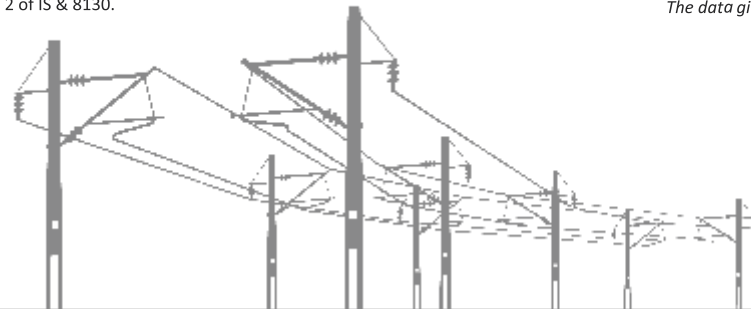
Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)

LT XLPE CABLES																	
3 core 1.1 KV Aluminium Copper conductor XLPE insulated unarmoured / Armoured Power Cables																	
Unarmoured					Armoured						Net WT. of Cables						
Cross sectional area (nom.)	Thickness of insulation	Min. Thickness of XLPE	Nom. Thickness of XLPE	Overall dia. (app.)	Nominal size of Armour		Minimum Thickness of outer sheath		Overall dia with armour		Net WT. of Cables						
					Wire	Strip	Wire	Strip	Wire	Strip	Unarmoured			Armoured			
					mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Al. (Kg/km)	Cu (kg/km)	Al. (kg/km)
4	0.7	0.3	1.8	13	1.4	-	1.24	-	16.2	-	-	162	233	512	583	-	-
6	0.7	0.3	1.8	14	1.4	-	1.24	-	17.2	-	-	188	304	585	678	-	-
10	0.7	0.3	1.8	16.3	1.4	-	1.24	-	19.1	-	-	230	413	678	867	-	-
16	0.7	0.3	1.8	14.2	-	-	-	-	18.7	-	-	312	428	535	828	-	-
25	0.9	0.3	2	20.2	1.6	4x0.8	1.4	1.24	21	20.2	520	970	920	1350	720	1150	
35	0.9	0.3	2	22.5	1.6	4x0.8	1.4	1.4	23.7	22.8	630	1270	1090	1690	840	1440	
40	1	0.3	2	25.1	1.6	4x0.8	1.56	1.4	26.5	24.7	790	1640	1320	2140	1030	1840	
70	1.1	0.3	2.2	29.3	2	4x0.8	1.56	1.4	31.2	28.8	1070	2310	1830	3000	1650	2530	
95	1.1	0.4	2.2	31.6	2	4x0.8	1.56	1.56	33.6	31.1	1340	3050	2180	3800	1950	3270	
120	1.2	0.4	2.2	36.1	2	4x0.8	1.72	1.56	38.5	35.8	1620	3790	2590	4640	2360	4040	
150	1.4	0.4	2.4	39.7	2	4x0.8	1.88	1.72	42.1	39.1	1990	4670	3050	5590	2850	4900	
185	1.6	0.5	2.6	43.8	2.5	4x0.8	2.04	1.88	47	43.2	2450	5800	3950	7120	3520	6020	
240	1.7	0.5	2.8	47.1	2.5	4x0.8	2.2	2.04	50.1	46.4	3100	7510	4770	8950	4240	7620	
300	1.8	0.6	3	52.4	2.5	4x0.8	2.36	2.2	55.2	51.8	3790	9320	5640	10880	5270	9480	
400	2	0.7	3.2	59.1	3.2	4x0.8	2.68	2.52	63.4	58.5	4770	11830	7480	14170	-	11960	

Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)



LT (XLPE) POWER CABLES

LT XLPE CABLES																
3.5 core 1.1 KV Aluminium Copper conductor XLPE insulated unarmoured / Armoured Power Cables																
Unarmoured					Armoured						Net WT. of Cables					
Cross sectional area (nom.)	Thickness of insulation	Min. Thickness of XLPE	Nom. Thickness of XLPE	Overall dia. (app.)	Nominal size of Armour		Minimum Thickness of outer sheath		Overall dia with armour		Net WT. of Cables					
					Wire	Strip	Wire	Strip	Wire	Strip	Unarmoured			Armoured		
					mm	mm	mm	mm	mm	mm	mm	mm	Al. (Kg/km)	Cu (kg/km)	Al. (kg/km)	Cu. (kg/km)
25/16	0.9/0.7	0.3	2	22.5	1.6	4x0.8	1.4	1.4	23.9	22.3	595	1150	1039	1560	814	1330
35/16	0.9/0.7	0.3	2	24	1.6	4x0.8	1.4	1.4	25.6	24	710	1440	1203	1890	962	1650
50/25	1.0/0.9	0.3	2	27.4	1.6	4x0.8	1.56	1.4	29	27	900	1910	1474	2430	1153	2110
70/35	1.1/0.9	0.4	2.2	31.8	2	4x0.8	1.56	1.56	34.1	31.8	1207	2660	2028	3410	1501	2880
95/50	1.1/1.0	0.4	2.2	35.5	2	4x0.8	1.56	1.56	37.8	35.2	1534	3540	2447	4350	1869	3770
120/70	1.2/1.1	0.4	2.2	37.9	2	4x0.8	1.72	1.72	40.1	37.9	1891	4470	2954	5400	2297	4740
15/70	1.4/1.1	0.5	2.4	42.9	2	4x0.8	1.88	1.72	45.2	42.5	2270	5360	3427	6360	2656	5590
185/95	1.6/1.1	0.5	2.6	46.4	2.5	4x0.8	2.04	1.88	49.9	45.9	2820	6740	4470	8180	3254	6970
240/120	1.7/1.2	0.6	2.8	52.6	2.5	4x0.8	2.2	2.04	55.5	51.8	3560	8690	5386	10240	4006	8860
300/150	1.8/1.4	0.6	3	56.5	2.5	4x0.8	2.36	2.2	59.2	55.9	4340	10770	6344	12430	4821	10910
400/185	2.0/1.6	0.7	3.4	65.2	3.2	4x0.8	2.68	2.52	69.1	64	5560	13740	8446	16190	6042	13790

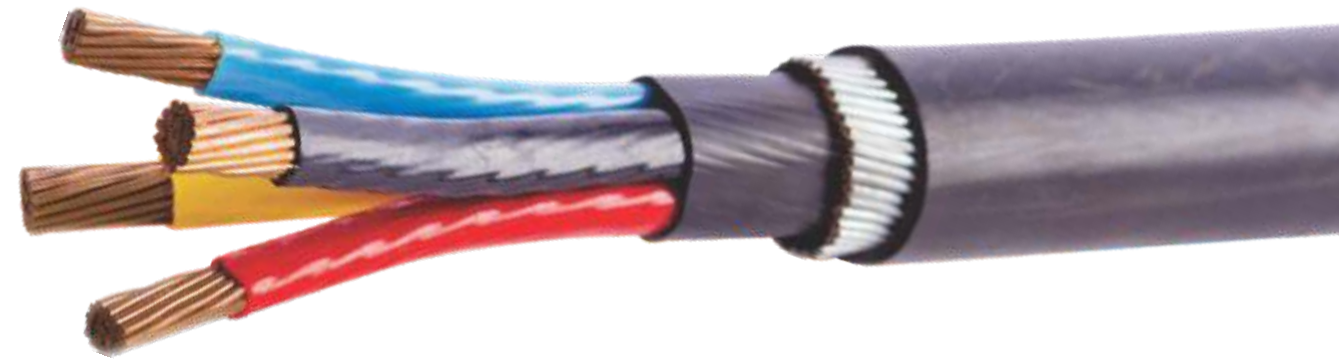
Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)

LT XLPE CABLES																	
4 core 1.1 KV Aluminium Copper conductor XLPE insulated unarmoured / Armoured Power Cables																	
Unarmoured					Armoured						Net WT. of Cables						
Cross sectional area (nom.)	Thickness of insulation	Min. Thickness of XLPE	Nom. Thickness of XLPE	Overall dia. (app.)	Nominal size of Armour		Minimum Thickness of outer sheath		Overall dia with armour		Net WT. of Cables						
					Wire	Strip	Wire	Strip	Wire	Strip	Unarmoured			Armoured			
					mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Al. (Kg/km)	Cu (kg/km)	Al. (kg/km)
4	0.7	0.3	1.8	16	1.4	-	1.24	-	17.6	-	-	182	282	562	662	-	-
6	0.7	0.3	1.8	17.7	1.4	-	1.24	-	19.2	-	-	217	366	627	776	-	-
10	0.7	0.3	1.8	18.5	1.4	-	1.24	-	20.5	-	-	260	512	767	1012	-	-
16	0.7	0.3	1.8	19.6	-	4x0.8	-	1.4	-	20.1	355	755	716	1055	-	-	
25	0.9	0.3	2	22.5	1.6	4x0.8	1.4	1.4	23.9	23.1	650	1250	1110	1680	880	1450	
35	0.9	0.3	2	24.6	1.6	4x0.8	1.4	1.4	26	24.5	790	1640	1320	2120	1050	1850	
50	1	0.3	2	27.9	1.6	4x0.8	1.56	1.56	29.6	28	990	2130	1610	2690	1310	2390	
70	1.1	0.4	2.2	32.1	2	4x0.8	1.56	1.56	34	31.6	1350	3010	2260	3820	1680	3240	
95	1.1	0.4	2.2	35.5	2	4x0.8	1.72	1.56	38	35.1	1700	4000	2710	4880	2050	4220	
120	1.2	0.5	2.4	39.6	2	4x0.8	1.88	1.72	42	39	2140	5030	3250	5990	2510	5250	
150	1.4	0.5	2.6	42.9	2.5	4x0.8	2.04	1.88	46.2	42.6	2600	6160	4190	7570	3000	6380	
185	1.6	0.5	2.8	48.2	2.5	4x0.8	2.2	2.04	51.5	47.8	3200	7670	4980	9210	3650	7880	
240	1.7	0.6	3	54.7	2.5	4x0.8	2.36	2.2	57.6	53.9	4050	9920	6000	11560	4530	10090	
300	1.8	0.7	3.2	60.6	3.15	4x0.8	2.52	2.36	64.5	59.4	4990	12370	7810	17490	5510	12500	
400	2	0.7	3.6	68.2	3.15	4x0.8	2.84	2.68	72	67	6320	15740	9400	18320	6820	15740	

Note: Conductors are compacted as per class 2 of IS & 8130.

The data given above are generally as per IS:7098(Pt-I)



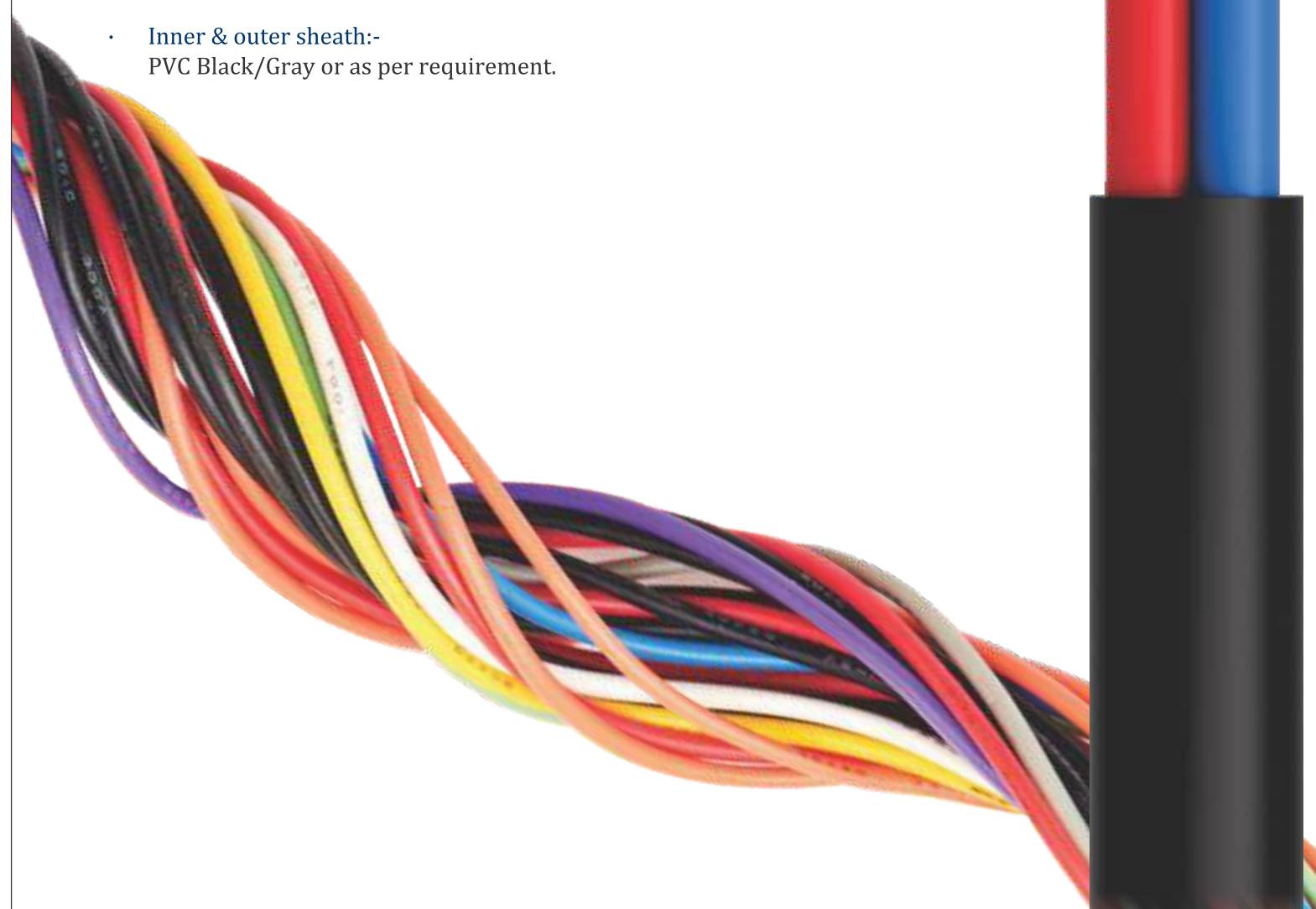
LT (PVC) POWER CABLES

Power Cables with PVC insulation for power transmission. Voltage grade 650/1100 volts (U/ U) provided with ISI marking IS 1554(Pt.1), IEC502, BS6436/87.

Configuration:- Single core upto 630 sq. mm. Multi-core upto 400 Sq.mm $\times 3^{1/2}$ cores.

Construction

- Conductor :-**
Aluminium/copper Solid/stranded Circular/ Compacted/sector-shaped conductor.
- Insulation:-**
PVC (Heat resistant PVC on request)
- Machanical Protection:-**
Galvanized steel wire/double/strips helical steel tape. Aluminium wire armouring for single core cable.
- Inner & outer sheath:-**
PVC Black/Gray or as per requirement.



LT (PVC) POWER CABLES

1 Core, Aluminium Conductor, PVC insulated, PVC sheathed, Unarmoured (Ayy)/ Armoured (AYWY)/ Cable-650/1100 volts as per is : 1554 (Pt-1)/88

Nominal cross sectional area	UNARMOURED				ARMOURED				Max. D.C. Conductor Resistance at 20° C	A.C CURRENT RATING (AMPS.)							
	nominal thickness of pvc insulation	app. Overall dia	app. Weight	nominal thickness of pvc insulation	nominal dia. Of aluminium wire	app. Overall dia	app. Weight	In Air				In ground					
								GPPVC Insulation Cables		HRPVC Insulation Cables		GPPVC Insulation Cables		HRPVC Insulation Cables			
sq. mm	mm	mm	kg/km	mm	mm	kg/km	kg/km	Ohm/km.	2	3	2	3	2	3	2	3	
1.5	0.8	6.7	68	1.1	1.4	10	108	18.1	18	15	21	18	21	17	24	20	
2.5	0.9	7.4	70	1.2	1.4	10.8	115	12.1	5	21	30	26	28	24	33	28	
4	1	8.2	81	1.3	1.4	11.5	126	7.41	32	27	38	33	36	31	41	35	
6	1	8.8	90	1.3	1.4	12.2	164	4.61	41	35	50	42	44	39	52	46	
10	1	9.7	115	1.3	1.4	13	197	3.08	56	47	69	57	59	51	69	60	
16	1	10.7	155	1.3	1.4	14.1	238	1.91	72	64	88	78	75	66	88	77	
25	1.2	12.3	195	1.5	1.4	16	295	1.2	99	84	121	103	97	86	112	101	
35	1.2	14.1	270	1.5	1.4	17.2	375	0.868	120	105	146	129	120	100	140	117	
50	1.4	15	334	1.7	1.4	18.7	566	0.641	150	130	184	158	145	120	170	140	
70	1.4	16.7	427	1.7	1.4	20.9	608	0.443	185	155	226	190	170	140	199	163	
95	1.6	19	546	1.9	1.6	23	732	0.32	215	190	264	233	205	175	240	205	
120	1.6	20.8	643	1.9	1.6	25	844	0.253	240	220	292	270	230	195	268	228	
150	1.8	23	760	2.1	1.6	26.2	979	0.206	270	250	330	305	265	220	310	258	
185	2	25	950	2.3	1.6	28.5	1151	0.164	305	290	374	356	300	240	351	278	
240	2.2	28	1150	2.5	1.6	31.9	1429	0.125	350	335	430	410	335	270	392	316	
300	2.4	32	1420	2.7	2	35.5	1784	0.1	395	380	484	464	370	295	434	345	
400	2.6	35.5	1731	3	2	40	2226	0.0778	455	435	557	534	410	325	480	378	
500	3	39	2200	3.4	2	43	2671	0.0605	490	480	600	589	435	345	510	403	
630	3.4	45	2850	3.5	2	49	3337	0.0469	560	550	680	674	485	390	565	456	
800	3.4	48.5	3450	3.9	2	52.8	4210	0.0367	640	630	774	785	530	440	620	515	
1000	3.4	55	4150	3.9	2	58	5024	0.0291	740	720	895	800	580	490	680	570	

Technical Data of Cables with copper can be supplied on request.

2 Core, Aluminium Conductor, PVC insulated, PVC sheathed, Unarmoured (Ayy)/ Armoured (AYWY)/ Cable-650/1100 volts as per is : 1554 (Pt-1)/88

Nominal cross sectional area	Nominal thickness of pvc	UNARMOURED		ARMOURED				Max. D.C. Conductor Resistance	A.C CURRENT RATING (AMPS.)			
		app. Overall	app. Weight	Nominal Steel Armour Size mm		app. Overall	app. Weight		In Air		In ground	
				W	F				GPPVC	HRPVC	GPPVC	HRPVC
sq. mm	mm	mm	kg/km	W	F	mm	kg/km	Ohm/km.	Amps	Amps	2	3
1.5	0.8	11.5	175	1.4	-	14.5	435	18.1	16	20	18	21
2.5	0.9	13	210	1.4	-	16	500	12.1	21	26	25	29
1	1	14.5	270	1.4	-	17.5	600	7.41	27	33	32	36
6	1	16	310	1.4	-	18.5	650	4.61	35	42	40	47
10	1	18.1	400	1.4	-	20.9	720	3.08	47	57	55	64
16	1	19	470	-	4x0.8	21	840	1.91	59	72	70	82
25	1.2	20	498	-	4x0.8	22	770	1.2	78	95	90	105
35	1.2	21.5	590	-	4x0.8	23	910	0.868	99	120	110	128
50	1.4	24	730	-	4x0.8	25.6	110	0.641	125	153	135	158
70	1.4	26.5	880	-	4x0.8	28	1345	0.443	150	183	160	187
95	1.6	29	1190	-	4x0.8	30.6	1685	0.32	185	225	190	222
120	1.6	31.9	1350	-	4x0.8	33.5	1890	0.253	210	256	210	245
150	1.8	35	1650	-	4x0.8	36	2265	0.206	240	294	240	280
185	2	37.3	1950	-	4x0.8	39.8	2685	0.164	275	334	275	322
240	2.2	43.7	2500	-	4x0.8	45.7	3400	0.125	325	397	320	374
300	2.4	45.8	3100	-	4x0.8	47.6	44330	0.1	365	445	355	416
400	2.6	51	4000	-	4x0.8	52.5	4950	0.0778	420	515	385	450

Cables with conductor area upto 10 Sq.mm can be substituted with copper conductor of one size lower.

LT (PVC) POWER CABLES

3 Core, Aluminium Conductor, PVC insulated, PVC sheathed, Unarmoured (AYY)/ Armoured (AYWY)/ Cable-650/1100 volts as per is : 1554 (Pt-1)/88

Nominal cross sectional area sq.mm	Nominal thickness of pvc insulation mm	Unarmoured		Armoured				Max. D.C. conductor resistance at 20°C ohm/km	A.C. current rating (Amps.)			
		app. Overall dia. mm	app. Weight kg/km	nominal steel armour size mm		app. Overall dia. mm	app. Weight kg/km		In air		In ground	
				W	F				GPPVC insulation Amps.	HRPVC insulation Amps.	GPPVC insulation Amps.	HRPVC insulation Amps.
1.5	0.8	11.5	200	1.4	-	14.5	485	18.1	13	16	16	18
2.5	0.9	13.5	240	1.4	-	16	560	12.1	18	22	21	24
4	1	15.4	290	1.4	-	17.5	610	7.41	23	28	28	32
6	1	16.5	338	1.4	-	19	690	4.61	30	38	35	41
10	1	18.5	420	1.4	-	22.5	850	3.08	40	49	46	54
16	1	21.2	560	-	4x0.8	23	970	1.91	51	63	60	69
25	1.2	22	620	-	4x0.8	23.5	1050	1.2	70	86	76	89
35	1.2	24	770	-	4x0.8	25.5	1145	0.868	86	105	92	108
50	1.4	27.5	970	-	4x0.8	29	1450	0.641	105	127	110	129
70	1.4	30.5	1270	-	4x0.8	31.5	1700	0.443	130	159	135	157
95	1.6	34.5	1640	-	4x0.8	36	2200	0.32	155	190	165	193
120	1.6	37	1865	-	4x0.8	38.5	2490	0.253	180	218	185	215
150	1.8	40.8	2370	-	4x0.8	42.8	3080	0.206	205	251	210	246
185	2	45.2	2875	-	4x0.8	46.8	3615	0.164	240	294	235	276
240	2.2	50.6	3820	-	4x0.8	52.5	4550	0.125	280	340	275	322
300	2.4	58.5	4635	-	4x0.8	59.5	5500	0.1	315	386	305	358
400	2.6	63.3	5600	-	4x0.8	65	6700	0.0778	375	445	335	390

Cables with conductor area upto 10 Sq.mm can be substituted with copper conductor of one size lower.

3.5 Core, Aluminium Conductor, PVC insulated, PVC sheathed, Unarmoured (AYY)/ Armoured (AYWY)/ Cable-650/1100 volts as per is : 1554 (Pt-1)/88

Nominal cross sectional area sq.mm	Nominal thickness of pvc insulation mm	unarmoured		armoured			Max. D.C. conductor resistance at 20°C	A.C. current rating (Amps.)			
		app. Overall dia. mm	app. Weight kg/km	nominal steel armour size mm	app. Overall dia. mm	app. Weight kg/km		In air		In ground	
								GPPVC insulation Amps.	HRPVC insulation Amps.	GPPVC insulation Amps.	HRPVC insulation Amps.
25/16	1.2/1.0	25	760	4x0.8	26	1170	1.2	70	86	76	89
35/16	1.2/1.0	27	880	4x0.8	28	1300	0.868	86	105	92	108
50/25	1.4/1.2	30	1145	4x0.8	31.6	1660	0.641	105	127	110	129
70/35	1.4/1.2	34.5	1470	4x0.8	35	2020	0.443	130	159	135	157
95/50	1.6/1.4	38.5	1890	4x0.8	40	2520	0.32	155	190	165	193
120/70	1.6/1.4	42	2300	4x0.8	43	2990	0.253	180	218	185	215
150/70	1.8/1.4	46	2710	4x0.8	47	3515	0.206	205	251	210	246
185/95	2.0/1.6	50.2	3210	4x0.8	52	4170	0.164	240	294	235	276
240/120	2.2/1.6	56.5	4230	4x0.8	58	5275	0.125	280	340	275	322
300/150	2.4/1.8	62.5	5385	4x0.8	64	6300	0.1	315	386	305	358
400/185	2.6/2.0	69.5	6650	4x0.8	71.5	7800	0.1778	375	445	335	390

Cables with conductor area upto 10 Sq.mm can be substituted with copper conductor of one size lower.

LT (PVC) POWER CABLES

4 Core, Aluminium Conductor, PVC insulated, PVC sheathed, Unarmoured (AYY)/ Armoured (AYWY)/ Cable-650/1100 volts as per is : 1554 (Pt-1)/88

Nominal cross sectional area sq.mm	Nominal thickness of pvc insulation mm	Unarmoured		Armoured				Max. D.C. conductor resistance at 20°C ohm/km	A.c. current rating (amps.)			
		app. Overall dia. mm	app. Overall weight kg/km	Nominal steel armour size mm		app. Overall dia. mm	app. Weight kg/km		in air		In ground	
				W	F				GPPVC insulation Amps.	HRPVC insulatio Amps.	GPPVC insulation Amps.	HRPVC insulatio Amps.
2.5	0.9	14	230	1.4	-	17	560	12.1	18	22	21	24
4	1	16.6	320	1.4	-	19	700	7.41	23	28	28	32
6	1	18	350	1.4	-	20.5	800	4.61	30	38	35	41
10	1	20	450	-	4x0.8	21	810	3.08	40	49	46	54
16	1	23	650	-	4x0.8	23.5	1000	1.91	51	63	60	69
25	1.2	25.5	765	-	4x0.8	26	1210	1.2	70	86	76	89
35	1.2	28	930	-	4x0.8	28.5	1420	0.868	86	105	92	108
50	1.4	32.9	1250	-	4x0.8	34	1800	0.641	105	127	110	129
70	1.4	36.4	1600	-	4x0.8	37.5	2220	0.443	130	159	135	157
95	1.6	41.3	2180	-	4x0.8	42.5	2830	0.32	155	190	165	193
120	1.6	44.8	2560	-	4x0.8	45	3250	0.253	180	218	185	215
150	1.8	49.7	3120	-	4x0.8	51	3820	0.206	205	251	210	246
185	2	54.6	3700	-	4x0.8	56.2	4550	0.164	240	294	235	276
240	2.2	61	4760	-	4x0.8	63	5930	0.125	280	340	275	322
300	2.4	67	5900	-	4x0.8	68.5	6970	0.1	315	386	305	358
400	2.6	76.2	7425	-	4x0.8	78	8800	0.0778	375	445	335	390

Cables with conductor area upto 10 Sq.mm can be substituted with copper conductor of one size lower.

1.1 KV Copper Conductor, PVC nsulated & Sheathed, Armoured/Unarmoured Cable Conformed to IS: 1554 (Pt-1)

No. of core	Nominal area of conductor sq.mm	Nominal thickness of insulation mm	Unarmoured		Armoured			Max. D.C. conductor resistance at ohm/km	A.C. curret rating			
			AYY		AYWY				In air at 40°C		In ground at 30°C	
			App. Overall dia of cable (mm)	App. Weight of cable (kg/km)	Nominal armour size (mm)	App. Overall dia (mm)	app. Weight (kg/km)		PVC insulation (Amps.)	HR PVC insulation (Amps.)	PVC insulation (Amps.)	HR PVC insulation (Amps.)
2core	4	1	14	235	1.4	16	510	4.61	35	42	41	47
	6	1	15	290	1.4	17	600	3.06	45	54	50	57
	10	1	18	430	1.4	20	785	1.86	60	72	70	80
3core	16	1	20	580	4x0.8	21	800	1.15	48	94	90	103
	4	1	15	290	1.4	17	580	4.61	30	36	36	41
	6	1	16	365	1.4	18	695	3.08	39	47	45	51
4 core	10	1	18	565	1.4	20	980	1.83	52	62	60	68
	16	1	19	660	4x0.8	21	955	1.15	66	79	77	88
	4	1	16	370	1.4	18	680	4.61	30	36	36	41
	6	1	17	470	1.4	19	870	3.08	39	47	45	51
	10	1	20	720	4x0.8	22	950	1.83	52	62	60	68
	16	1	21	850	4x0.8	22	1140	1.15	66	79	77	88

Cables with conductor area upto 10 Sq.mm can be substituted with copper conductor of one size lower.

LT (PVC) POWER CABLES

Basic assumption for current rating for PVC Cables

Max conductor Temperature	70° C	
Ambent air temperature	40°C	
Ground temperature	30° C	
Thermal resistivity of soil	150°C	cm/W
Thermal resistivity of Insulation	650°C	cm/W
Depth of laying (directly in ground)	75cm	
Max conductor temperature	160°C	

Rating factors for variation in ambient air temperature

Air Temperature °C	15	20	25	30	35	40	45	50	55	60
Rating Factor	1.4	1.32	1.25	1.16	1.09	1	0.9	0.81	0.7	0.57

Rating factors for soil temperature for cable in ground

ground Temperature °C	15	20	25	30	35	40	45	50	55
Rating Factor	1.17	1.12	1.6	1	0.94	0.87	0.79	0.7	0.61

Rating factors for variation in depth of laying ground

Depth of laying (cms)	75	90	105	120	150	180 & above
Rating Factor up to 25 sqmm	1	0.99	0.98	0.97	0.96	0.95



CONTROL CABLES

Cables for control circuits in power plants and other similar industrial installation and signaling network of railways, with or without FR/FRLS properties in sizes normally upto 61 cores. Voltage grade 650/1100 Volts (U/U). Conforming to standard specifications like IS 1554(Pt1), Bs 6346, IEC227-I, III, IRS 63/89.

Configuration:- Multi Core/ Multi-pair.

Construction

- **Conductor :-**
solid/ stranded, circular annealed, bare/tinned copper wire of 1.5 sq. mm, 2.5sq.mm, 4.0sq.mm, 6.0sq.mm.
- **Insulation:-**
PVC fully color coded cores. Core identification by printed numerals / letters also available on request.
- **Screen(if desired) :-**
Screening by copper braid or aluminium mylar tape or aluminium wire for reinforced armour types.
- **Drain Wire (if desired) :-**
Drain wire of solid / stranded, bare/tinned copper wire normally provided for screened cables.
- **Machanical Protection:-**
Galvanized steel wire or strip or double helical steel tape armour.
- **Inner & Outer Sheath :-**
PVC black/grey.



CONTROL CABLES

1. Insulation thickness (nom)- 0.8mm for 1.5 sq. mm & 0.9mm for 2.5 sq.mm
2. Thickness of inner sheath (minimum)
 - 0.3mm upto including 48 cores & 0.4mm above 48 cores for table 1
 - 0.3mm upto including 43 cores & 0.4mm above 43 cores for table 2
 - 0.3mm upto including 33 cores & 0.4mm above 33 cores for table 3
 - 0.3mm upto including 29 cores & 0.4mm above 29 cores for table 4
3. Standard drum length -500/1000mtrs+/-5% upto & including 19 cores & 500 mtrs.+/-5% above 19 cores
4. Maximum DC resistance of cond. at 20° C in ohm/km-12.1 for 1.5 sq.mm & 7.41 for 2.5sq.mm
5. Maximum AC resistance of cond. at 70°C in ohm/km-17.42 for 1.5 sq.mm. & 10.67 for 2.5sq.mm
6. Maximum mutual capacitance between core to core in nF/km-100 at 0.8khz.
7. Short circuit current in amp. for 1 sec. duration-176 for 1.5sq. mm & 287 for 2.5 sq.mm.
8. Minimum bending radius for unarmoured cable in mm=10x cable dia in mm.

Rating factor for variation in ground temperature (for cable laid direct in the ground)

GROUND TEMPERATURE °	15	20	25	30	35	40	45
RATING FACTOR	1.17	1.12	1.06	1	0.94	0.87	0.79

Rating factor for variation in ground temperature (for cable laid direct in the duct)

GROUND TEMPERATURE °	15	20	25	30	35	40	45
RATING FACTOR	1.17	1.12	1.06	1	0.91	0.87	0.79

Rating factor for variation in ambient air temperature

GROUND TEMPERATURE °	25	30	35	40	45
RATING FACTOR	1.25	1.16	1.09	1	0.9

Rating factor for multicore cable laid in air (spacing between cales equal to dia of the cable)

NO. OF RACKS	NO. OF CABLES PER PACK				
	1	2	3	6	9
1	1	0.98	0.96	0.93	0.92
2	1	0.95	0.93	0.9	0.89
3	1	0.94	0.92	0.89	0.88
4	1	0.93	0.9	0.87	0.86

Rating factor for multicore cable laid on racks in air (with cable touching)

NO. OF RACKS	NO. OF CABLES PER PACK				
	1	2	3	6	9
1	1	0.84	0.8	0.75	0.73
2	1	0.8	0.76	0.71	0.69
3	1	0.78	0.74	0.7	0.68
6	1	0.76	0.72		0.66

AERIAL BUNCHED CABLES



INTRODUCTION

Aerial Bunched Cable (ABC) is a good concept for over head power distribution. When compared to the conventional bare conductor over head distribution system ABC provides reliability and higher safety. Lowers power losses and ultimate system economy by reducing installation, maintenance and operative cost. This system is ideal for rural distribution and specially attractive for installation in difficult places such as hilly areas, forest areas, coastal areas etc.

CONSTRUCTION OF ABC

XLPE/HDPE insulated power conductors of aluminium (neutral conductor and street lighting conductors if and when necessary) are laid together (twisted) around a high tensile stranded and aluminum alloy with insulated or bare messenger wire to form the aerial bunched cable. This assembly is directly strung on to distribution pole/towers by mean of standard hardwares available in the market but care shall be taken to render the messenger wire completely insulated from earthing at any point of distribution in case of HT ABC. The XLPE (cross-linked polyethelene) insulation is black in colour and its stabilizer against deterioration caused by exposure to direct sunlight and ultraviolet radiation, XLPE is cross-linkable low density polythylene which is made thermoset by special formation from base polymer of thgermoplastic low density polyethylene, XLPE combines the best electrical properties of LDPE and superior thermo mechanical properties.

MATERIALS

- Aluminum conductors conform to IS: 8130 (class-2)
- Stranded high tensile AI Alloy messenger wire conforms to IS:398 (Part-4). Alternatively Galvanized steel wire conforms to IS:398 (Part-2)
- XLPE and HDPE insulation of power conductors conforms to IS:7098 (part-I & II) and IS:6474 respectively. Since, the tension-form the current carrying conductor is totally removed by introduction of messenger. Wire the operating temperature of the conductor is 900C as against 750C of the bare conductor of the same size.

STRINGING

No difficulty is envisaged during stringing of ABC in the conventional method but care shall be taken that insulated conductors do not get damaged during installation.

Dragging the ABC on the ground is to be avoided. Tension to be applied during stringing shall be 25% of the breaking load of the messenger wires. This will allow line to have sag within specified limit of 1.5% of the span at the lowest ambient temperature.

AERIAL BUNCHED CABLES

JOINTING

While mid-span jointing permissible for LT ABC system by conventional technique, our recommendation will be to draw the line in such a way as to bring the joints at the supports. Mid-span jointing is not at all recommended in the case of HT lines our recommendation is for outdoor type HY terminations only. Under unavoidable circumstances, line tapping at the support points may be allowed through suitably designed clamp connectors/PG clamp, semi-conducting screen continuity shall be maintained at all joints as far as possible to avoid fluctuations during system disturbances. The 3 phase screens may be shorted and earthed through suitable non-linear surge arrestor.

RELIABILITY, SAFETY AND FLEXIBILITY:

ABC Cables are highly reliable and insulation has been developed to with stand heat, cold and intense sunlight. Disturbance and faults occur five to ten times more often in open wire lines than in ABC lines. There is no risk in touching the live cable and the insulation reduces the number of short circuits and over-voltages in overhead cables during thunder-storms. Few hardware accessories are needed as each one can be used with many different size of cable. This makes installation and storage easier. Streets can easily be get it at little extra cost by using the ABC cables that have an extra conductor for lighting. The cable can be supplied with one or two insulated conductors for street lighting.

The hardware and accessories for AB cables are made by various reputed manufacturer and is easily available in India. They are similar to the standard hardware available for Bare conductor overhead distribution lines.

SCOPE

This specification covers design, engineering, manufacture, assembly, stage testing, inspection and testing before supply and delivery at site of XLPE. Insulated Aluminum cables twisted over central bare/insulate aluminum messenger wire.

STANDARDS

The materials shall conform in all respects to the relevant Indian Standard Specifications with latest amendments thereto, IS-14255/95 Indian Title International & Standard Internationally recognized standard.

IS-8130/1484 Aluminum conductors for Insulated electric cables

IS-6474/1984 Polyethylene Insulation for IS 7098 Part-I XLPE Insulation

Cables for voltage upto and including 1000 V

IS-398/Part-IV/All Aluminum Alloy IEC - 228/1978

1994 Conductors (AAAC) for Overhead Transmission purposes Conductors of Insulated Cables

IS 10418/1982 Drums for electric cables

IS-6568/1988 Specification for logs for BS148/ASTMD plywood 1275, D1533, D 1934,

IEC

PUB 296-1969

SI. NO.	DESCRIPTION
1	Aluminum conductor (power)
2	XLPE Insulation
3	Aluminum Conductor (lighting)
4	Bare 'Al-alloy' conductor (messenger)



AERIAL BUNCHED CABLES

1.1KV grade stranded & compacted aluminium phase conductor and stranded messenger conductor with all aluminium alloy, phase conductor is insulated with XLPE compound, messenger is either insulated or bare with lighting conductor of 16mm² referred specification IS: 14255-1995 up to the latest amendment.

Description & type of cable	No. of wires		Thickness of XLPE insulation		App. Overall dia. mm	App. Weight of cable kg/km	Breaking load of messenger kn(min)	Max. D.C. resistance ohms/km		A.C. current rating Amps. in air at 40°C
	Phase	Messenger	Phase	Messenger				Phase	Messenger	
			mm	mm						
With insulated messenger conductor										
3C x 16 mm ² + 25 mm ² (insulated) + 16 mm ²	7	7	1.2	1.2	23.5	369	7	1.91	1.38	62
3C x 25 mm ² + 25 mm ² (insulated) + 16 mm ²	7	7	1.2	1.2	25	457	7	1.2	1.38	82
3C x 35 mm ² + 25 mm ² (insulated) + 16 mm ²	7	7	1.2	1.2	27.5	554	7	0.868	1.38	103
3C x 35 mm ² + 35 mm ² (insulated) + 16 mm ²	7	7	1.2	1.2	28.4	586	10.1	0.868	0.986	103
3C x 50 mm ² + 35 mm ² (insulated) + 16 mm ²	7	7	1.5	1.2	32.5	760	10.1	0.641	0.986	127
3C x 70 mm ² + 50 mm ² (insulated) + 16 mm ²	7	7	1.5	1.5	37.5	1007	14	0.443	0.689	154
3C x 70 mm ² + 70 mm ² (insulated) + 16 mm ²	7	7	1.5	1.5	39.5	1070	19.7	0.443	0.492	154
3C x 95 mm ² + 70 mm ² (insulated) + 16 mm ²	19	7	1.5	1.5	42.5	1304	19.7	0.32	0.492	188
3C x 120 mm ² + 70 mm ² (insulated) + 16 mm ²	19	7	1.6	1.5	46.8	1550	19.7	0.253	0.492	218
3C x 150 mm ² + 70 mm ² (insulated) + 16 mm ²	19	7	1.8	1.5	50.8	1860	19.7	0.206	0.492	248
With bare messenger conductor										
3C x 16 mm ² + 25 mm ² (bare) + 16 mm ²	7	7	1.2	N.A*	19.5	340	7	1.91	1.38	62
3C x 25 mm ² + 25 mm ² (bare) + 16 mm ²	7	7	1.2	N.A*	20.5	429	7	1.200	1.38	82
3C x 35 mm ² + 25 mm ² (bare) + 16 mm ²	7	7	1.2	N.A*	23.5	526	7	0.868	1.38	103
3C x 35 mm ² + 35 mm ² (bare) + 16 mm ²	7	7	1.2	N.A*	25	553	10.1	0.868	0.986	103
3C x 50 mm ² + 35 mm ² (bare) + 16 mm ²	7	7	1.5	N.A*	26.8	727	10.1	0.641	0.986	127
3C x 70 mm ² + 50 mm ² (bare) + 16 mm ²	7	7	1.5	N.A*	31.5	958	14	0.443	0.689	154
3C x 70 mm ² + 70 mm ² (bare) + 16 mm ²	7	7	1.5	N.A*	34.5	1013	19.7	0.443	0.492	154
3C x 95 mm ² + 70 mm ² (bare) + 16 mm ²	19	7	1.5	N.A*	37	1248	19.7	0.32	0.492	188
3C x 120 mm ² + 70 mm ² (bare) + 16 mm ²	19	7	1.6	N.A*	39	1493	19.7	0.253	0.492	218
3C x 150 mm ² + 70 mm ² (bare) + 16 mm ²	19	7	1.8	N.A*	40	1803	19.7	0.206	0.492	248

Note: Insulation thickness of 16 mm² for lighting conductor operating temperature
 Current rating of 16 mm² lighting conductor
 Conductor operating temperature
 Short circuit temperature for one sec.

1.20 mm
 62 Amps.
 90°C
 250°C

Ambient Air Temperature is 40°C

AERIAL BUNCHED CABLES

1.1 KV grade stranded & compacted aluminium alloy, phase conductor and stranded messenger conductor with all aluminium alloy, phase conductor is insulated with XLPE compound, messenger is either insulated or bare with lighting conductor of 16 mm² referred specification IS: 14255-1995 up to latest amendment.

Description & type of cable	No. of wires		Thickness of XLPE insulation		App. Overall dia. mm	App. Weight of cable kg/km	Breaking load of messenger kn(min)	Max. D.C. resistance		A.C. current rating Amps. in air at 40°C
	phase	messenger	phase mm	messenger mm				ohms/km		
								phase	messenger	
With insulated messenger conductor										
1C x 16 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	20	165	7	1.91	1.38	72
3C x 16 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	22	301	7	1.91	1.38	64
1C x 25 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	22.4	195	7	1.2	1.38	99
3C x 25 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	25	390	7	1.2	1.38	84
1C x 35 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	27.3	227	7	0.868	1.38	120
3C x 35 mm ² + 35 mm ² (insulated)	7	7	1.2	1.2	27.4	486	7	0.868	1.38	105
1C x 35 mm ² + 35 mm ² (insulated)	7	7	1.2	1.2	28	259	10.1	0.868	0.986	120
3C x 35 mm ² + 25 mm ² (insulated)	7	7	1.2	1.2	28.4	518	10.1	0.868	0.986	105
1C x 50 mm ² + 35 mm ² (insulated)	7	7	1.5	1.2	29	317	10.1	0.641	0.986	150
3C x 50 mm ² + 35 mm ² (insulated)	7	7	1.5	1.2	32.3	692	10.1	0.641	0.986	130
3C x 70 mm ² + 50 mm ² (insulated)	7	7	1.5	1.5	37.5	939	14	0.443	0.689	155
3C x 70 mm ² + 70 mm ² (insulated)	7	7	1.5	1.5	39	1002	19.7	0.443	0.492	155
3C x 95 mm ² + 70 mm ² (insulated)	19	7	1.5	1.5	42.7	1237	19.7	0.32	0.492	190
3C x 120 mm ² + 70 mm ² (insulated)	19	7	1.6	1.5	46	1482	19.7	0.253	0.492	220
3C x 150 mm ² + 70 mm ² (insulated)	19	7	1.8	1.5	50	1791	19.7	0.206	0.492	250
With bare messenger conductor										
Description & type of cable	No. of wires		Thickness of XLPE insulation		App. Overall dia. mm	App. Weight of cable kg/km	Breaking load of messenger kn(min)	Max. D.C. resistance		A.C. current rating Amps. in air at 40°C
	phase	messenger	phase mm	messenger mm				ohms/km		
								Phase	Messenger	
1C x 16 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	18.5	137	7	1.91	1.38	72
3C x 16 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	19.3	272	7	1.91	1.38	64
1C x 25 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	19.5	167	7	1.2	1.38	99
3C x 25 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	20.5	362	7	1.2	1.38	84
1C x 35 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	22	199	7	0.868	1.38	120
3C x 35 mm ² + 35 mm ² (bare)	7	7	1.2	N.A*	23.5	458	7	0.868	1.38	105
1C x 35 mm ² + 35 mm ² (bare)	7	7	1.2	N.A*	24.6	226	10.1	0.868	0.986	120
3C x 35 mm ² + 25 mm ² (bare)	7	7	1.2	N.A*	25	485	10.1	0.868	0.986	105
1C x 50 mm ² + 35 mm ² (bare)	7	7	1.5	N.A*	26.6	284	10.1	0.641	0.986	150
3C x 50 mm ² + 35 mm ² (bare)	7	7	1.5	N.A*	26.8	659	10.1	0.641	0.986	130
3C x 70 mm ² + 50 mm ² (bare)	7	7	1.5	N.A*	31.2	890	14	0.443	0.689	155
3C x 70 mm ² + 70 mm ² (bare)	19	7	1.5	N.A*	34.4	946	19.7	0.443	0.492	155
3C x 95 mm ² + 70 mm ² (bare)	19	7	1.5	N.A*	36	1179	19.7	0.32	0.492	190
3C x 120 mm ² + 70 mm ² (bare)	19	7	1.6	N.A*	38	1425	19.7	0.253	0.492	220
3C x 150 mm ² + 70 mm ² (bare)	19	7	1.8	N.A*	40	1735	19.7	0.206	0.492	250

Rating factor for variation in air temperature:

Air Temperature °C	20	25	30	35	40	49	50
Rating Factor	1.32	1.25	1.16	1.09	1	0.9	0.81

*Not Applicable

FLEXIBLE MULTI STRAND HOUSE WIRING



UNIWIRED[®] submersible cable type YY 650/1100 volts grade with copper conductor

Nominal cross sectional area sq.mm.	No. & dia. Of wire No./mm	Radial thickness of insulation mm	Radial thickness of sheath mm	App. Overall dia. Mm	App. Wt. of cable kg/km	Standard length of coil meters
1.5	21/30	0.6	0.9	4.7x10.30	105	100
2.5	35/030	0.7	1	5.5x12.30	155	100
4	56/0.30	0.8	1.1	6.5x14.90	230	100
6	85/0.30	0.8	1.1	7.4x16.40	300	100
10	140/0.30	1	1.2	8.5x20.50	475	100
16	126/0.40	1	1.3	9.8x23.80	695	100
25	196/0.40	1.2	1.5	11.9x29.30	1060	100
35	276/0.40	1.2	1.6	13.2x32.80	1415	100
50	396/0.40	1.4	1.7	15.4x39	1990	100

Nominal cross sectional area of conductor sq.mm.	No. of nom. Dia. Of wires (mm)	Thickness of insulation (Nom.)(mm)	App. Overall dia (mm)	Current carrying capacity 2 wires single phase (mm)	D.C. resistance (max.) per km. at 20°C (mm)
0.75	24/0.20	0.6	2.5	7	26
1	14/0.30	0.7	2.8	12	18.1
1.5	22/0.30	0.7	3.1	16	12.1
2.5	36/0.30	0.8	3.8	22	7.41
4	56/0.30	0.8	4.4	29	4.95
6	84/0.30	0.8	5.2	37	3.3

Standard Colours : Red, Yellow, Blue, Black and Green (for earthing)
Supplied in 90 meter coils in attractive cartons, Conforms to IS 694:2010

FLEXIBLE MULTI STRAND HOUSE WIRING

Nominal cross sectional area of conductor	No. nom. Dia. Of wires	Thickness of insulation (nom.)	Appr. Overall dia.	Current carrying capacity* 2 wire single phase	D.C. resistance (max.) per Km. at 20°C
sq.mm	mm	mm	mm	mm	mm
1	14/0.30	0.7	2.8	12	18.1
1.5	22/0.30	0.7	3.1	16	12.1
2.5	36/0.30	0.8	3.8	22	7.41
4.6	56/0.30	0.8	4.4	29	4.95
6	84/0.30	0.8	5.2	37	3.3

Standard colour : Red, yellow, blue, black & green (for earthing).
Supplied in 90 mtr coils in attractive cartons, conforms to IS 694:1990

No. & dia of wire, No./inch	No. & dia of wire, No./SWG	No. & dia of wire, No./mm	Thickness		Appr. Overall dia. mm	appr. Weight of cable mm	current rating Amps.	Standard length of coil mtrs.
			PV insulation mm	PVC outersheath mm				

Single core unsheathed

1/0.044	1/18	1/1.2	1	-	3.2	18.1	19	91.44
3/0.029	3/32	3/0.73	1	-	3.7	23.5	22	91.44
3/0.036	3/20	3/0.91	1	-	4.12	31.2	28	91.44
7/0.029	7/22	7/0.73	1.1	-	4.5	41.5	38	91.44
7/0.036	7/20	7/0.91	1.2	-	5.2	60	46	91.44
7/0.044	7/18	7/1.12	1.2	-	5.8	81.5	57	91.44
7/0.052	-	7/1.32	1.2	-	6.4	108	70	91.44
7/0.064	7/16	7/1.62	1.3	-	7.5	156	88	91.44
19/0.044	19/18	19/1.12	1.3	-	8.3	197	110	91.44
19/0.025	-	19/1.42	1.3	-	9.3	365	127	91.44
19/0.064	19/16	19/1.62	1.4	-	11	390	160	91.44
19/0.083	19/14	19/2.11	1.4	-	13.4	640	220	91.44
37/0.064	37/16	37/1.64	1.5	-	14.5	725	245	91.44
37/0.083	37/14	37/2.11	1.5	-	17.9	1210	320	91.44

Single core Sheathed

1/0.044	1/18	1/1.12	1	0.7	4.7	30	19	91.44
3/0.029	3/32	3/0.73	1	0.7	5.2	37	22	91.44
3/0.036	3/20	3/0.91	1	0.7	5.6	45.5	28	91.44
7/0.029	7/22	7/0.73	1.1	0.7	6	58	38	91.44
7/0.036	7/20	7/0.91	1.2	0.7	6.6	74	46	91.44
7/0.044	7/18	7/1.12	1.2	0.7	7.2	100.5	57	91.41

Two Core Flat

1/0.044	1/18	1/1.12	1	0.9	5.10x8.40	71	14	91.44
3/0.029	3/32	3/0.73	1	0.9	5.60x9.40	87	18	91.44
3/0.036	3/20	3/0.91	1	1	6.20x10.40	113	24	91.44
7/0.029	7/22	7/0.73	1.1	1	6.60x11.20	140	31	91.44
7/0.036	7/20	7/0.91	1.2	1	7.20x12.40	182	37	91.44
7/0.044	7/18	7/1.12	1.2	1	8.00x13.80	239	46	91.41

FLEXIBLE MULTI STRAND HOUSE WIRING

Nominal cross sectional area sq.mm	Thickness of PVC insulation mm	THICKNESS		Apprx. Overall diameter mm	Apprx. Weight of cable mm	Current rating Amps.	Standard length of coil meters
		PVC insulation mm	PVC Outer sheath mm				
SINGLE CORE UNSHEATHED							
0.5	16/0.20	0.6	-	2.1	8.7	3	100
0.75	24/0.20	0.6	-	2.25	11.4	6	100
1	32/0.20	0.6	-	2.45	14.3	10	100
1.5	48/2	0.6	-	2.8	20.2	15	100
2.5	80/0.20	0.7	-	3.35	31.7	20	100
4	128/0.20	0.8	-	4	48.5	25	100
6	85/0.30	0.8	-	4.55	69	32	100
10	141/0.30	1	-	6	117	43	100
16	162/0.40	1	-	7	177	58	100
25	196/0.40	1.2	-	8.5	270	78	100
35	276/0.40	1.2	-	9.6	370	95	100
50	396/0.40	1.4	-	11.6	540	120	100
TWO CORE TWISTED							
0.5	16/0.20	0.6			17.7	3	100
0.75	24/0.20	0.6			23.2	6	100
1	32/0.20	0.6			29	10	100
1.5	48/0.20	0.6			41	15	100
2.5	80/0.20	0.7			64	20	100
4	128/0.20	0.8			98	25	100
TWO CORE ROUND							
0.5	16/0.20	0.6	0.9	6.1	49	3	100
0.75	24/0.20	0.6	0.9	6.4	59.2	6	100
1	32/0.20	0.6	0.9	6.8	66.7	10	100
1.5	48/0.20	0.6	0.9	7.5	85.6	15	100
2.5	80/0.20	0.7	1	8.8	125	20	100
4	128/0.20	0.8	1	10.1	175	25	100
THREE CORE ROUND							
0.5	16/0.20	0.6	0.9	6.5	58	3	100
0.75	24/0.20	0.6	0.9	6.8	68	6	100
1	32/0.20	0.6	0.9	7.2	80	10	100
1.5	48/0.20	0.6	0.9	8	106	15	100
2.5	80/0.20	0.7	1	9.4	155	20	100
4	128/0.20	0.8	1	10.7	220	25	100
6	85/0.30	0.8	1.1	12.1	300	32	100
10	141/0.30	1	1.2	15.14	495	43	100
16	126/0.40	1	1.3	17.8	725	58	100
25	196/0.40	1.2	1.5	21.5	1090	78	100
35	276/0.40	1.2	1.6	24	1435	95	100
50	396/0.40	1.4	1.7	28.5	2070	120	100
FOUR CORE ROUND							
0.5	16/0.20	0.6	0.9	7.1	70	3	100
0.75	24/0.20	0.6	0.9	7.5	85	6	100
1	32/0.20	0.6	0.9	8	102	10	100
1.5	48/0.20	0.6	1	9	136	15	100
2.5	80/0.20	0.7	1	10.3	195	20	100
4	128/0.20	0.8	1	11.9	280	25	100



UNIWIRES[®] twisted paired cables are best suited for telephone cabling applications. The conductor is made of solid annealed, electrolytic grade high conductivity bare copper. The conductor is insulated with special grade high-density polyethylene with different colours. The insulated cores are twisted with uniform lay to form pairs and are bunched together in such a manner so as to minimise cross talk. In 50 and 100 pair cables the units of 10 and 20 pairs respectively are identified with colour binders and stranded to form the laid up cable. The laid up cable is further jacketed with a grey colour fire retardant (FR) PVC specially formulated and manufactured in-house, with high oxygen and temperature index. The cables can be used for internal telephone wiring in high-rise buildings, offices, factories, hotels, residential complexes, etc. Stringent quality control at every stage, from raw material through manufacturing, up to the finished product guarantees high quality.

Salient Features: Low Attenuation, Low Crosstalk, Fire Retardant Jacket in Grey

Construction Parameters	1 Pair	2 Pair	3 Pair	4 Pair	5 Pair	10 Pair	20 Pair	50 Pair	100 Pair
Conductor (Solid annealed bare copper)	0.4 mm diameter (nom.) & 0.5 mm diameter (nom.)								
Insulation Material (0.4 & 0.5 mm dia.)	High density polyethylene								
Insulation Thickness (Average)	0.4 mm dia. 0.5 mm dia.	0.17 mm 0.20 mm							
Diameter of Insulated Conductor (Maximum)	0.4 mm dia. 0.5 mm dia.	0.74 mm 0.92 mm							
Rip cord (0.4 & 0.5 mm dia.)	Nylon - placed under Jacket for Jacket stripping								
Colour Combination	For 0.4 mm dia. & 0.5 mm dia.								
Pair 1	White-Blue	White-Blue	White-Blue	White-Blue	White-Blue	White-Blue	White-Blue	White-Blue	White-Blue
Pair 2	-	White-Orange	White-Orange	White-Orange	White-Orange	White-Orange	White-Orange	White-Orange	White-Orange
Pair 3	-	-	White-Green	White-Green	White-Green	White-Green	White-Green	White-Green	White-Green
Pair 4	-	-	-	White-Brown	White-Brown	White-Brown	White-Brown	White-Brown	White-Brown
Pair 5	-	-	-	-	White-Grey	White-Grey	White-Grey	White-Grey	White-Grey
Pair 6	-	-	-	-	-	Red-Blue	Red-Blue	Red-Blue	Red-Blue
Pair 7	-	-	-	-	-	Red-Orange	Red-Orange	Red-Orange	Red-Orange
Pair 8	-	-	-	-	-	Red-Green	Red-Green	Red-Green	Red-Green
Pair 9	-	-	-	-	-	Red-Brown	Red-Brown	Red-Brown	Red-Brown
Pair 10	-	-	-	-	-	Red-Grey	Red-Grey	Red-Grey	Red-Grey
Pair 11	-	-	-	-	-	-	Black-Blue	-	Black-Blue
Pair 12	-	-	-	-	-	-	Black-Orange	-	Black-Orange
Pair 13	-	-	-	-	-	-	Black-Green	-	Black-Green
Pair 14	-	-	-	-	-	-	Black-Brown	-	Black-Brown
Pair 15	-	-	-	-	-	-	Black-Grey	-	Black-Grey
Pair 16	-	-	-	-	-	-	Yellow-Blue	-	Yellow-Blue
Pair 17	-	-	-	-	-	-	Yellow-Orange	-	Yellow-Orange
Pair 18	-	-	-	-	-	-	Yellow-Green	-	Yellow-Green
Pair 19	-	-	-	-	-	-	Yellow-Brown	-	Yellow-Brown
Pair 20	-	-	-	-	-	-	Yellow-Grey	-	Yellow-Grey
No. of Unit	1 X 1 P	1 X 2 P	1 X 3 P	1 X 3 P	1 X 5 P	1 X 10 P	1 X 20 P	5 X 10 P	5 X 20 P
Colour of Unit Identification Binder	0.4 mm dia. & 0.5 mm dia.								
Unit 1	-	-	-	-	-	-	-	Blue	Blue
Unit 2	-	-	-	-	-	-	-	Orange	Orange
Unit 3	-	-	-	-	-	-	-	Green	Green
Unit 4	-	-	-	-	-	-	-	Brown	Brown
Unit 5	-	-	-	-	-	-	-	Grey	Grey
PVC Jacket (0.4 mm dia. & 0.5 mm dia.)	FRPVC compound with high oxygen index								
Approx. Outer Diameter	0.4 mm dia. 0.5 mm dia.	2.40 2.75	3.10 3.50	3.50 4.00	3.90 4.70	4.30 5.50	6.20 8.20	8.40 10.50	12.30 15.20 16.80 20.40
Packing Length (mtrs) 0.4 mm dia. & 0.5 mm dia.	90	90	90	90	90	90	90	500	500

Electrical Parameters	0.40 mm dia	0.50 mm dia
Conductor Resistance (max.) ohms/km at 200C	143.0	92.20
Mutual Capacitance (max.) nF/km	50	50
Insulation Resistance in Air (min.) M-ohms/km	10,000	10,000
Capacitance Unbalance Pair to Pair (max.) pF/km	250	250

UNIWIRES BROADBAND CABLES

- DROP CABLE -SINGLE Pair -0.50 mm
- DROP CABLE -SINGLE Pair -0.41 mm



UNIWIRES[®] | SUNGLOW

SOLAR CABLES
ECO Plus Energy

Solar DC Cables from PV Module to Array Junction Box

Single Core in sq.mm	XL- LSOH Insulation Thickness - Nominal in mm	XL- LSOH Sheathing Thickness - Nominal in mm	Overall Dia. Nominal in mm	Tinned Copper Maximum Resistance @ 20°C (ohms- Ω/Km)	Current Carrying Capacity (Single Cable in Air) (in Amps- A)
1.5	0.5	0.5	4.10 +/-0.5	13.700	30
2.5	0.5	0.5	4.10 +/-0.5	8.210	41
4	0.5	0.5	5.1 +/-0.5	5.090	55
6	0.5	0.5	6.1 +/-0.5	3.390	70

Solar DC Cables from Array Junction Box to Main Junction Box & MJB to Inverter

Single Core in sq.mm	XL- LSOH Insulation Thickness - Nominal in mm	XL- LSOH Sheathing Thickness - Nominal in mm	Overall Dia. Nominal in mm	Tinned Copper Maximum Resistance @ 20°C (ohms- Ω/Km)	Current Carrying Capacity (Single Cable in Air) (in Amps- A)
10	0.5	0.5	6.6 +/-0.5	1.950	98
16	0.5	0.5	7.7 +/-0.5	1.240	132
25	0.9	1.0	10.5 +/-0.7	0.795	176
35	0.9	1.1	12.0 +/-0.7	0.565	218
50	1.0	1.2	14.0 +/-0.7	0.393	274
70	1.1	1.3	16.0 +/-1.0	0.277	406
95	1.1	1.5	18.5 +/-1.0	0.210	491
120	1.2	1.6	20.0 +/-1.0	0.164	576
150	1.4	1.7	22.5 +/-1.0	0.132	670
185	1.6	1.9	25.0 +/-1.0	0.108	784
240	1.7	2.1	28.0 +/-1.0	0.0817	944

HANDLING, STORAGE AND LAYING OF CABLES

A. CABLE INSPECTION

Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:

1. A reel is lying flat on its side
2. Several reels are stacked
3. Other freight is stacked on a reel
4. Nails have been driven into reel flanges to secure shipping blocks
5. A reel flange is damaged
6. A cable covering is removed, stained or damaged
7. A cable end seal is removed or damaged. A reel has been dropped (hidden damage likely)

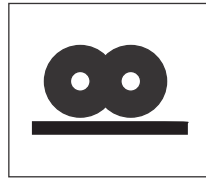
DO'S



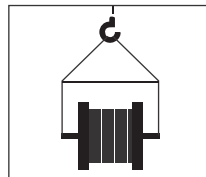
When off loading reels from a truck, lower reels carefully using a hydraulic gate, hoist or forklift truck.



If a fork lift is used, approach the reel from the flange side. Position the forks such that the reel is lifted by both reel flanges. Also Consideration should be given to, Traffic Patterns during off-loading & damage during the time in storage



Cable reels should be stored on hard surfaces resting on the flanges edge (flanges vertical). Align reels flange to flange and, if possible, arrange so that first in is first out.



When using a hoist, install a mancril through the reel arbor holes and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges,

B. CABLE HANDLING & STORAGE

Damage to cables can occur due to the incorrect handling to which the drums and cables may be subjected; causing breakdown of the drum flanges and in exceptional cases, movement of the drum barrel takes place. Once this breakdown of the drum occurs, the cable is immediately exposed to damage. Cables damaged during handling & storage can cause service failures when the subject cable is put to use.

Thus the following is a list of Do's and Don'ts that should be followed while handling and storing the cables before it is put to use.

DON'TS



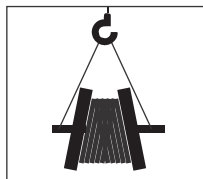
Never drop reels. If reels must be rolled, roll in opposite direction of the cable wraps to keep cable from loosening on the reel.



Do not allow the lift forks to contact the cable. Care must be taken by the fork lift operator not to make sudden turns or stops.



Multiple reels stacked on top of each other ("Pancake" storage) is not recommended for cable drums. The weight of the stack can total thousands of kgs. creating an enormous load on the bottom reels. Also, damage to the reel and/ or cable will likely occur when the reel is flipped for transit. A concentration of stress on the reel flange may cause it to break and subsequently damage the cable.



This may lead to the bending of the reel flanges and mashing the cable.



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