45 Years of Excellence

MAKE IN INDIA

Swadeshi® CABLES

An ISO 9001 Certified Company

WE PERFORM | WE CONNECT | WE DELIVER

IS: 694 IS: 1554 IS: 7098

PRODUCT CATALOGUE

POWERING CITIES FOR DECADES

OUR VISION

Our dedication to customer service ensures that you will receive goods where and when you require them. Our primary goal has always been to uphold quality and standards, even as we face continuous pressure to minimize prices. Striving to maintain affordable prices while simultaneously minimizing our environmental footprint through waste reduction is our ongoing commitment. We offer favourable lead times and flexible minimum order quantities for unique and customized products.

OUR MISSION

At Swadeshi Cables, our unwavering commitment to innovative and modern solutions has been a consistent priority. We define customer focus as the act of delivering precisely what our customers need, whether it's in the form of products or after sale services. To achieve this, we actively engage with our customers, thoroughly understand their requirements, and develop tailored solutions. This dedication extends to providing professional guidance to ensure that our customers receive exactly what they need without any unnecessary expenses. Our ongoing efforts revolve around continuous process improvement and empowering our staff, enabling us to consistently deliver top-quality products and services at competitive prices to our valued customers..

JAGDISH PRASAD BANSAL
CHAIRMAN
(OUR VISIONARY)

MAHAVIR BANSAL
MANAGING DIRECTOR

ADITYA BANSAL
DIRECTOR

SARTHAK BANSAL
DIRECTOR

45 Years of Excellence

ABOUT US

Swadeshi is a renowned manufacturer and supplier of electrical wires and cables, with over 45 years of expertise and a nationwide presence across India. Our distinguished reputation is built upon our diverse and comprehensive product line. Whether it's a standard cable or a customized solution, Swadeshi Cables is dedicated to delivering precisely tailored cables that meet our customer's requirements while maintaining highly competitive pricing. Our deep understanding of our products, coupled with our vast experience, allows us to offer a specification review service that is trusted by leading engineering and construction companies.

With our corporate headquarters and primary distribution centre situated in New Delhi, we strategically position ourselves at the geographic centre of the nation. At Swadeshi Cables, our workforce is our strength, consisting of skilled technocrats and design engineers. These professionals adhere rigorously to stringent quality control procedures and are motivated by the positive market response to our high-quality products. Our manufacturing facility is equipped with state-of-the-art machinery that enables us to produce and test cables in compliance with various international standards, including BIS, IEC, BS, VDE, and others. We are committed to continuous improvement, regularly enhancing our cutting-edge research and development and production capabilities through modernization initiatives.

Our company provides a comprehensive infrastructure for low voltage (LV) cable solutions, addressing the demands of diverse projects across various sectors. The cornerstone of our success is rooted in the proficiency of our professional team, robust partnerships with associates, and the agility to adapt rapidly and effectively. Coupled with a forward-thinking vision, we consistently aim to stay ahead of the curve. Our commitment to continuous improvement drives us to enhance the quality of our products continually, ensuring they meet the evolving needs of a broader client base while maximizing their satisfaction.

Our customer base primarily includes government departments, both at the central and state levels, as well as state-owned enterprises, defence establishments, railway authorities, Coal India Limited, ONGC, nuclear power plants, central and state public works departments (PWDs), state electricity boards and many other organizations, and a wide array of multinational corporations, corporate entities, and esteemed organizations spanning across both the public and private sectors. These encompass a diverse range of industries, including steel plants, sugar mills, cement plants, and many others.

WE'RE CONCERNED WITH
Quality Products at reasonable prices.

OUR ETHICS LIE IN
Fair Trade Practices.

OUR MOTTO IS
Customer Satisfaction

CERTIFICATIONS

QRO — QUALITY RESEARCH ORGANIZATION

Certificate of Registration

This is to certify that

GUARDIAN CABLES & CONDUCTORS (P) LTD.

C-408-409, DSIIDC Industrial Complex, Narela Delhi 110040, India

has been independently assessed by QRO
and is compliant with the requirement of:

ISO 9001:2015

Quality Management System

For the following scope of activities:

Manufacturer & Supplier of LT XLPE, PVC Power & Control Cables, PVC Flexible and Multi Strand Cables, Multi -Core Cables, Submersible Flat, Telephone & Aerial Bunched Cables, LAN, CCTV, COAxial & HT-Cables

Date of Certification: 29th July 2022
1st Surveillance Audit Due: 28th July 2023
2nd Surveillance Audit Due: 28th July 2024
Certificate Expiry: 28th July 2025

Certificate Number: 20220728106

Head of Certification

UKcert — Certification & Inspection

Certificate of Compliance

CE

We hereby declare that the technical file of product complied with the requirement of directive 2014/35/EU Low Voltage Directive

Certificate No.: CE-3053

Manufacturer

Name : GUARDIAN CABLES & CONDUCTORS (P) LTD

Address : C-408-409, DSIIDC Industrial Complex, Narela, Delhi 110040, India.

Products : PVC Insulated and/or PVC Sheathed Solid, Stranded, Multi Strand and Flexible Wires, Cables and Cords with Copper/Aluminium Conductor PVC/XLPE Insulated, Aluminium/Copper Armoured/Unarmoured, Power and Control Cables

The quality system file has been assessed, approved and is subject to continuous surveillance according to the Council Directive on 2014/35/EU Low Voltage Directive.

This certificate is issued under the following conditions:

1. It applies only to the quality system maintained in the manufacture of above referenced models and it does not substitute the design or type examination procedures, if requested.
2. The certificate remains valid until the manufacturing conditions or the quality systems are changed.
3. The certificate validity is conditioned by positive results of surveillance audits.

The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of conformity and compliance with all relevant EU Directives. The statement is based on a single evaluation of one sample of above mentioned product. It does not imply an assessment of the whole production.

Validity of this certificate can be verified at www.ukcertifications.org.uk/verify

Date of this Certificate	05th November 2022
1st Surveillance Audit Due	04th November 2023
2nd Surveillance Audit Due	04th November 2024
Certificate Expiry	04th November 2025

Authorised Signatory

भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-DL-06-0015823
NAME OF ENTERPRISE	M/S GUARDIAN CABLES AND CONDUCTORS PRIVATE LIMITED
TYPE OF ENTERPRISE *	

SNo.	Classification Year	Enterprise Type	Classification Date
1	2022-23	Small	26/06/2022
2	2021-22	Small	16/05/2021
3	2020-21	Small	30/03/2021

MAJOR ACTIVITY	MANUFACTURING
SOCIAL CATEGORY OF ENTREPRENEUR	GENERAL
NAME OF UNIT(S)	

S.No.	Name of Unit(s)
1	GUARDIAN CABLES AND CONDUCTORS PRIVATE LIMITED

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	C-408,409	Name of Premises/ Building	DSIIDC ,INDUSTRIAL COMPLEX
Village/Town	NARELA	Block	C
Road/Street/Lane	NARELA	City	DELHI
State	DELHI	District	NORTH WEST , Pin 110040
Mobile	9910480850	Email:	sales@swadeshicables.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	01/03/1995
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	01/03/1995

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	27 - Manufacture of electrical equipment	2732 - Manufacture of other electronic and electric wires and cables	27320 - Manufacture of other electronic and electric wires and cables (insulated wire and cable made of steel, copper, aluminium)	Manufacturing

DATE OF UDYAM REGISTRATION	30/03/2021

* In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.

राष्ट्रीय लघु उद्योग निगम लिमिटेड
THE NATIONAL SMALL INDUSTRIES CORPORATION LIMITED
(A Government of India Enterprise)

Branch Office : Central Delhi, CB-308, 2nd Floor, Ring Road, Naraina, New Delhi-110028
Ph : 01126775787 Fax : 01126775166
Email : bonaraina@nsic.co.in Website : www.nsic.co.in

GOVERNMENT PURCHASE ENLISTMENT CERTIFICATE

Renewal Certificate (Valid From 11/03/2022 to 10/03/2024)

Ref.No. NSIC/GP/WAZ/2015/42825 Date: 17/03/2022

M/s. Guardian Cables & Conductors Pvt. Ltd.
C-408-409, DSIIDC Industrial Area,Narela
DELHI,
DELHI- 110040

Factory Address:
1. C-408-409, DSIIDC Industrial Area,Narela
DELHI, DELHI-110040

Name of the Directors:
1. Sh. Naresh Bansal
2. Sh. Mahavir Bansal
3. Sh. Jagdish Parsad Bansal

Constitution: Private Limited UAM DL06B0003246 Enterprise Social Class: GENERAL Special Category: GENERAL

GOVERNMENT PURCHASE REGISTRATION NO: NSIC/GP/WAZ/2015/9019976

Monetary Limit: ₹ 625 lakhs (₹ Six Hundred Twenty Five Lakh Only)

TURNOVER (Rupees in Lakhs)

Financial Year	Annual Turnover
2019-19	770.46
2019-20	1079.43
2020-21	1248.84
Monetary Limit	625

MSEs registered with NSIC are exempted from deposit of Earnest Money irrespective of value of Monetary Limit.

Your name has been registered as a MSE Unit eligible for participation in the Central Government Store Purchase Programme as per the Single Point Registration Scheme for the following item(s)/Service(s)/Service(s)

Name of the Item(s)/ Service(s)	Specification(s)	Qualitative Capacity	Quantitative Capacity P.M
"As per List Attached" (1 item only)			

Disclaimer:- The purchasing agencies are advised to satisfy themselves with the store details in the certificate while doing the Technical Evaluation stage before placing the tender/order on the units, certified by NSIC.

S.N. SOMAUI
SENIOR BRANCH MANAGER
National Small Industries Corp. Ltd.
CB-308, 2nd Floor, Ring Road, Naraina
New Delhi-110028

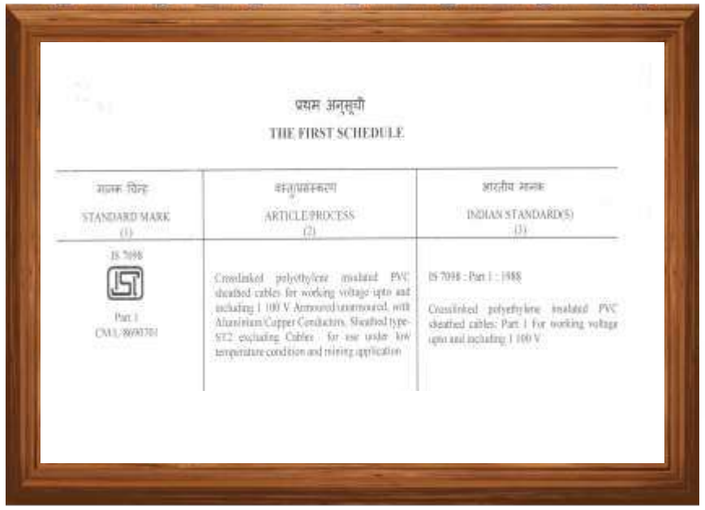
BIS LICENCES

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

मुख्य विभाग - 2 Delhi Branch Office - II

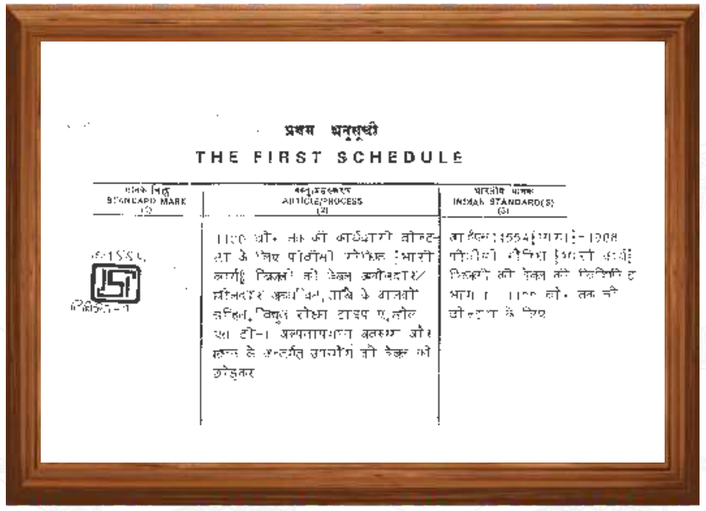
लाइसेंस संख्या सी एम/एल - 8166781 की संलग्नी
ATTACHMENT TO LICENCE NO. CM/L - 8166781

सी एम/एल संख्या CM/L-NO	लाइसेंसधारी का नाम और पता सहित नाम NAME OF THE LICENSEE WITH THE ADDRESS	उत्पाद का नाम NAME OF THE PRODUCT	भा मा संख्या IS NO.
8166781	GUARDIAN CABLES & CONDUCTORS (P) LTD. C-408-409, DSIIDC Industrial complex, Narela, Delhi : North West Delhi Delhi 110040	[illegible]	IS 694 : 2010



प्रथम अनुसूची
THE FIRST SCHEDULE

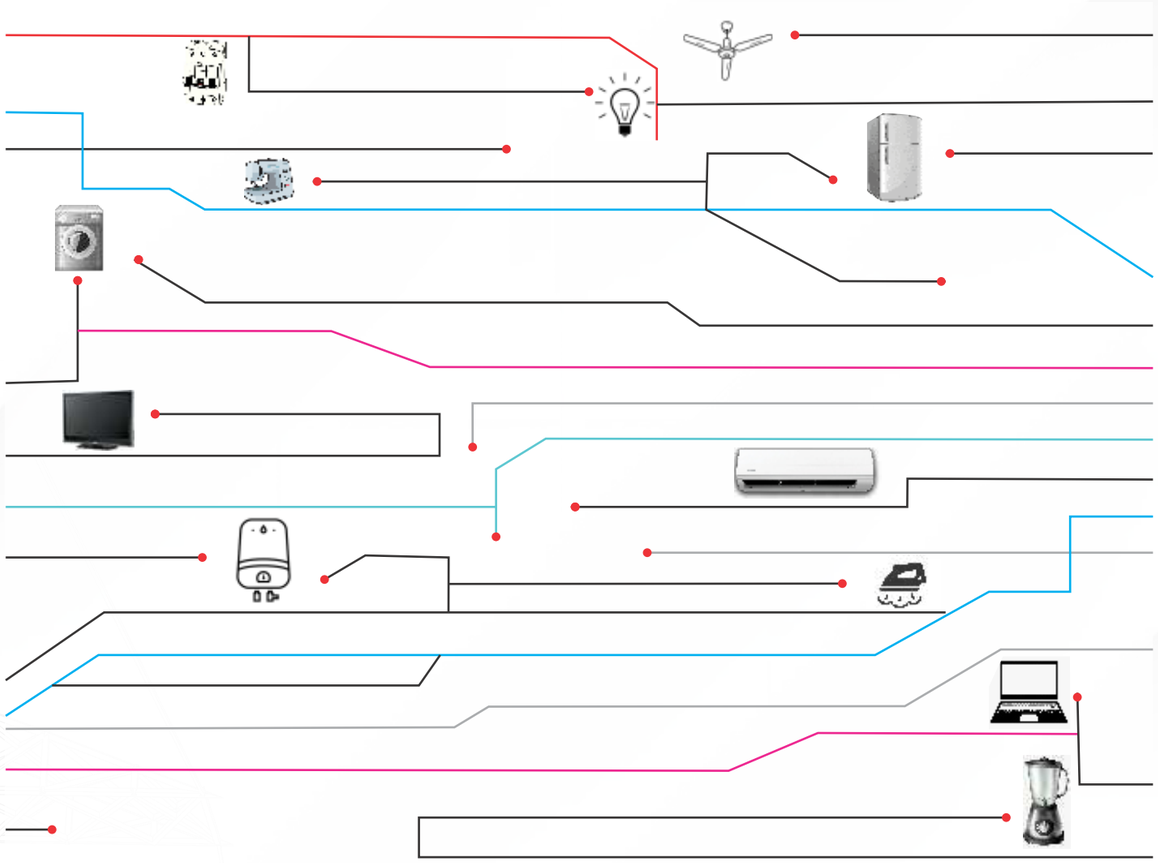
मानक चिह्न STANDARD MARK (1)	वस्तु/प्रक्रम ARTICLE/PROCESS (2)	भारतीय मानक INDIAN STANDARD(S) (3)
IS 7098 Part I CM/L-8600701	Crosslinked polyethylene insulated PVC sheathed cables for working voltage upto and including 1 100 V Armoured/unarmoured, with Aluminium/Copper Conductors, Sheathed type-ST2 excluding Cables for use under low temperature condition and mining application	IS 7098 : Part 1 : 1988 Crosslinked polyethylene insulated PVC sheathed cables: Part 1 For working voltage upto and including 1 100 V



प्रथम अनुसूची
THE FIRST SCHEDULE

मानक चिह्न STANDARD MARK (1)	वस्तु/प्रक्रम ARTICLE/PROCESS (2)	भारतीय मानक INDIAN STANDARD(S) (3)
CM/L-[illegible]	1100 वो० तक की अधिकतम वोल्टता के लिए पॉलीमर रोधक [illegible] कवचित/अकवचित, [illegible] के बाहरी [illegible] टाइप ए, [illegible] टी-1 अल्पतापमान [illegible] और खनन के अन्तर्गत उपयोग की केबल की [illegible]	आईएस 7098 (भाग 1) : 1988 पॉलीमर रोधक [illegible] पीवीसी [illegible] केबल की केबल की विशिष्टि [illegible] भाग 1 1100 वो० तक की वोल्टता के लिए

HOUSE WIRES



SWADESHI – FR

SWADESHI – FR-LSH

SWADESHI – ZHFR

Owing to our consistent effort for quality and providing the best, we have developed exhaustive range of domestic wires and cables suitable for Indian homes, various government & private sector clients, used under varied conditions. Manufactured with best quality of Conductor (Electrolytic grade copper) and finest grade of indigenously developed PVC/LSZH compound, **Swadeshi cables** give maximum safety at no extra cost.

SWADESHI - FR SERIES

Construction:
Standard - IS: 694/2015
Size - 0.5 Sqmm to 6 Sqmm
Conductor - Annealed bare copper as per IS: 8130/2013
Insulation - Specially formulated PVC (Type-A, C & D) with FR property

Swadeshi-FR 1100V Grade Multi strand flexible annealed bare copper conductor, FR PVC insulated and un-sheathed single core flexible cables conforming to IS: 694 latest version.

FR Propeties		
Propeties	Test Method	Value
Oxygen Index	ASTM D–2863	>30%
Temp. Index	ASTM D–2863	>2500 °C

Nominal cross sectional area of the conductor	Nos. / Nominal Dia. Of Strand	Nominal thickness of insulation	Maximum overall diameter	Max. Conductor Resistance at 20°C	Current Rating	
					2 Wires, In Conduit/Trunking	1 Phase, Clipped directly to surface or on cable tray
mm2	Nos./mm	mm	mm	Ohm/km	Amps.	Amps.
0.75	24/0.20	0.6	2.8	26	8	9
1.0	32/0.20 (14/0.30)	0.6	3.0	19.5	13	14
1.5	30/0.25 (22/0.30)	0.6	3.4	13.3	17	20
2.5	50/0.25 (36/0.30)	0.7	4.1	7.98	24	27
4	56/0.30	0.8	4.8	4.95	30	33
6	84/0.30	0.8	5.3	3.30	38	42

Standard colour:

Normal Packing: 90 / 180 meter coils & as per Customer Request

Application:

Salient Features
*Electrolytic Grade copper having 99.9% purity and maximum conductivity to ensure maximum safety.
*Bunching of copper is uniform lay & diameter, that makes stripping & crimping of wires easier & minimizes losses.
*Indigenously developed PVC compound formulated from fines ingredients and produced in-house.
*Double insulation, with primary insulation form virgin PVC coated with ultra colour layer.

IS: 694

SWADESHI – FR - LSH SERIES

Whenever fire breaks-out in any building/complex cables/wires emanates the toxic black smoke, which causes suffocation and subsequently becomes fatal to the human life. This compelled us to develop FR-LSH (Flame Retardant Low smoke Halogen) Cables. Swadeshi cables are quite safe during the fire break-out.

Construction:

Standard - IS: 694/2015
Size - 1.0 Sqmm to 50 Sqmm
Conductor - Annealed bare copper as per IS:8130/2013
Insulation - Specially formulated PVC (Type-A, C & D) with FR-LSH property.

FR - LSH Propeties		
Propeties	**Test Method**	**Value**
Oxygen Index	ASTM D – 2863	>30%
Temp. Index	ASTM D – 2863	>250 °C
Smoke Density	ASTM D – 2863	<60%
Max. Acid Gas Generation	IEC – 60754 -1	<40%

Nominal cross sectional area of the conductor	Nos. / Nominal Dia. Of Strand	Nominal thickness of insulation	Maximum overall diameter	Max. Conductor Resistance at 20°C	Current Rating	
					2 Wires, In Conduit/Trunking	1 Phase, Clipped directly to surface or on cable tray
mm2	Nos./mm	mm	mm	Ohm/km	Amps.	Amps.
0.75	24/0.20	0.6	2.8	26	8	9
1.0	32/0.20 (14/0.30)	0.6	3.0	19.5	13	14
1.5	30/0.25 (22/0.30)	0.6	3.4	13.3	17	20
2.5	50/0.25 (36/0.30)	0.7	4.1	7.98	24	27
4	56/0.30	0.8	4.8	4.95	30	33
6	84/0.30	0.8	5.3	3.30	38	42

Standard colour:

Normal Packing: 90 / 180 meter coils & as per Customer Request

Salient Features
*Excellent fire retardant properties.
*During fire: Very less toxic fumes emitted
*Self Extinguishing.
*Quite lesser amount of non-corrosive smoke emitted

IS: 694

SWADESHI - ZHFR SERIES

Our Fire Resistant Cables can withstand upto 85 °C / 105 °C (as per requirement) operating conductor temperature. Swadeshi Zero Halogen Fire Retardant cables are recommended specially in a situation where high degree of safety of personnel and equipment, in the places like Hotels, Theatres, Hospitals, High-rise buildings, Commercial complexes, centrally Air Conditioned offices, Residential properties etc.

Construction:

Standard - IS: 694/2015
Size - 0.5 Sqmm to 6 Sqmm
Conductor - Annealed bare copper as per IS: 8130/2013
Insulation - Zero halogen flame retardant (ZHFR)

Nominal cross sectional area of the conductor	Nos. / Nominal Dia. Of Strand	Nominal thickness of insulation	Maximum overall diameter	Max. Conductor Resistance at 20°C	Current Rating	
					2 Wires, In Conduit/Trunking	1 Phase, Clipped directly to surface or on cable tray
mm2	Nos./mm	mm	mm	Ohm/km	Amps.	Amps.
0.5	16/0.20	0.6	2.6			
0.75	24/0.20	0.6	2.8	26	8	9
1.0	32/0.20 (14/0.30)	0.6	3.0	19.5	13	14
1.5	30/0.25 (22/0.30)	0.6	3.4	13.3	17	20
2.5	50/0.25 (36/0.30)	0.7	4.1	.98	24	27
4	56/0.30	0.8	4.8	4.95	30	33
6	84/0.30	0.8	5.3	3.30	38	42

Standard colour:

Normal Packing: 90 / 180 meter coils & as per Customer Request

Salient Features:
*Electrolytic Grade copper having 99.9% purity and maximum conductivity to ensure maximum safety.
*Bunching of copper is uniform lay & diameter that makes stripping & crimping of wires easier & minimizes losses.
*Indigenously developed PVC compound formulated from fines ingredients and produced in-house.
*Double insulation, with primary insulation form virgin PVC coated with ultra colour layer

ZHFR Propeties		
Propeties	**Test Method**	**Value**
Oxygen Index	ASTM D–2863	>30%
Temp. Index	ASTM D–2863	>300 °C
Smoke Density	ASTM D–2863	<20%
Max. Acid Gas Generation	IEC– 60754-1	<0.5%

A brief comparison of PVC cable and ZHFR cables is given below			
Propeties	**HR PVC**	**FR-LSZH**	**ZHFR**
Halogen Gas (mg/g)	>200	>150%	>0.5%
Corrosive Gas (pH)	1-2	2-3	6.0
Smoke Density (%)	85	50	10
Usage Temperature (oC)	85/105	70	90
Low Temperature	-20	-20	-50

SINGLE CORE – FLEXIBLE WIRE

Application: These wires/cables are used for wiring in control panels, machines and various electrical installations in dry and damp interiors especially under typical industrial environmental conditions.

Construction:

Standard - IS: 694
Size - 0.75 Sqmm to 400 Sqmm
Conductor - Annealed bare copper as per IS: 8130
Insulation - PVC / HR PVC with FR/FR-LSH property / HFFR

Nominal Cross Sectional Area of Conductor	Number / Nom. Dia. Of wire (Nom.)	Thickness of Insulation (Nom.)	Overall Diameter (Max.)	Nominal Cross Sectional Area of Conductor	Number / Nom. Dia. Of wire (Nom.)	Thickness of Insulation (Nom.)	Overall Diameter (Max.)
Sq.mm	No./mm	mm	Mm	Sq.mm	No./mm	mm	Mm
0.5	16/0.20	0.6	2.6	35	0.41	1.2	11.7
0.75	24/0.20	0.6	2.8	50	0.41	1.4	13.9
1.0	32/0.20	0.6	3.0	70	0.51	1.4	16.0
1.5	30/0.25	0.7	3.4	95	0.51	1.6	18.2
2.5	50/0.25	0.8	4.1	120	0.51	1.6	20.2
4	56/0.30	0.8	4.8	150	0.51	1.8	22.5
6	84/0.30	0.8	5.3	185	0.51	2.0	24.9
10	140/0.30	1.0	7.0	240	0.51	2.2	28.4
16	226/0.30	1.0	8.1	300	0.51	2.4	31.0
25		1.2	10.2				

IS: 694

SINGLE / MULTI CORE SHEATHED FLEXIBLE CABLES

Application: These wires/cables are used for wiring in control panels, machines and various electrical installations in dry and damp interiors especially under typical industrial environmental conditions.

Construction:

Standard - IS: 694/2015
Size – 0.75 Sqmm to 400 Sqmm
Conductor - Annealed bare copper as per IS: 8130/2013
Insulation - PVC / HR PVC with FR/FR-LSH property
Sheath - PVC (ST-1, ST-2 & ST-3) with FR/FR-LSH property

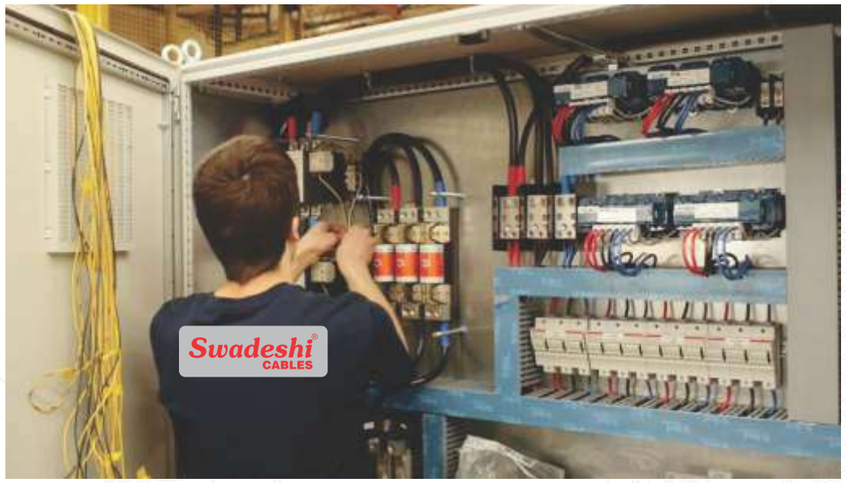
Cable Size (No. of cores x Size of conductor)	Max. Diameter of wire in a conductor	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)	Cable Size (No. of cores x Size of conductor)	Number / Nom. Dia. Of wire (Nom.)	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)
Sq.mm	mm	Mm	mm	Mm	Sq.mm	No./mm	mm	mm	Mm
1Cx0.5	0.21	0.6	0.9	4.3	8Cx1.5	0.26	0.6	1.1	14.7
1Cx0.75	0.21	0.6	0.9	4.5	8Cx2.5	0.26	0.7	1.2	17.3
1Cx1.0	0.21	0.6	0.9	4.7	9Cx0.5	0.21	0.6	1.0	11.8
1Cx1.5	0.26	0.6	0.9	5.4	9Cx0.75	0.21	0.6	1.1	12.4
1Cx2.5	0.26	0.7	1.0	6.2	9Cx1.0	0.21	0.6	1.1	13.1
1Cx4	0.31	0.8	1.0	6.8	9Cx1.5	0.26	0.6	1.1	15.6
1Cx6	0.31	0.8	1.1	7.5	9Cx2.5	0.26	0.7	1.3	18.3
1Cx10	0.41	1	1.3	9.4	10Cx0.5	0.21	0.6	1.0	12.0
1Cx16	0.41	1	1.4	10.9	10Cx0.75	0.21	0.6	1.1	12.7
1Cx25	0.41	1.2	1.4	13.6	10Cx1.0	0.21	0.6	1.1	13.4
1Cx35	0.41	1.2	1.6	15.5	10Cx1.5	0.26	0.6	1.1	16.0
1Cx50	0.41	1.4	2.0	18.1	10Cx2.5	0.26	0.7	1.3	18.7
1Cx70	0.51	1.4	2.2	20.8	11Cx0.5	0.21	0.6	1.0	12.0
1Cx95	0.51	1.6	2.4	23.6	11Cx0.75	0.21	0.6	1.1	12.7
1Cx120	0.51	1.6	2.5	26.0	11Cx1.0	0.21	0.6	1.1	13.4
2Cx0.5	0.21	0.6	0.9	6.9	11Cx1.5	0.26	0.6	1.1	16.0
2Cx0.75	0.21	0.6	0.9	7.3	11Cx2.5	0.26	0.7	1.3	18.7
2Cx1.0	0.21	0.6	0.9	7.6	12Cx0.5	0.21	0.6	1.0	12.4
2Cx1.5	0.26	0.6	0.9	8.9	12Cx0.75	0.21	0.6	1.1	13.1
2Cx2.5	0.26	0.7	1.0	10.3	12Cx1.0	0.21	0.6	1.1	13.9
2Cx4	0.31	0.8	1.0	11.6	12Cx1.5	0.26	0.6	1.1	16.5
2Cx6	0.31	0.8	1.1	13.0	12Cx2.5	0.26	0.7	1.3	19.4
2Cx10	0.41	1	1.3	16.5	13Cx0.5	0.21	0.6	1.0	13.1
2Cx16	0.41	1	1.4	19.4	13Cx0.75	0.21	0.6	1.1	13.8
2Cx25	0.41	1.2	1.4	23.8	13Cx1.0	0.21	0.6	1.1	14.6
2Cx35	0.41	1.2	1.6	27.2	13Cx1.5	0.26	0.6	1.2	17.4
2Cx50	0.41	1.4	2.0	32.0	13Cx2.5	0.26	0.7	1.3	20.5
2Cx70	0.51	1.4	2.2	36.8	14Cx0.5	0.21	0.6	1.1	13.1
2Cx95	0.51	1.6	2.4	41.8	14Cx0.75	0.21	0.6	1.1	13.8
2Cx120	0.51	1.6	2.5	46.2	14Cx1.0	0.21	0.6	1.1	14.6

SINGLE / MULTI CORE SHEATHED FLEXIBLE CABLES

Cable Size (No. of cores x Size of conductor)	Max. Diameter of wire in a conductor	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)	Cable Size (No. of cores x Size of conductor)	Number / Nom. Dia. Of wire (Nom.)	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)
Sq.mm	mm	Mm	mm	Mm	Sq.mm	No./mm	mm	mm	Mm
3Cx0.5	0.21	0.6	0.9	7.3	14Cx1.5	0.26	0.6	1.2	17.4
3Cx0.75	0.21	0.6	0.9	7.7	14Cx2.5	0.26	0.7	1.3	20.5
3Cx1.0	0.21	0.6	0.9	8.1	15Cx0.5	0.21	0.6	1.1	13.5
3Cx1.5	0.26	0.6	0.9	9.4	15Cx0.75	0.21	0.6	1.2	14.3
3Cx2.5	0.26	0.7	1	10.9	15Cx1.0	0.21	0.6	1.2	15.1
3Cx4	0.31	0.8	1.0	12.4	15Cx1.5	0.26	0.6	1.2	18.1
3Cx6	0.31	0.8	1.2	13.8	15Cx2.5	0.26	0.7	1.4	21.3
3Cx10	0.41	1	1.4	17.69	16Cx0.5	0.21	0.6	1.1	13.8
3Cx16	0.41	1	1.4	20.6	16Cx0.75	0.21	0.6	1.2	14.6
3Cx25	0.41	1.2	1.5	25.6	16Cx1.0	0.21	0.6	1.2	15.4
Cx35	0.41	1.2	1.6	29.3	16Cx1.5	0.26	0.6	1.2	18.4
3Cx50	0.41	1.4	2.0	34.6	16Cx2.5	0.26	0.7	1.4	21.7
3Cx70	0.51	1.4	2.2	39.6	17Cx0.5	0.21	0.6	1.1	14.6
3Cx95	0.51	1.6	2.4	47.0	17Cx0.75	0.21	0.6	1.2	15.4
3Cx120	0.51	1.6	2.5	51.0	17Cx1.0	0.21	0.6	1.2	16.3
3Cx150	0.51	1.8	2.6	54.8	17Cx1.5	0.26	0.6	1.3	19.5
3Cx185	0.51	2.0	2.8	61.2	17Cx2.5	0.26	0.7	1.4	23.0
3Cx240	0.51	2.2	3.0	69.7	18Cx0.5	0.21	0.6	1.1	14.6
3Cx300	0.51	2.4	3.2	75.7	18Cx0.75	0.21	0.6	1.2	15.4
4Cx0.5	0.21	0.6	0.9	8.0	18Cx1.0	0.21	0.6	1.3	16.3
4Cx0.75	0.21	0.6	0.9	8.4	18Cx1.5	0.26	0.6	1.3	19.5
4Cx1.0	0.21	0.6	0.9	8.8	18Cx2.5	0.26	0.7	1.4	23.3
4Cx1.5	0.26	0.6	1.0	10.4	19Cx0.5	0.21	0.6	1.1	14.6
4Cx2.5	0.26	0.7	1.0	12.0	19Cx0.75	0.21	0.6	1.2	15.4
4Cx4	0.31	0.8	1.0	13.6	19Cx1.0	0.21	0.6	1.3	16.3
4Cx6	0.31	0.8	1.2	15.47	19Cx1.5	0.26	0.6	1.3	19.5
4Cx10	0.41	1	1.4	19.5	19Cx2.5	0.26	0.7	1.4	23.8
4Cx16	0.41	1	1.4	23.0	20Cx0.5	0.21	0.6	1.2	15.4
4Cx25	0.41	1.2	1.6	28.5	20Cx0.75	0.21	0.6	1.3	16.3
4Cx35	0.41	1.2	1.7	32.7	20Cx1.0	0.21	0.6	1.4	17.3
4Cx50	0.41	1.4	2.0	38.6	20Cx1.5	0.26	0.6	1.4	20.7
4Cx70	0.51	1.4	2.2	44.3	20Cx2.5	0.26	0.7	1.5	24.4
4Cx95	0.51	1.6	2.4	50.2	21Cx0.5	0.21	0.6	1.2	15.4
4Cx120	0.51	1.6	2.5	55.7	21Cx0.75	0.21	0.6	1.3	16.3
4Cx150	0.51	1.8	2.6	62.1	21Cx1.0	0.21	0.6	1.4	17.3
4Cx185	0.51	2.0	2.8	68.5	21Cx1.5	0.26	0.6	1.4	20.7
4Cx240	0.51	2.2	3.0	77.9	21Cx2.5	0.26	0.7	1.5	25.0
4Cx300	0.51	2.4	3.2	84.7	22Cx0.5	0.21	0.6	1.2	16.3

SINGLE / MULTI CORE SHEATHED FLEXIBLE CABLES

Cable Size (No. of cores x Size of conductor)	Max. Diameter of wire in a conductor	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)	Cable Size (No. of cores x Size of conductor)	Number / Nom. Dia. Of wire (Nom.)	Thickness of Insulation (Nom.)	Thickness of sheath (Nom.)	Overall Diameter (Max.)
Sq.mm	mm	Mm	mm	Mm	Sq.mm	No./mm	mm	mm	Mm
5Cx0.5	0.21	0.6	0.9	8.7	22Cx0.75	0.21	0.6	1.3	17.3
5Cx0.75	0.21	0.6	0.9	9.2	22Cx1.0	0.21	0.6	1.4	18.2
5Cx1.0	0.21	0.6	1.0	9.6	22Cx1.5	0.26	0.6	1.4	21.9
5Cx1.5	0.26	0.6	1.0	11.4	22Cx2.5	0.26	0.7	1.5	25.8
5Cx2.5	0.26	0.7	1.0	13.2	23Cx0.5	0.21	0.6	1.2	16.3
5Cx4	0.31	1	1.1	15.3	23Cx0.75	0.21	0.6	1.3	17.3
6Cx0.5	0.21	0.6	0.9	9.5	23Cx1.0	0.21	0.6	1.4	18.2
6Cx0.75	0.21	0.6	1.0	10.0	23Cx1.5	0.26	0.6	1.4	21.9
6Cx1.0	0.21	0.6	1.0	10.5	23Cx2.5	0.26	0.7	1.5	26.3
6Cx1.5	0.26	0.6	1.0	12.4	24Cx0.5	0.21	0.6	1.2	17.1
6Cx2.5	0.26	0.7	1.1	14.5	24Cx0.75	0.21	0.6	1.3	18.2
7Cx0.5	0.21	0.6	0.9	9.5	24Cx1.0	0.21	0.6	1.4	19.2
7Cx0.75	0.21	0.6	1.0	10.0	24Cx1.5	0.26	0.6	1.4	23.0
7Cx1.0	0.21	0.6	1.0	10.5	24Cx2.5	0.26	0.7	1.5	27.2
7Cx1.5	0.26	0.6	1.0	12.4	25Cx0.5	0.21	0.6	1.2	17.1
7Cx2.5	0.26	0.7	1.1	14.5	25Cx0.75	0.21	0.6	1.3	19.0
8Cx0.5	0.21	0.6	1.0	11.1	25Cx1.0	0.21	0.6	1.4	19.2
8Cx0.75	0.21	0.6	1.0	11.8	25Cx1.5	0.26	0.6	1.4	23.0
8Cx1.0	0.21	0.6	1.0	12.4	25Cx2.5	0.26	0.7	1.5	27.9



IS: 694

FLAT SUBMERSIBLE CABLES

Swadeshi is one of the most reliable & versatile product. An example of our fine workmanship are our flexible cables for submersible pumps motors. Widely accepted & acclaimed, it enjoys the reputation of being the best in the industry.

Construction:

Conductor - Stranded Flexible bare annealed electrolytic grade copper

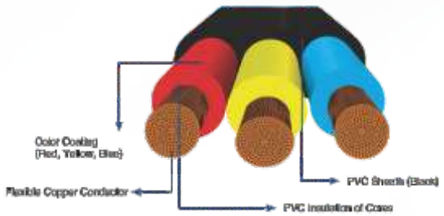
Insulation - Specially formulated PVC (Type-A, C & D)

Outer sheath - Specially formulated PVC (ST-1, ST-2 & ST-3)

Standard - IS 694 latest version

Application

PVC insulated multi-strand annealed bare copper conductor, three core flat PVC sheathed cable are used for giving electrical connection to the submersible pump motors.



Conductor Area (Nom.)	Size of Strand	Insulation Thickness (Nom)	Sheath Thickness (Nom.)	Height 'H' (Maximum)	Width 'W' (Maximum)	Current carrying capacity at 40°C
Sq.mm	mm	mm	mm	mm	mm	Amps
1.0	0.21	0.6	0.9	4.5	9.9	13
1.5	0.21	0.6	0.9	4.8	10.8	17
2.5	0.21	0.7	1.0	5.7	12.9	24
4	0.26	0.8	1.0	6.2	14.5	30
6	0.26	0.8	1.1	7.2	16.4	38
10	0.31	1.0	1.4	9.2	21.5	52
16	0.31	1.0	1.4	10.3	24.7	70
25	0.41	1.2	2.0	13.1	30.9	88
35	0.41	1.2	2.0	14.3	34.6	110
50	0.41	1.4	2.2	15.5	40.5	145

Salient Features:

* Bright annealed electrolytic grade copper having 99.9% purity and maximum conductivity to ensure minimum power losses. Cores are insulated on modern & precision machines using specially formulated PVC compound having very high thermal properties.
* Indigenous PVC compound provides better ageing properties, higher operating temperature & enhance insulation characteristics.
* Outer sheath for Submersible cables is designed to fit closely, maintain flexibility, resist water absorption, abrasion, oil, grease and other environmental effects.

SPEAKER CABLES

Application: Speaker cables are highly recommended for use in connecting speakers, public address systems for clear and distortion free voice with low DB loss.

Conductor: Oxygen free flexible copper conductor.

Colour: Availability: Transparent/Black/White with Red tracer for polarity identification.
Also available on customer requires.

Packing: The delivery length is available in 100mtr. Coils.

Coaxial Cables (RG6)

Swadeshi Coaxial cables are designed to be used at homes for television sets and are also used by security agencies for advanced data transmission.

Salient Features:

*Protects signals from external electromagnetic interference.

*Very low attenuation or signal losses.

*Special Jacketing offers increased life even in rugged conditions.

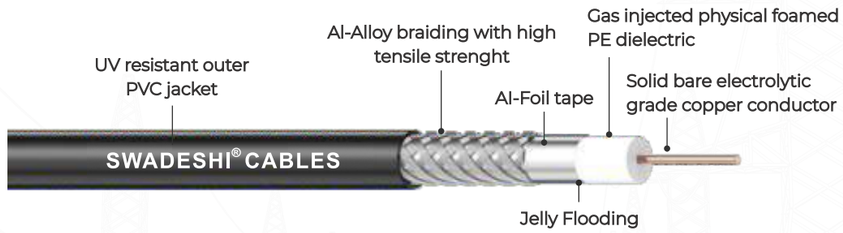
Technical Details:

* **Conductor:** The central conductor is made of solid electrolytic grade annealed bare cooper (BC) conductor or copper clad steel **(CCS) conductor.**
* **Insulation:** The insulation provided over the conductor is of foam polyethylene (PE) dielectric insulator with gas injected in it to **reduce signal loss.**
* **Screen:** Aluminium mylar tape is provided over the insulated conductor to shield the conductor and ensure disturbance-free **transmission of signals.**
* **Braiding:** The braiding is generally provided with 60% coverage of Aluminim-magnesium allow.
* **Jelly filling**

Packing:

Available in 100 meter packed in carton and 305 meter packed in easy pull box.

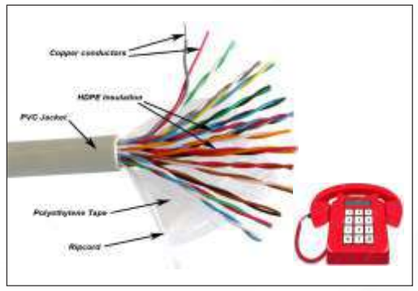
Higher length is available on special request.



TELEPHONE CABLES

Swadeshi twisted paired cables are best suited for telephone and switchboard cabling application. The cables can be used for switchboard and internal telephone wiring in apartments, high-rise building, offices, factories, hotels, residential complexes etc. The most common sizes are 1 Pair, 2 Pair, 3 Pair, 4 Pair, 5 Pair, 10 Pair and 20 Pair in conductor of 0.4mm or 0.5mm.

Salient Features:
* Low Power Loss
* Low Crosstalk
* Fire Retardant Sheath
* Low Attenuation



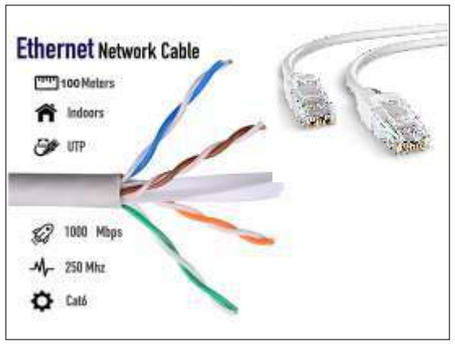
Range of Product:
*1Pair to 20 Pair (0.4mm / 0.5mm)

Technical Details:
*Conductor: The central conductor is made of bare annealed solid electrolytic grade of copper
*Insulation: Premium quality HDPE is used. This serves for low attenuation and minimized cross talk
*Twisted Pairs: The cores are carefully twisted with suitable lays and bunched together
*Packing: Available in 90 meter and 500 meter. Higher lengths available on special request.

LAN CABLES

Swadeshi Lan cables enable data transfer without transmission loss or theft. These technologically advanced cables are compatible with the most superior networking switchgear and provide express-speed performance of upto 250 MHz. Its unique zero interference features assures that no signal loss is experienced during data transfer process.

Salient Features:
* Min. radiation and max. Noise immunity
* Excellent electromagnetic compatibility
* High speed data access
* Prevent cross talking



Technical Details
* Conductor: Solid bare copper
* Insulation: High density polyethylene
* Pair: 2 Insulated conductor twisted together with unique lay
* Outer Jacket: FR PVC
* Outer Jacket colour: Yellow or as per customer requirement

Packing: Available in 305 meter packed in easy pull box.

SOLAR CABLES

Solar energy is the most abundant source of energy on our planet. Solar energy is converted in the electrical energy by means of arrays of photovoltaic modules. Specially designed Photovoltaic cables are used in these modules.

Conductor :- EC Grade annealed tined coated copper
Insulation: - XLPO compound
Sheathing: - XLPO compound
Colour : - Black / Red / Black with Red Strip / Customer requires.
Packing: - 500 /1000 meter and any as per customer requirements.
Sizes: - 2.5/4.0/6.0 and any as per customer request.

Application:
These cables are connected between individual modules and string combiner box.

Salient Features:
* High thermal rating to stand extreme temperatures
* Specially designed to stand extreme weather condition
* Excellent resistance to heat pressure
* Excellent abrasion & notch resistant
* RoHS compliant

FIRE SURVIVAL CABLES

High safety Fire Survival Cables for fire-prone areas also known as Circuit Integrity Cables are designed to sustain high temperature for a defined minimum period under direct fire. They are applied in Hazard prone areas where people and equipments are exposed to the threat of fire like airports, thermal power plants, metro projects, rail terminals, etc. With qualities that will prevent them from overheating, they can withstand temperatures of up to 650oC, 720oC & 950oC as per various conditions of operation and applications.

Application:
Fire Survival Cables for fire hazardous/prone areas to maintain circuit integrity during the fire standard specification IS/IEC/BS

Designed for critical installation:
Airports, Thermal Power Plants, Metro Rail Projects, Rail Terminals, Nuclear Plants, Interstate Bus Terminals, Installations Prone to fire.

Construction:

Conductor:	Solid/Stranded annealed tinned / bare copper conductor lapped with Glass mica tape.
Insulation:	XLPE/LSZH compound
Individual / overall Screening:	Aluminium Mylar tape and polyester tape with ATC drain wire. (If required)
Armouring:	Galvanised steel round wire / flat strip
Sheath:	FR PVC / FRLS PVC / LSZH
Outer sheath colour:	Red, Orange, Black and any other customer requirement
Range:	1.5 Sqmm to 400 Sqmm

INSTRUMENTATION SHIELDED CABLES

Swadeshi manufactures a wide variety of cables suitable for process instrumentation which plays a vital role in the measurement, supervision and control of the process. The introduction of microprocessor-based/computerized instrumentation has demanded stringent quality requirement along with special electrical parameter for instrumentation cables. Very low-level electrical signals pass between measuring end and display units/controllers which are situated far off. These low level signal are prone to external noise pickups and heavy silenuation during the transmission. hence the cables used for instrumentation are designed and manufactured very meticulously. Swadeshi maintains high-quality standard and follow stringent in-process quality control during the manufacturing of instrumentation cables, meeting the design parameters of the project requirement.

Construction -

Specification:	BS EN: 50288-7, Gen. conf. to IS: 7098 (Pt-1), IS: 1554 (Pt-1).
Conductor:	0.5Sqmm to 2.5Sqmm or higher sizes of solid/stranded/flexible tinned/bare copper conductors.
Insulation:	PVC/PE/XLPE/LSZH as per requirement
Individual / overall Screening:	Aluminium mylar tape and polyester tape with ATC drain wire.
Armouring:	Galvanised steel round wire / flat strip
Sheath:	PVC / FR PVC / FRLS PVC / LSZH
Outer sheath colour:	Black, Blue, Grey and any other customer requirement

Features:

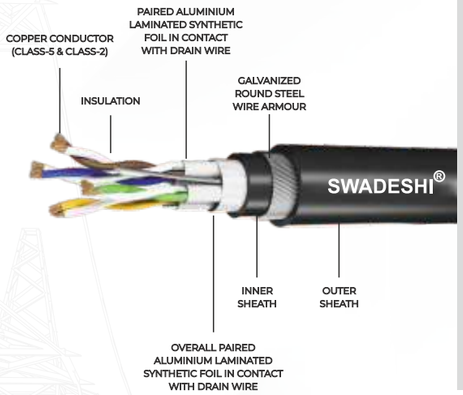
***Excellent Noise Reduction property**

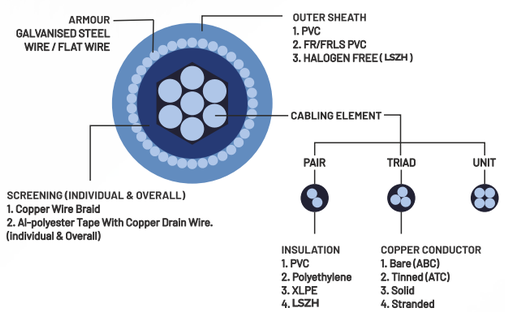
***Great Mechanical strength flexibility.**

***Enhanced transmission performance with desired L/R ratio**

***Resistance to Electromagnetic interference**

CONSTRUCTION OF INSTRUMENTATION CABLE





Type of instrumentation cables:

* Overall screening Core Armoured cables
* Overall screening pair Armoured cables
* Individual and Overall screening pair Armoured cables
* Overall screening triad Armoured cables
* Individual and Overall screening triad Armoured cables
* Overall screening Core Un-Armoured cables
* Overall screening pair Un-Armoured cables
* Individual and Overall screening pair Un-Armoured cables
* Overall screening triad Un-Armoured cables
* Individual and Overall screening triad Un-Armoured cables

POWER AND CONTROL CABLES

Manufacturing of cables:

Cable with Aluminium, Copper conductor and polymaric insulation are manufactured at Swedeshi Cable. Essentially cables comprise of conductors, insulation, inner sheath, armour and outer sheath. The brief description of the process is mentioned as under.

Conductor

SWADESHI cables are available with both Aluminium and Copper conductors. They are manufactured with Solid/Stranded Circular /Shaped/Compacted Aluminium /Copper Conductor. Stranding makes Cables flexible and easy to handle while shaping makes them compact.

All conductors for SWADESHI cables are manufactured strictly in accordance with National and International specifications.

National specification :- IS 8130

International specification :- IEC 60228 / BS EN 60228 / BS 6360

Dielectric Insulation:

Insulation for SWADESHI Cables is strictly as per National and International specifications. Cables are designed and manufactured with polymer dielectrics to bear thermal and thermo mechanical stresses at continuous normal and short circuit temperature conditions.

SWADESHI Cables are available with both thermoplastic and thermosetting insulations.

***PVC Cables** Thermoplastic dielectric

***XLPE Cables** Thermosetting dielectric

Swadeshi Cables are manufactured with national and international standards as given below:-

National specifications : IS 5831/IS:1554-1/IS: 7098-1/IS 17505-1

International specification :- IEC:60502-1/BS 5467 / BS:6346 / BS:6746

LAYING UP:

Cores are tested on line during production for both, physical and electrical characteristics. Control is observed within strict tolerance limits for dimensions in case pf PVC/XLPE insulation. For multicore cables cores are laid up on our latest laying machine equipped with sector correction equipment. In case of XLPE insulated cores the same are cured so as to impart the requisite characteristics both electrical and mechanical and then are laid up.

INNER SHEATH:

Laid-up cables are provided with an inner sheath with high-quality PVC which acts as bedding for steel/strip armoring. Wherever required filler cords are provided to maintain the circularity to laid up cables. In-polymers used for inner sheath are softer than insulation or outer sheath & are compatible with temperature ratings of cables & do not have a deleterious effects on any other component of cable.

The inner sheath is applied either with extrusion or by wrapping. In SWADESHI CABLES, though the inner sheath is closely applied on the laid-up cores, the same can be stripped with ease without damaging the insulation. The inner sheath dimensions are maintained strictly by the laid down specification.

SPECIFICATION:

for PVC Cable - IS: 1554 (Part-1) and For XLPE Cables IS: 7098 (Part-1)

ARMOURING

Mechanical protection to the cables is provided with amouring. In SWADESHI CABLES, single-core cables are armoured with Aluminium or Aluminium alloy wire/strips, thus avoiding magnetic hysteresis losses on A.C. systems. Multicore cables are provided galvanized steel wire/strip armouring.

SWADESHI Cables armour wire/strips are of low resistivity material and meet the requirement of IS:3975

OUTER SHEATH

All SWADESHI Cables are provided with PVC/Polymer outer sheath.

IS: 1554 IS: 7098

POWER AND CONTROL CABLES

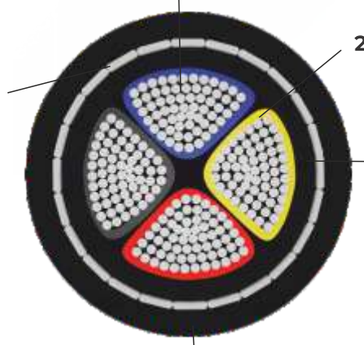
General purpose sheathing compound: ST 1
Heat resistant compound for sheath: ST 2
Flame Retardant sheath
Flame retardant low smoke sheath

ADVANTAGES OF PVC CABLES

1. A Non-hygroscopic insulation almost unaffected by moisture.
2. Non-migration of compound permitting vertical installation.
3. Complete protection against most forms of electrolytic and chemical corrosion.
4. A tough and resilient sheath with excellent fire-resisting qualities.
5. Good aging characteristics

ADVANTAGES OF XLPE CABLES

1. Higher current rating.
2. Higher short circuit rating.
3. Longer service life.
4. For a short circuit time it can withstand a maximum of 260 oC and is favorable to endure short circuit stresses.
5. It is less sensitive to the setting of network protection.
6. Because of the thermosetting process taking place due to the effect of cross-linking, the crack resistance in increased.
7. Due to the chemical cross-linking internal stresses are reduces. Consequently, the material is less sensitive during the Manufacturing process to setting of the cooling gradient.
8. The thermal resistivity of cross-linked material is favourably low, compared to the thermoplastic material.
9. The low dielectric loss is significant advantage.
10. The excellent mechanical features of the insulation improve the protection against external effects.
11. The resistance of the XLPE to acids, alkalies is outstanding and is often compensating the adverse environmental influences.



IS: 1554 IS: 7098

COMPOUNDS PROPERTIES

Fire Retardant Low Smoke Cable

These cables are specially designed for hazardous areas where during fire low HCL gas emission & smoke are essential. These cables are also Fire Retardant.
LV Power, Control, Instrumentation and Thermocouple cables can be manufactured as per various National / International standards.

Properties of FR-LSH compounds	
Min. oxygen as per ASTMD-2863	29%
Min. temperature as per ASTMD-2863	250°C
Max. HCL emission as per IEC-60754-1	20% by weight
Max. Smoke density rating as per ASTMD-2843	60%
Flammability test on complete cables	Cables shall meet the test requirements of IEC-60332-1, IEC-60332-III Cat A, B or C, IEEE-383, SS-424 14475, Cl. F3, IS:10810-53, 61 or 62 as per customer requirements.

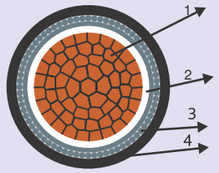
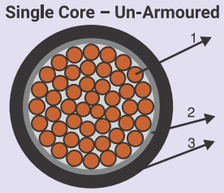
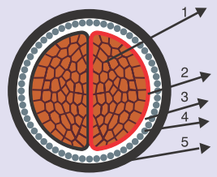
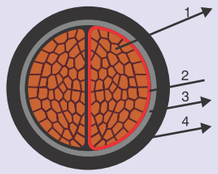
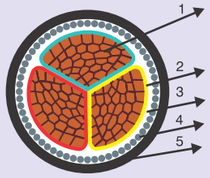
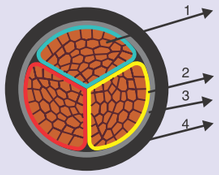
Low Smoke Zero Halogen Cables

These cables are specially designed for hazardous and public areas such as closed hospitals, schools, airports, office buildings etc.
These cables are made of fire retardant compounds and in the event of fire emit extremely low HCL gas & smoke; thus, greatly enhancing public safety. Extremely low halogen content also make these cables environment friendly.

LV Power, Control, Instrumentation and Thermocouple cables can be manufactured as per various National/International standards

Properties of LSZH compounds	
Min. oxygen as per ASTMD-2863	35%
Min. temperature as per ASTMD-2863	280°C
Max. HCL emission as per IEC-60754-1	0.5% by weight/ 2mg/cm²
Max. Smoke density rating as per ASTMD-2843	20%
Flammability test on complete cables	Cables shall meet the test requirements of IEC-60332-1, IEC-60332-III Cat A, B or C, IEEE-383, SS-424 14475, Cl. F3, IS:10810-53, 61 or 62 as per customer requirements.

Construction – CSD

TYPICAL CROSS SECTIONAL VIEW (XLPE/PVC/HR/FR-LSH PVC) CABLES		
PVC / HR PVC	**XLPE**	**VIEW**
1.Conductor – Copper or Aluminium (A) **2.Insulation** – Type " A" or "C" PVC (Y) **3.Armoured** – Aluminium Round wire / Flat strip **4.Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YWaY, YWaY,YFaY,YFaY, AYWaY, AYWaY,AYFaY,AYFaY	**1.Conductor** – Copper or Aluminium (A) **2.Insulation** – Type "XLPE" (2X) **3.Armoured** – Aluminum Round wire / Flat strip **4.Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XWaY, 2XWaY,2XFaY, 2XFaY, A2XWaY, 2XWaY,A2XFaY,A2XFaY	**Single Core – Armoured** 
1.Conductor – Copper or Aluminium (A) **2.Insulation** – Type " A" or "C" PVC (Y) **3.Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** –YY, YY,YY,YY, AYY, AYY, AYY, AYY	**1.Conductor** – Copper or Aluminium (A) **2.Insulation** – Type "XLPE" (2X) **3.Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XY, 2XY,2XY, 2XY, A2XY, A2XY,A2XY,A2XY	**Single Core – Un-Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or " C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YWY(P), YWY(T), YFY(P), YFY(T), AYWY(P), AYWY(T),AYFY(P), AYFY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XWY(P), 2XWY(T), 2XFY(P), 2XFY(T), A2XWY(P), A2XWY(T),A2XFY(P), A2XFY(T).	**Two Core – Armoured** 
1.Conductor – Copper or Aluminium (A) **2.Insulation** – Type " A" or "C" PVC (Y) **3.Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YY, YY,YY,YY, AYY, AYY,AYY,AYY	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XY(P), 2XY(T), 2XY(P), 2XY(T), A2XY(P), A2XY(T),A2XY(P), A2XY(T).	**Two Core – Un Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or "C"PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YWY(P), YWY(T), YFY(P), YFY(T), AYWY(P), AYWY(T),AYFY(P), AYFY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XWY(P), 2XWY(T), 2XFY(P), 2XFY(T), A2XWY(P), A2XWY(T),A2XFY(P), A2XFY(T).	**Three Core – Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type "A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YY(P), YY(T), YY(P), YY(T), AYY(P), AYY(T),AYY(P), AYY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** –2XY(P), 2XY(T), 2XY(P), 2XY(T), A2XY(P), A2XY(T),A2XY(P), A2XY(T).	**Three Core – Un Armoured** 

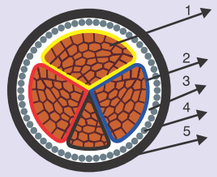
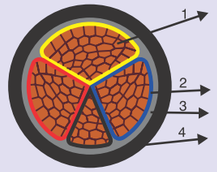
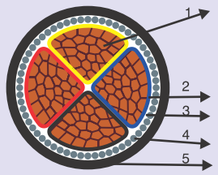
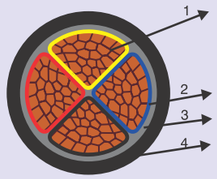
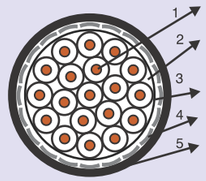
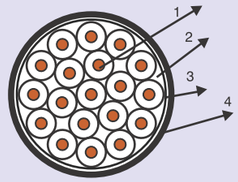
TYPICAL CROSS SECTIONAL VIEW (XLPE/PVC/FR-LSH/HR PVC) CABLES		
PVC / HR PVC	**XLPE**	**VIEW**
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YWY(P), YWY(T), YFY(P), YFY(T), AYWY(P), AYWY(T),AYFY(P), AYFY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XWY(P), 2XWY(T), 2XFY(P), 2XFY(T), A2XWY(P),A2XWY(T),A2XFY(P), A2XFY(T).	**Three "Half Core – Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** –YY(P), YY(T), YY(P), YY(T), AYY(P), AYY(T),AYY(P), AYY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** –2XY(P), 2XY(T), 2XY(P), 2XY(T), A2XY(P), A2XY(T),A2XY(P), A2XY(T).	**Three " Half Core – Un Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** –YWY(P), YWY(T), YFY(P),YFY(T), AYWY(P), AYWY(T),AYFY(P), AYFY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** –2XWY(P), 2XWY(T), 2XFY(P), 2XFY(T), A2XWY(P), A2XWY(T),A2XFY(P), A2XFY(T).	**Four Core – Armoured** 
1. Conductor – Copper or Aluminium (A) **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** –YY(P), YY(T), YY(P), YY(T), AYY(P), AYY(T),AYY(P), AYY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** –2XY(P), 2XY(T), 2XY(P), 2XY(T), A2XY(P), A2XY(T),A2XY(P), A2XY(T).	**Four Core – Un Armoured** 
1. Conductor – Copper **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** – YWY(P), YWY(T), YFY(P), YFY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Armoured** – G.S.Round wire / Flat strip **5. Outersheath** – ST2 PVC (Y) **Cable Codes :** –2XWY(P), 2XWY(T), 2XFY(P), 2XFY(T)	**Control cable – Armoured** 
1. Conductor – Copper **2. Insulation** – Type " A" or "C" PVC (Y) **3. Innersheath** – ST1 or ST2 Extruded PVC {(P)} or Thermoplastic tapes {(T)} **4. Outersheath** – ST1 or ST2 PVC (Y) **Cable Codes :** –YY(P), YY(T), YY(P), YY(T)	**1. Conductor** – Copper or Aluminium (A) **2. Insulation** – Type " XLPE" (2X) **3. Innersheath** – ST2 Extruded PVC {(P)} or Thermoplastic tapes (T) **4. Outersheath** – ST2 PVC (Y) **Cable Codes :** – 2XY(P), 2XY(T), 2XY(P), 2XY(T)	**Control cable – Un Armoured** 

TABLE - 1 - SINGLE CORE ALUMINIUM CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-1&2 conductor as per IS: 8130	No of wires	Thickness of PVC Insulation	Nominal Dimension of Armour wire	ARMOURED (AYWaY)			UNARMOURED (AYY)				CURRENT RATING					
				Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm toleranc	Approx weight of cable	Nominal Thickness of PVC Insulation	Nom Thickness of Outter sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C		In Single way buried Duct @ 30°C		In Air @ 40°C	
											2 Cables	3 Cables	2 Cables	3 Cables	2 Cables	3 Cables
Sq.mm	No's	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	Amps	Amps	Amps	Amps	Amps	Amps
1C x 4	3	1.3	1.4	1.24	11.1	145	1	1.8	8.7	85	36	31	33	30	32	27
1C x 6	3	1.3	1.4	1.24	11.6	160	1	1.8	9.2	100	44	39	42	37	41	35
1C x 10	7	1.3	1.4	1.24	12.6	190	1	1.8	10.2	120	59	51	56	51	56	47
1C x 16	6	1.3	1.4	1.24	13.3	210	1	1.8	10.9	140	75	66	71	65	72	64
1C x 25	6	1.5	1.4	1.24	14.9	275	1.2	1.8	12.5	200	97	86	93	84	99	84
1C x 35	6	1.5	1.4	1.24	15.9	325	1.2	1.8	13.5	225	120	100	110	100	120	105
1C x 50	6	1.7	1.4	1.24	17.4	400	1.4	1.8	15	300	145	120	130	115	150	130
1C x 70	12	1.7	1.4	1.4	19.4	500	1.4	1.8	16.6	375	170	140	155	135	185	155
1C x 95	15	1.9	1.6	1.4	21.9	650	1.6	1.8	18.7	490	205	175	180	155	215	190
1C x 120	15	1.9	1.6	1.4	23.3	750	1.6	2	20.5	575	230	195	200	170	240	220
1C x 150	15	2.1	1.6	1.4	25.1	900	1.8	2	22.3	700	265	220	220	190	270	250
1C x 185	30	2.3	1.6	1.4	27.4	1050	2	2	24.6	850	300	240	240	210	305	290
1C x 240	30	2.5	1.6	1.56	30.6	1325	2.2	2	27.4	1050	335	270	270	225	350	335
1C x 300	30	2.7	1.6	1.56	33.1	1550	2.4	2	29.9	1250	370	295	295	245	395	380
1C x 400	53	3	2	1.56	37.5	2000	2.6	2.2	33.7	1625	410	325	335	275	455	435
1C x 500	53	3.4	2	1.72	41.7	2500	3	2.2	37.5	2000	435	345	355	295	490	480
1C x 630	53	3.9	2	1.88	46.5	3050	3.4	2.4	42.3	2500	485	390	395	320	560	550
1C x 800	53	3.9	2	1.88	50.8	3700	3.4	2.4	46.6	3050	525	442	420	350	640	600
1C x 1000	53	3.9	2.5	2.04	57.5	4500	3.4	2.6	52.3	3700	570	485	445	380	740	720

TABLE - 2 - SINGLE CORE COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-1&2 conductor as per IS: 8130	No of wires	Thickness of PVC Insulation	Nominal Dimension of Armour wire	ARMOURED (AYWaY)			UNARMOURED (AYY)				CURRENT RATING					
				Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm toleranc	Approx weight of cable	Nominal Thickness of PVC Insulation	Nom Thickness of Outter sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C		In Single way buried Duct @ 30°C		In Air @ 40°C	
											2 Cables	3 Cables	2 Cables	3 Cables	2 Cables	3 Cables
Sq.mm	No's	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	Amps	Amps	Amps	Amps	Amps	Amps
1C x 4	7	1.3	1.4	1.24	11.1	165	1	1.8	8.7	105	46	39	42	38	43	35
1C x 6	7	1.3	1.4	1.24	11.6	200	1	1.8	9.2	130	57	49	54	48	54	44
1C x 10	7	1.3	1.4	1.24	12.6	240	1	1.8	10.2	175	75	65	72	64	72	60
1C x 16	6	1.3	1.4	1.24	13.3	300	1	1.8	10.9	230	94	85	92	83	92	82
1C x 25	6	1.5	1.4	1.24	14.9	425	1.2	1.8	12.5	330	125	110	120	110	125	110
1C x 35	6	1.5	1.4	1.24	15.9	525	1.2	1.8	13.5	425	150	130	140	125	155	130
1C x 50	6	1.7	1.4	1.24	17.4	700	1.4	1.8	15	575	180	155	165	150	190	165
1C x 70	12	1.7	1.4	1.4	19.4	900	1.4	1.8	16.6	775	220	190	200	175	235	205
1C x 95	15	1.9	1.6	1.4	21.9	1200	1.6	1.8	18.7	1025	265	220	230	200	275	245
1C x 120	18	1.9	1.6	1.4	23.3	1400	1.6	2	20.5	1250	300	250	255	220	310	280
1C x 150	18	2.1	1.6	1.4	25.1	1750	1.8	2	22.3	1550	340	280	280	245	345	320
1C x 185	30	2.3	1.6	1.4	27.4	2100	2	2	24.6	1900	380	305	305	260	390	370
1C x 240	34	2.5	1.6	1.56	30.6	2700	2.2	2	27.4	2400	420	345	340	285	445	425
1C x 300	34	2.7	1.6	1.56	33.1	3250	2.4	2	29.9	2950	465	375	370	310	500	475
1C x 400	53	3	2	1.56	37.5	4300	2.6	2.2	33.7	3900	500	400	405	335	570	550
1C x 500	53	3.4	2	1.72	41.7	5300	3	2.2	37.5	4850	540	425	430	355	610	590

IS: 1554

TABLE - 3 - TWO CORE ALUMINIUM CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
2C x 1.5	1	0.8	0.3	–	1.4	–	1.24	–	14	–	390	1.8	12.2	160	18	16	16
2C x 2.5	1	0.9	0.3	–	1.4	–	1.24	–	15.2	–	450	1.8	13	200	25	21	21
2C x 4	3	1	0.3	–	1.4	–	1.24	–	16.8	–	520	1.8	15	250	32	27	27
2C x 6	3	1	0.3	–	1.4	–	1.24	–	17.8	–	600	1.8	16	300	40	34	35
2C x 10	7	1	0.3	–	1.4	–	1.24	–	19.8	–	700	1.8	18	350	55	45	47
2C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	18.8	20.4	525	675	1.8	18	320	70	58	59
2C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	20.8	22.4	650	850	2	20.4	450	90	76	78
2C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	21.8	23.4	750	1000	2	21.4	525	110	92	99
2C x 50	6	1.4	0.3	4 x 0.8	1.6	1.4	1.56	24.3	26.2	925	1200	2	23.9	675	135	115	125
2C x 70	12	1.4	0.3	4 x 0.8	1.6	1.56	1.56	26.7	28.3	1100	1400	2	26	825	160	140	150
2C x 95	15	1.6	0.4	4 x 0.8	2	1.56	1.56	30.2	32.6	1400	1900	2.2	29.9	1050	190	170	185
2C x 120	15	1.6	0.4	4 x 0.8	2	1.56	1.72	31.7	34.4	1600	2150	2.2	31.4	1275	210	190	210
2C x 150	15	1.8	0.4	4 x 0.8	2	1.72	1.72	35.4	37.8	1950	2550	2.4	35.2	1550	240	210	240
2C x 185	30	2	0.5	4 x 0.8	2	1.88	1.88	39.1	41.5	2350	2950	2.4	38.5	1850	275	240	275
2C x 240	30	2.2	0.5	4 x 0.8	2.5	2.04	2.04	42.5	45.9	2850	3900	2.6	42	2300	320	275	325
2C x 300	30	2.4	0.6	4 x 0.8	2.5	2.2	2.2	48.5	51.9	3500	4625	2.8	48.1	2850	355	305	365
2C x 400	53	2.6	0.7	4 x 0.8	3.15	2.36	2.52	53.4	58.1	4300	6200	3.2	52.5	3700	385	345	420

TABLE - 4 - TWO CORE COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
2C x 1.5	1	0.8	0.3	–	1.4	–	1.24	–	14	–	400	1.8	12.2	175	23	20	20
2C x 2.5	1	0.9	0.3	–	1.4	–	1.24	–	15.2	–	475	1.8	13.0	225	32	27	27
2C x 4	7	1	0.3	–	1.4	–	1.24	–	16.8	–	550	1.8	15.0	300	41	35	35
2C x 6	7	1	0.3	–	1.4	–	1.24	–	17.8	–	650	1.8	16.0	350	50	44	45
2C x 10	7	1	0.3	–	1.4	–	1.24	–	19.8	–	800	1.8	18.0	475	70	58	60
2C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	18.8	20.4	700	850	1.8	18.0	500	90	75	78
2C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	20.8	22.4	940	1100	2	20.4	725	115	97	105
2C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	21.8	23.4	1150	1400	2	21.4	925	140	120	125
2C x 50	6	1.4	0.3	4 x 0.8	1.6	1.4	1.56	24.3	26.2	1500	1750	2	23.9	1250	165	145	155
2C x 70	12	1.4	0.3	4 x 0.8	1.6	1.56	1.56	26.7	28.3	1950	2250	2	26	1600	205	180	195
2C x 95	15	1.6	0.4	4 x 0.8	2	1.56	1.56	30.2	32.6	2500	3000	2.2	29.9	2150	240	215	230
2C x 120	18	1.6	0.4	4 x 0.8	2	1.56	1.72	31.7	34.4	3000	3550	2.2	31.4	2650	275	235	265
2C x 150	18	1.8	0.4	4 x 0.8	2	1.72	1.72	35.4	37.8	3650	4250	2.4	35.2	3250	310	270	305
2C x 185	30	2	0.5	4 x 0.8	2	1.88	1.88	39.1	41.5	4450	5050	2.4	38.5	3950	350	300	350
2C x 240	34	2.2	0.5	4 x 0.8	2.5	2.04	2.04	42.5	45.9	5600	6650	2.6	42	5050	405	345	410
2C x 300	34	2.4	0.6	4 x 0.8	2.5	2.2	2.2	48.5	51.9	6900	8025	2.8	48.1	6250	450	385	465

TABLE - 5 - THREE CORE ALUMINIUM CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3C x 1.5	1	0.8	0.3	—	1.4	—	1.24	—	14.5	—	420	1.8	12.7	175	16	14	13
3C x 2.5	1	0.9	0.3	—	1.4	—	1.24	—	15.8	—	500	1.8	14	225	21	18	18
3C x 4	3	1	0.3	—	1.4	—	1.24	—	17.6	—	550	1.8	15.8	275	28	23	23
3C x 6	3	1	0.3	—	1.4	—	1.24	—	18.6	—	625	1.8	16.8	325	35	30	30
3C x 10	7	1	0.3	—	1.4	—	1.4	—	21.2	—	750	1.8	19	400	46	39	40
3C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	18.6	20.2	600	750	1.8	17.8	375	60	50	51
3C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	21.3	22.9	750	1000	2	20.9	575	76	63	70
3C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	23.1	24.7	900	1150	2	22.7	700	92	77	86
3C x 50	6	1.4	0.3	4 x 0.8	1.6	1.56	1.56	26.4	28	1150	1450	2	25.7	900	110	95	105
3C x 70	12	1.4	0.4	4 x 0.8	2	1.56	1.56	29.9	32	1450	2000	2.2	29.3	1150	135	115	130
3C x 95	15	1.6	0.4	4 x 0.8	2	1.56	1.72	33.8	36.2	1800	2450	2.2	33.3	1450	165	140	155
3C x 120	15	1.6	0.4	4 x 0.8	2	1.72	1.72	37	39.4	2150	2800	2.2	36.4	1750	185	155	180
3C x 150	15	1.8	0.5	4 x 0.8	2	1.88	1.88	40.1	42.5	2600	3250	2.4	39.5	2150	210	175	205
3C x 185	30	2	0.5	4 x 0.8	2.5	1.88	2.04	44.2	47.9	3100	4250	2.6	44	2650	235	200	240
3C x 240	30	2.2	0.6	4 x 0.8	2.5	2.2	2.2	50.3	53.7	4000	5150	2.8	49.9	3550	275	235	280
3C x 300	30	2.4	0.6	4 x 0.8	2.5	2.36	2.36	55	58.4	4800	6100	3	54.7	4050	305	260	315
3C x 400	53	2.6	0.7	4 x 0.8	3.15	2.52	2.68	62.6	67.7	6000	8200	3.4	62.8	5200	335	290	375

TABLE - 6 - THREE CORE COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3C x 1.5	1	0.8	0.3	—	1.4	—	1.24	—	14.5	—	450	1.8	12.7	200	21	17	17
3C x 2.5	1	0.9	0.3	—	1.4	—	1.24	—	15.8	—	525	1.8	14	250	27	24	24
3C x 4	7	1	0.3	—	1.4	—	1.24	—	17.6	—	625	1.8	15.8	350	36	30	30
3C x 6	7	1	0.3	—	1.4	—	1.24	—	18.6	—	725	1.8	16.8	425	45	38	39
3C x 10	7	1	0.3	—	1.4	—	1.4	—	21.2	—	950	1.8	19	575	60	50	52
3C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	18.6	20.2	850	1050	1.8	17.8	650	77	64	66
3C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	21.3	22.9	1200	1400	2	20.9	1000	99	81	90
3C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	23.1	24.7	1550	1800	2	22.7	1300	120	99	110
3C x 50	6	1.4	0.3	4 x 0.8	1.6	1.56	1.56	26.4	28	2000	2300	2	25.7	1750	145	125	135
3C x 70	12	1.4	0.4	4 x 0.8	2	1.56	1.56	29.9	32	2700	3150	2.2	29.3	2350	175	150	165
3C x 95	15	1.6	0.4	4 x 0.8	2	1.56	1.72	33.8	36.2	3550	4150	2.2	33.3	3100	210	175	200
3C x 120	18	1.6	0.4	4 x 0.8	2	1.72	1.72	37	39.4	4350	5000	2.2	36.4	3800	240	195	230
3C x 150	18	1.8	0.5	4 x 0.8	2	1.88	1.88	40.1	42.5	5300	5950	2.4	39.5	4700	270	225	265
3C x 185	30	2	0.5	4 x 0.8	2.5	1.88	2.04	44.2	47.9	6450	7600	2.6	44	5800	300	255	305
3C x 240	34	2.2	0.6	4 x 0.8	2.5	2.2	2.2	50.3	53.7	8200	9500	2.8	49.9	7400	345	295	355
3C x 300	34	2.4	0.6	4 x 0.8	2.5	2.36	2.36	55	58.4	10000	11400	3	54.7	9100	385	335	400
3C x 400	53	2.6	0.7	4 x 0.8	3.15	2.52	2.68	62.6	67.7	13050	15300	3.4	62.8	12100	425	360	455

TABLE - 7 - THREE & HALF CORE ALUMINIUM CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3.5C x 25/16	6/6	1.2/1.0	0.3	1.6	1.4	25.4	1150	4x0.8	1.4	23.8	900	2	23.4	650	76	63	70
3.5C x 35/16	6/6	1.2/1.0	0.3	1.6	1.4	26.4	1300	4x0.8	1.4	24.8	1000	2	24.4	750	92	77	86
3.5C x 50/25	6/6	1.4/1.2	0.3	1.6	1.56	30	1600	4x0.8	1.56	28.4	1300	2	27.7	1025	110	95	105
3.5C x 70/35	12/6	1.4/1.2	0.4	2	1.56	34.9	2200	4x0.8	1.56	32.5	1650	2.2	32.2	1350	135	115	130
3.5C x 95/50	15/6	1.6/1.4	0.4	2	1.72	38.9	2700	4x0.8	1.56	36.2	2075	2.2	35.9	1700	165	140	155
3.5C x 120/70	15/12	1.6/1.4	0.5	2	1.88	42.1	3200	4x0.8	1.72	39.3	2500	2.4	39.1	2100	185	155	180
3.5C x 150/70	15/12	1.8/1.4	0.5	2	1.88	46.4	3700	4x0.8	1.88	44	3000	2.4	43.4	2500	210	175	205
3.5C x 185/95	30/15	2.0/1.6	0.5	2.5	2.04	52.2	4850	4x0.8	2.04	48.8	3600	2.6	48.3	3025	235	200	240
3.5C x 240/120	30/15	2.2/1.6	0.6	2.5	2.36	58.9	5750	4x0.8	2.2	55.2	4600	3	55.2	3850	275	235	280
3.5C x 300/150	30/15	2.4/1.8	0.6	3.15	2.52	64.7	7600	4x0.8	2.36	59.7	5400	3.2	59.8	4750	305	260	315
3.5C x 400/185	53/30	2.6/2.0	0.7	3.15	2.68	73.3	9300	4x0.8	2.68	68.6	6850	3.4	68.4	6050	335	290	375

TABLE - 8 - THREE & HALF CORE COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3.5C x 25/16	6/6	1.2/1.0	0.3	1.6	1.4	25.4	1700	4x0.8	1.4	23.8	1400	2	23.4	1150	99	81	90
3.5C x 35/16	6/6	1.2/1.0	0.3	1.6	1.4	26.4	2000	4x0.8	1.4	24.8	1700	2	24.4	1450	120	99	110
3.5C x 50/25	6/6	1.4/1.2	0.3	1.6	1.56	30	2600	4x0.8	1.56	28.4	2350	2	27.7	2000	145	125	135
3.5C x 70/35	12/6	1.4/1.2	0.4	2	1.56	34.9	3650	4x0.8	1.56	32.5	3100	2.2	32.2	2700	175	150	165
3.5C x 95/50	15/6	1.6/1.4	0.4	2	1.72	38.9	4700	4x0.8	1.56	36.2	4100	2.2	35.9	3600	210	175	200
3.5C x 120/70	18/12	1.6/1.4	0.5	2	1.88	42.1	5700	4x0.8	1.72	39.3	5050	2.4	39.1	4500	240	195	230
3.5C x 150/70	18/12	1.8/1.4	0.5	2	1.88	46.4	6800	4x0.8	1.88	44	6050	2.4	43.4	5400	270	225	265
3.5C x 185/95	30/15	2.0/1.6	0.5	2.5	2.04	52.2	8600	4x0.8	2.04	48.8	7400	2.6	48.3	6700	300	255	305
3.5C x 240/120	34/18	2.2/1.6	0.6	2.5	2.36	58.9	10500	4x0.8	2.2	55.2	9450	3	55.2	8600	345	295	355
3.5C x 300/150	34/18	2.4/1.8	0.6	3.15	2.52	64.7	13500	4x0.8	2.36	59.7	11500	3.2	59.8	10500	385	335	400
3.5C x 400/185	53/30	2.6/2.0	0.7	3.15	2.68	73.3	17250	4x0.8	2.68	68.6	14850	3.4	68.4	13900	425	360	455

IS: 1554

TABLE - 9 - FOUR CORE ALUMINIUM CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:1554-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
4C x 1.5	1	0.8	0.3	-	1.4	-	1.24	-	15.4	-	450	1.8	13.6	200	16	14	13
4C x 2.5	1	0.9	0.3	-	1.4	-	1.24	-	16.8	-	550	1.8	15	250	21	18	18
4C x 4	3	1	0.3	-	1.4	-	1.24	-	18.8	-	625	1.8	17	325	28	23	23
4C x 6	3	1	0.3	-	1.4	-	1.24	-	20	-	750	1.8	18.2	400	35	30	30
4C x 10	7	1	0.3	4 x 0.8	1.6	1.4	1.4	21.6	23	750	950	1.8	20.6	475	46	39	40
4C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	22.2	23.8	725	950	2	21.8	500	60	50	51
4C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	23.6	25.2	900	1150	2	23.2	700	76	63	70
4C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.56	25.9	27.8	1100	1400	2	25.5	850	92	77	86
4C x 50	6	1.4	0.4	4 x 0.8	2	1.56	1.56	30.3	32.7	1450	1950	2.2	30	1150	110	95	105
4C x 70	12	1.4	0.4	4 x 0.8	2	1.56	1.56	33.4	35.8	1800	2350	2.2	33.1	1450	135	115	130
4C x 95	15	1.6	0.4	4 x 0.8	2	1.72	1.72	38.2	40.6	2300	2950	2.4	38	1925	165	140	155
4C x 120	15	1.6	0.5	4 x 0.8	2	1.88	1.88	41.7	44.1	2750	3500	2.4	41.1	2250	185	155	180
4C x 150	15	1.8	0.5	4 x 0.8	2.5	1.88	2.04	44.7	48.4	3250	4400	2.6	44.5	2800	210	175	205
4C x 185	30	2	0.6	4 x 0.8	2.5	2.04	2.2	50.1	53.8	4000	5250	2.8	50	3425	235	200	240
4C x 240	30	2.2	0.6	4 x 0.8	2.5	2.36	2.36	56.7	60.1	5000	6450	3	56.4	4325	275	235	280
4C x 300	30	2.4	0.7	4 x 0.8	3.15	2.52	2.68	62.9	68	6100	8300	3.4	63.1	5400	305	260	315
4C x 400	53	2.6	0.7	4 x 0.8	3.15	2.84	2.84	70.6	75.3	7650	10100	3.6	70.5	6850	335	290	375

TABLE - 10 - FOUR CORE COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED POWER CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:1554-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
4C x 1.5	1	0.8	0.3	-	1.4	-	1.24	-	15.4	-	500	1.8	13.6	225	21	17	17
4C x 2.5	1	0.9	0.3	-	1.4	-	1.24	-	16.8	-	600	1.8	15	300	27	24	24
4C x 4	7	1	0.3	-	1.4	-	1.24	-	18.8	-	725	1.8	17	400	36	30	30
4C x 6	7	1	0.3	-	1.4	-	1.24	-	20	-	875	1.8	18.2	525	45	38	39
4C x 10	7	1	0.3	4 x 0.8	1.6	1.4	1.4	21.6	23	975	1150	1.8	20.6	700	60	50	52
4C x 16	6	1	0.3	4 x 0.8	1.6	1.4	1.4	22.2	23.8	1100	1300	2	21.8	850	77	64	66
4C x 25	6	1.2	0.3	4 x 0.8	1.6	1.4	1.4	23.6	25.2	1525	1775	2	23.2	1250	99	81	90
4C x 35	6	1.2	0.3	4 x 0.8	1.6	1.4	1.56	25.9	27.8	1950	2250	2	25.5	1650	120	99	110
4C x 50	6	1.4	0.4	4 x 0.8	2	1.56	1.56	30.3	32.7	2600	3100	2.2	30	2300	145	125	135
4C x 70	12	1.4	0.4	4 x 0.8	2	1.56	1.56	33.4	35.8	3450	4100	2.2	33.1	3050	175	150	165
4C x 95	15	1.6	0.4	4 x 0.8	2	1.72	1.72	38.2	40.6	4550	5200	2.4	38	4050	210	175	200
4C x 120	18	1.6	0.5	4 x 0.8	2	1.88	1.88	41.7	44.1	5550	6300	2.4	41.1	5000	240	195	230
4C x 150	18	1.8	0.5	4 x 0.8	2.5	1.88	2.04	44.7	48.4	6800	8000	2.6	44.5	6200	270	225	265
4C x 185	30	2	0.6	4 x 0.8	2.5	2.04	2.2	50.1	53.8	8250	9650	2.8	50	7600	300	255	305
4C x 240	34	2.2	0.6	4 x 0.8	2.5	2.36	2.36	56.7	60.1	10500	12000	3	56.4	9700	345	295	355
4C x 300	34	2.4	0.7	4 x 0.8	3.15	2.52	2.68	62.9	68	13000	15400	3.4	63.1	12200	385	335	400
4C x 400	53	2.6	0.7	4 x 0.8	3.15	2.84	2.84	70.6	75.3	16800	19500	3.6	70.5	15900	425	360	455

TABLE - 11 - 1.5 SQMM / 2.5 SQMM COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED CONTROL CABLES

FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:1554-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of PVC Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING	
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps
2C x 1.5	7	0.8	0.3	1.4	1.24	14	375	—	—	—	—	1.8	12.2	150	23	20
3C x 1.5	7	0.8	0.3	1.4	1.24	14.5	400	—	—	—	—	1.8	12.7	175	21	17
4C x 1.5	7	0.8	0.3	1.4	1.24	15.4	450	—	—	—	—	1.8	13.6	200	21	17
5C x 1.5	7	0.8	0.3	1.4	1.24	16.3	500	—	—	—	—	1.8	14.5	250	16	14
6C x 1.5	7	0.8	0.3	1.4	1.24	17.3	550	—	—	—	—	1.8	15.5	275	15	13
7C x 1.5	7	0.8	0.3	1.4	1.24	17.3	575	—	—	—	—	1.8	15.5	300	14	13
10C x 1.5	7	0.8	0.3	1.4	1.4	20	750	—	—	—	—	1.8	17.8	400	13	11
12C x 1.5	7	0.8	0.3	1.6	1.4	21.4	900	4 x 0.8	1.24	19.4	675	1.8	18.8	450	12	10
14C x 1.5	7	0.8	0.3	1.6	1.4	22.8	975	4 x 0.8	1.4	21.2	775	1.8	20.2	500	11	10
16C x 1.5	7	0.8	0.3	1.6	1.4	23.7	1050	4 x 0.8	1.4	22.1	850	1.8	21.1	560	11	9
19C x 1.5	7	0.8	0.3	1.6	1.4	24.7	1150	4 x 0.8	1.4	23.1	925	2	22.5	660	10	9
24C x 1.5	7	0.8	0.3	1.6	1.4	28	1375	4 x 0.8	1.4	26.4	1150	2	25.8	800	9	8
27C x 1.5	7	0.8	0.3	1.6	1.4	28.5	1450	4 x 0.8	1.4	26.9	1200	2	26.3	875	9	8
30C x 1.5	7	0.8	0.3	1.6	1.4	29.4	1550	4 x 0.8	1.4	27.8	1300	2	27.2	950	9	7
37C x 1.5	7	0.8	0.3	1.6	1.4	31.3	1750	4 x 0.8	1.4	29.7	1500	2	29.1	1125	8	7
2C x 2.5	7	0.9	0.3	1.4	1.24	15.2	425	—	—	—	—	1.8	13.4	200	32	27
3C x 2.5	7	0.9	0.3	1.4	1.24	15.8	500	—	—	—	—	1.8	14	225	27	24
4C x 2.5	7	0.9	0.3	1.4	1.24	16.8	550	—	—	—	—	1.8	15	275	27	24
5C x 2.5	7	0.9	0.3	1.4	1.24	17.9	625	—	—	—	—	1.8	16.1	325	23	19
6C x 2.5	7	0.9	0.3	1.4	1.24	19.1	700	—	—	—	—	1.8	17.3	375	21	18
7C x 2.5	7	0.9	0.3	1.4	1.24	19.1	725	—	—	—	—	1.8	17.3	400	20	17
10C x 2.5	7	0.9	0.3	1.6	1.4	22.6	975	4 x 0.8	1.4	21	850	1.8	20	550	18	15
12C x 2.5	7	0.9	0.3	1.6	1.4	23.8	1100	4 x 0.8	1.4	22.2	900	2	21.6	650	17	14
14C x 2.5	7	0.9	0.3	1.6	1.4	25.4	1225	4 x 0.8	1.4	23.8	1000	2	23.2	725	16	13
16C x 2.5	7	0.9	0.3	1.6	1.4	26.5	1325	4 x 0.8	1.4	24.9	1100	2	24.3	800	15	13
19C x 2.5	7	0.9	0.3	1.6	1.4	27.7	1500	4 x 0.8	1.4	26.1	1250	2	25.5	900	14	12
24C x 2.5	7	0.9	0.3	1.6	1.56	32	1800	4 x 0.8	1.4	30	1500	2	29.4	1125	13	11
27C x 2.5	7	0.9	0.3	1.6	1.56	32.6	1950	4 x 0.8	1.4	30.6	1625	2	30	1225	12	10
30C x 2.5	7	0.9	0.3	1.6	1.56	33.6	2050	4 x 0.8	1.56	32	1775	2	31	1350	12	10
37C x 2.5	7	0.9	0.4	2	1.56	36.9	2600	4 x 0.8	1.56	34.5	2050	2.2	33.9	1600	11	9

TABLE - 12 - SINGLE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-1&2 conductor as per IS: 8130	No of wires	Thickness of XLPE Insulation	Nominal Dimension of Armour wire	ARMOURED (AYWaY)			UNARMOURED (AYY)				CURRENT RATING					
				Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tolerance	Approx weight of cable	Nominal Thickness of PVC Insulation	Nom Thickness of Outter sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C		In Single way buried Duct @ 30°C		In Air @ 40°C	
											2 Cables	3 Cables	2 Cables	3 Cables	2 Cables	3 Cables
Sq.mm	No's	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	Amps	Amps	Amps	Amps	Amps	Amps
1C x 4	1	-	-	-	-	-	0.7	1.8	7.8	70	43	37	36	34	38	33
1C x 4	6	-	-	-	-	-	0.7	1.8	8.1	70	43	37	36	34	38	33
1C x 6	1	-	-	-	-	-	0.7	1.8	8.3	85	55	47	47	43	50	43
1C x 6	6	-	-	-	-	-	0.7	1.8	8.6	85	55	47	47	43	50	43
1C x 10	1	-	-	-	-	-	0.7	1.8	9.1	100	69	59	58	54	64	55
1C x 10	6	-	-	-	-	-	0.7	1.8	9.6	100	69	59	58	54	64	55
1C x 16	6	1	1.4	1.24	12.7	225	0.7	1.8	10.3	125	89	76	75	69	84	72
1C x 25	6	1.2	1.4	1.24	14.3	250	0.9	1.8	11.9	170	115	98	96	89	112	98
1C x 35	6	1.2	1.4	1.24	15.3	300	0.9	1.8	12.9	200	137	116	115	106	137	119
1C x 50	6	1.3	1.4	1.24	16.6	350	1	1.8	14.2	250	161	137	135	124	165	145
1C x 70	12	1.4	1.4	1.24	18.4	450	1.1	1.8	16	325	198	168	165	151	209	185
1C x 95	15	1.4	1.6	1.4	20.9	575	1.1	1.8	17.7	425	243	202	199	181	264	235
1C x 120	15	1.5	1.6	1.4	22.5	700	1.2	1.8	19.3	500	276	230	226	206	308	276
1C x 150	15	1.7	1.6	1.4	24.3	800	1.4	2	21.5	625	308	256	252	229	350	314
1C x 185	30	1.9	1.6	1.4	26.6	950	1.6	2	23.8	750	349	290	285	258	406	366
1C x 240	30	2	1.6	1.4	29.2	1150	1.7	2	26.4	925	404	335	329	298	480	434
1C x 300	30	2.1	1.6	1.56	31.9	1400	1.8	2	28.7	1100	454	376	369	333	551	500
1C x 400	53	2.4	2	1.56	36.3	1850	2	2.2	32.5	1450	518	429	421	378	647	589
1C x 500	53	2.6	2	1.56	39.7	2200	2.2	2.2	35.9	1800	588	485	476	426	751	685
1C x 630	53	2.8	2	1.72	44.1	2700	2.4	2.2	39.9	2200	663	546	536	477	868	793
1C x 800	53	3.1	2	1.88	49.4	3350	2.6	2.4	45	2750	740	608	596	528	992	907
1C x 1000	53	3.3	2.5	2.04	56.3	4200	2.8	2.6	51.1	3400	812	665	652	575	1117	1022

TABLE - 13 - SINGLE CORE COPPER CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-1&2 conductor as per IS: 8130	No of wires	Thickness of XLPE Insulation	Nominal Dimension of Armour wire	ARMOURED (AYWaY)			UNARMOURED (AYY)				CURRENT RATING					
				Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tolerance	Approx weight of cable	Nominal Thickness of PVC Insulation	Nom Thickness of Outter sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C		In Single way buried Duct @ 30°C		In Air @ 40°C	
											2 Cables	3 Cables	2 Cables	3 Cables	2 Cables	3 Cables
Sq.mm	No's	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	Amps	Amps	Amps	Amps	Amps	Amps
1C x 4	1	-	-	-	-	-	0.7	1.8	7.8	95	54	47	46	43	48	41
1C x 4	7	-	-	-	-	-	0.7	1.8	8.1	100	54	47	46	43	48	41
1C x 6	1	-	-	-	-	-	0.7	1.8	8.3	115	67	58	57	53	61	52
1C x 6	7	-	-	-	-	-	0.7	1.8	8.6	125	67	58	57	53	61	52
1C x 10	7	1	1.4	1.24	12	225	0.7	1.8	9.6	170	90	77	76	70	83	71
1C x 16	6	1	1.4	1.24	12.7	300	0.7	1.8	10.3	210	115	98	97	89	108	94
1C x 25	6	1.2	1.4	1.24	14.3	375	0.9	1.8	11.9	300	148	126	124	114	144	126
1C x 35	6	1.2	1.4	1.24	15.3	450	0.9	1.8	12.9	400	177	150	148	136	176	154
1C x 50	6	1.3	1.4	1.24	16.6	625	1	1.8	14.2	550	208	177	174	160	212	187
1C x 70	12	1.4	1.4	1.24	18.4	825	1.1	1.8	16	725	255	216	213	195	269	238
1C x 95	15	1.4	1.6	1.4	20.9	1100	1.1	1.8	17.7	950	312	260	256	233	340	303
1C x 120	18	1.5	1.6	1.4	22.5	1350	1.2	1.8	19.3	1200	355	295	291	264	396	354
1C x 150	18	1.7	1.6	1.4	24.3	1650	1.4	2	21.5	1450	396	329	324	294	450	403

TABLE - 14 - TWO CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
2C x 4	1	0.7	0.3	1.4	1.24	14.9	400	—	—	—	—	1.8	13.1	175	42	36	38
2C x 4	3	0.7	0.3	1.4	1.24	15.6	400	—	—	—	—	1.8	13.8	175	42	36	38
2C x 6	1	0.7	0.3	1.4	1.24	15.9	450	—	—	—	—	1.8	14.1	200	55	46	50
2C x 6	3	0.7	0.3	1.4	1.24	16.6	450	—	—	—	—	1.8	14.8	200	55	46	50
2C x 10	1	0.7	0.3	1.4	1.24	17.6	550	—	—	—	—	1.8	15.8	250	68	57	64
2C x 10	7	0.7	0.3	1.4	1.24	18.6	550	—	—	—	—	1.8	16.8	250	68	57	64
2C x 16	6	0.7	0.3	1.4	1.4	18.8	600	—	—	—	—	1.8	16.8	260	89	74	83
2C x 25	6	0.9	0.3	1.6	1.4	21.2	750	4 x 0.8	1.4	19.6	550	2	19.2	375	114	95	109
2C x 35	6	0.9	0.3	1.6	1.4	22.2	875	4 x 0.8	1.4	20.6	650	2	20.2	450	136	113	133
2C x 50	6	1	0.3	1.6	1.4	24.3	1050	4 x 0.8	1.4	22.7	800	2	22.3	575	161	134	162
2C x 70	12	1.1	0.3	1.6	1.56	27.1	1250	4 x 0.8	1.56	25.5	1000	2	24.8	725	197	164	204
2C x 95	15	1.1	0.4	2	1.56	30.8	1700	4 x 0.8	1.56	28.4	1250	2.2	28.1	950	235	196	251
2C x 120	15	1.2	0.4	2	1.56	32.7	2000	4 x 0.8	1.56	30.3	1450	2.2	30	1100	266	222	287
2C x 150	15	1.4	0.4	2	1.72	36.2	2300	4 x 0.8	1.72	33.8	1750	2.2	33.2	1400	296	248	328
2C x 185	30	1.6	0.5	2	1.88	39.9	2700	4 x 0.8	1.72	37.1	2100	2.4	36.9	1650	335	281	379
2C x 240	30	1.7	0.5	2.5	2.04	43.9	3500	4 x 0.8	1.88	40.2	2550	2.6	40	2050	385	324	448
2C x 300	30	1.8	0.6	2.5	2.2	49.5	4200	4 x 0.8	2.04	45.8	3050	2.8	45.7	2500	432	364	513
2C x 400	53	2	0.6	2.5	2.36	53.9	5100	4 x 0.8	2.36	50	3900	3	50.2	3250	487	412	593

TABLE - 15 - TWO CORE COPPER CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
2C x 4	1	0.7	0.3	1.4	1.24	14.9	450	—	—	—	—	1.8	13.1	225	54	45	48
2C x 4	7	0.7	0.3	1.4	1.24	15.6	450	—	—	—	—	1.8	13.8	225	54	45	48
2C x 6	1	0.7	0.3	1.4	1.24	15.9	525	—	—	—	—	1.8	14.1	275	67	56	61
2C x 6	7	0.7	0.3	1.4	1.24	16.6	525	—	—	—	—	1.8	14.8	275	67	56	61
2C x 10	7	0.7	0.3	1.4	1.24	18.6	675	—	—	—	—	1.8	16.8	375	89	75	83
2C x 16	6	0.7	0.3	1.4	1.4	18.8	775	—	—	—	—	1.8	16.8	425	115	96	108
2C x 25	6	0.9	0.3	1.6	1.4	21.2	1025	4 x 0.8	1.4	19.6	850	2	19.2	650	147	122	140
2C x 35	6	0.9	0.3	1.6	1.4	22.2	1250	4 x 0.8	1.4	20.6	1050	2	20.2	850	176	146	172
2C x 50	6	1	0.3	1.6	1.4	24.3	1600	4 x 0.8	1.4	22.7	1400	2	22.3	1150	208	173	208
2C x 70	12	1.1	0.3	1.6	1.56	27.1	2050	4 x 0.8	1.56	25.5	1825	2	24.8	1500	253	211	262
2C x 95	15	1.1	0.4	2	1.56	30.8	2800	4 x 0.8	1.56	28.4	2300	2.2	28.1	2000	302	252	322
2C x 120	18	1.2	0.4	2	1.56	32.7	3350	4 x 0.8	1.56	30.3	2850	2.2	30	2500	340	284	368
2C x 150	18	1.4	0.4	2	1.72	36.2	4000	4 x 0.8	1.72	33.8	3450	2.2	33.2	3100	379	317	419
2C x 185	30	1.6	0.5	2	1.88	39.9	4850	4 x 0.8	1.72	37.1	4200	2.4	36.9	3750	425	357	482
2C x 240	34	1.7	0.5	2.5	2.04	43.9	6300	4 x 0.8	1.88	40.2	5300	2.6	40	4800	486	409	566
2C x 300	34	1.8	0.6	2.5	2.2	49.5	7600	4 x 0.8	2.04	45.8	6450	2.8	45.7	5950	541	456	644
2C x 400	53	2	0.6	2.5	2.36	53.9	9650	4 x 0.8	2.36	50	8400	3	50.2	7700	602	508	734

TABLE - 16 - THREE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3C x 4	1	0.7	0.3	1.4	1.24	15.5	450	—	—	—	—	1.8	13.7	200	35	30	32
3C x 4		3	0.7	0.3	1.4	1.24	16.3	450	—	—	—	—	1.8	14.5	200	35	3032
3C x 6	1	0.7	0.3	1.4	1.24	16.6	500	—	—	—	—	1.8	14.8	225	46	38	42
3C x 6	3	0.7	0.3	1.4	1.24	17.3	500	—	—	—	—	1.8	15.5	225	46	38	42
3C x 10	1	0.7	0.3	1.4	1.24	18.4	625	—	—	—	—	1.8	16.6	300	57	48	54
3C x 10	7	0.7	0.3	1.4	1.24	19.5	625	—	—	—	—	1.8	17.7	300	57	48	54
3C x 16	6	0.7	0.3	1.6	1.4	19.7	725	4 x 0.8	1.24	17.8	530	1.8	17.3	325	74	61	69
3C x 25	6	0.9	0.3	1.6	1.4	21.7	900	4 x 0.8	1.4	20.1	725	2	19.7	500	95	79	93
3C x 35	6	0.9	0.3	1.6	1.4	23.8	1025	4 x 0.8	1.4	22.2	850	2	21.8	600	114	94	114
3C x 50	6	1	0.3	1.6	1.56	26.5	1250	4 x 0.8	1.4	24.6	1050	2	24.2	750	134	112	138
3C x 70	12	1.1	0.4	2	1.56	31.3	1800	4 x 0.8	1.56	28.9	1375	2.2	28.6	1025	164	137	175
3C x 95	15	1.1	0.4	2	1.56	33.5	2100	4 x 0.8	1.56	31.1	1600	2.2	30.8	1250	197	164	216
3C x 120	15	1.2	0.4	2	1.72	38.4	2550	4 x 0.8	1.56	35.7	1980	2.2	35.4	1550	223	187	249
3C x 150	15	1.4	0.5	2	1.88	42	3050	4 x 0.8	1.72	39.2	2300	2.4	39	1975	249	209	284
3C x 185	30	1.6	0.5	2.5	2.04	47	3950	4 x 0.8	1.88	43.3	2800	2.6	43.1	2350	282	238	329
3C x 240	30	1.7	0.6	2.5	2.2	50	4600	4 x 0.8	2.04	46.3	3450	2.8	46.2	2950	327	276	392
3C x 300	30	1.8	0.6	2.5	2.36	53.3	5500	4 x 0.8	2.2	51.6	4170	3	51.6	3600	369	312	452
3C x 400	53	2	0.7	3.15	2.68	63.3	7600	4 x 0.8	2.52	58.4	5250	3.2	58.2	4650	420	356	526

TABLE - 17 - THREE CORE COPPER CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3C x 4	1	0.7	0.3	1.4	1.24	15.5	500	—	—	—	—	1.8	13.7	275	45	38	41
3C x 4	7	0.7	0.3	1.4	1.24	16.3	500	—	—	—	—	1.8	14.5	275	45	38	41
3C x 6	1	0.7	0.3	1.4	1.24	16.6	625	—	—	—	—	1.8	14.8	350	56	47	52
3C x 6	7	0.7	0.3	1.4	1.24	17.3	625	—	—	—	—	1.8	15.5	350	56	47	52
3C x 10	7	0.7	0.3	1.4	1.24	19.5	800	—	—	—	—	1.8	17.7	475	74	62	70
3C x 16	6	0.7	0.3	1.6	1.4	19.7	1000	4 x 0.8	1.24	17.8	825	1.8	17.3	600	95	79	89
3C x 25	6	0.9	0.3	1.6	1.4	21.7	1350	4 x 0.8	1.4	20.1	1150	2	19.7	900	122	102	119
3C x 35	6	0.9	0.3	1.6	1.4	23.8	1650	4 x 0.8	1.4	22.2	1450	2	21.8	1200	146	122	147
3C x 50	6	1	0.3	1.6	1.56	26.5	2200	4 x 0.8	1.4	24.6	1900	2	24.2	1600	173	144	179
3C x 70	12	1.1	0.4	2	1.56	31.3	3050	4 x 0.8	1.56	28.9	2550	2.2	28.6	2200	212	177	226
3C x 95	15	1.1	0.4	2	1.56	33.5	3800	4 x 0.8	1.56	31.1	3250	2.2	30.8	2900	254	212	279
3C x 120	18	1.2	0.4	2	1.72	38.4	4650	4 x 0.8	1.56	35.7	4000	2.2	35.4	3600	287	240	320
3C x 150	18	1.4	0.5	2	1.88	42	5650	4 x 0.8	1.72	39.2	4950	2.4	39	4500	321	269	365
3C x 185	30	1.6	0.5	2.5	2.04	47	7100	4 x 0.8	1.88	43.3	6000	2.6	43.1	5500	362	304	422
3C x 240	34	1.7	0.6	2.5	2.2	50	8850	4 x 0.8	2.04	46.3	7600	2.8	46.2	7000	418	352	500
3C x 300	34	1.8	0.6	2.5	2.36	53.3	10750	4 x 0.8	2.2	51.6	9350	3	51.6	8700	469	396	574
3C x 400	53	2	0.7	3.15	2.68	63.3	14400	4 x 0.8	2.52	58.4	12200	3.2	58.2	11400	528	447	662

TABLE - 18 - THREE & HALF CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3.5C x 25/16	6/6	0.9/0.7	0.3	1.6	1.4	23.8	1000	4 x 0.8	1.4	22.2	750	2	21.8	550	95	79	93
3.5C x 35/16	6/6	0.9/0.7	0.3	1.6	1.4	25.5	1200	4 x 0.8	1.4	23.9	875	2	23.5	675	114	94	114
3.5C x 50/25	6/6	1.0/0.9	0.3	1.6	1.56	29.0	1500	4 x 0.8	1.4	27.1	1110	2	26.7	875	134	112	138
3.5C x 70/35	12/6	1.1/0.9	0.4	2	1.56	34.0	2000	4 x 0.8	1.56	31.6	1475	2.2	31.3	1150	164	137	175
3.5C x 95/50	15/6	1.1/1.0	0.4	2	1.56	37.6	2450	4 x 0.8	1.56	35.2	1825	2.2	34.9	1450	197	164	216
3.5C x 120/70	15/12	1.2/1.1	0.4	2	1.72	40.2	2900	4 x 0.8	1.72	37.8	2200	2.2	37.2	1800	223	187	249
3.5C x 150/70	15/12	1.4/1.1	0.5	2	1.88	45.2	3350	4 x 0.8	1.72	42.4	2625	2.4	42.2	2200	249	209	284
3.5C x 185/95	30/15	1.6/1.1	0.5	2.5	2.04	49.7	4350	4 x 0.8	1.88	46	3175	2.6	45.8	2700	282	238	329
3.5C x 240/120	30/15	1.7/1.2	0.6	2.5	2.2	55.4	5300	4 x 0.8	2.04	51.7	4000	2.8	51.6	3400	327	276	392
3.5C x 300/150	30/15	1.8/1.4	0.6	2.5	2.36	59.3	6175	4 x 0.8	2.2	55.6	4750	3	55.6	4150	369	312	452
3.5C x 400/185	53/30	2.0/1.6	0.7	3.15	2.68	69.2	8350	4 x 0.8	2.52	64.1	6000	3.4	64.3	5400	420	356	526

TABLE - 19 - THREE & HALF CORE COPPER CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
3.5C x 25/16	6/6	0.9/0.7	0.3	1.6	1.4	23.8	1000	4 x 0.8	1.4	22.2	750	2	21.8	550	95	79	93
3.5C x 35/16	6/6	0.9/0.7	0.3	1.6	1.4	25.5	1200	4 x 0.8	1.4	23.9	875	2	23.5	675	114	94	114
3.5C x 50/25	6/6	1.0/0.9	0.3	1.6	1.56	29.0	1500	4 x 0.8	1.4	27.1	1110	2	26.7	875	134	112	138
3.5C x 70/35	12/6	1.1/0.9	0.4	2	1.56	34.0	2000	4 x 0.8	1.56	31.6	1475	2.2	31.3	1150	164	137	175
3.5C x 95/50	15/6	1.1/1.0	0.4	2	1.56	37.6	2450	4 x 0.8	1.56	35.2	1825	2.2	34.9	1450	197	164	216
3.5C x 120/70	15/12	1.2/1.1	0.4	2	1.72	40.2	2900	4 x 0.8	1.72	37.8	2200	2.2	37.2	1800	223	187	249
3.5C x 150/70	15/12	1.4/1.1	0.5	2	1.88	45.2	3350	4 x 0.8	1.72	42.4	2625	2.4	42.2	2200	249	209	284
3.5C x 185/95	30/15	1.6/1.1	0.5	2.5	2.04	49.7	4350	4 x 0.8	1.88	46	3175	2.6	45.8	2700	282	238	329
3.5C x 240/120	30/15	1.7/1.2	0.6	2.5	2.2	55.4	5300	4 x 0.8	2.04	51.7	4000	2.8	51.6	3400	327	276	392
3.5C x 300/150	30/15	1.8/1.4	0.6	2.5	2.36	59.3	6175	4 x 0.8	2.2	55.6	4750	3	55.6	4150	369	312	452
3.5C x 400/185	53/30	2.0/1.6	0.7	3.15	2.68	69.2	8350	4 x 0.8	2.52	64.1	6000	3.4	64.3	5400	420	356	526

TABLE - 20 - FOUR CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
4C x 4	1	0.7	0.3	1.4	1.24	16.5	500	—	—	—	—	1.8	14.8	225	35	30	32
4C x 4	3	0.7	0.3	1.4	1.24	17.3	500	—	—	—	—	1.8	15.5	225	35	30	32
4C x 6	1	0.7	0.3	1.4	1.24	17.7	550	—	—	—	—	1.8	15.9	260	46	38	42
4C x 6	3	0.7	0.3	1.4	1.24	18.5	550	—	—	—	—	1.8	16.7	260	46	38	42
4C x 10	1	0.7	0.3	1.4	1.4	20.1	725	—	—	—	—	1.8	17.9	350	57	48	54
4C x 10	7	0.7	0.3	1.4	1.4	21.4	725	—	—	—	—	1.8	19.2	350	57	48	54
4C x 16	6	0.7	0.3	1.6	1.4	22.8	850	4 x 0.8	1.4	21.2	675	1.8	20.4	425	74	61	69
4C x 25	6	0.9	0.3	1.6	1.4	23.8	1050	4 x 0.8	1.4	22.2	825	2	21.8	600	95	79	93
4C x 35	6	0.9	0.3	1.6	1.4	26	1300	4 x 0.8	1.4	24.4	1000	2	24	750	114	94	114
4C x 50	6	1	0.3	1.6	1.56	29.5	1550	4 x 0.8	1.56	27.9	1300	2	27.2	975	134	112	138
4C x 70	12	1.1	0.4	2	1.56	34.1	2200	4 x 0.8	1.56	31.7	1650	2.2	31.8	1300	164	137	175
4C x 95	15	1.1	0.4	2	1.72	37.9	2650	4 x 0.8	1.56	35.2	2000	2.2	34.9	1600	197	164	216
4C x 120	15	1.2	0.5	2	1.88	41.9	3200	4 x 0.8	1.72	39.1	2450	2.4	38.9	2050	223	187	249
4C x 150	15	1.4	0.5	2.5	2.04	46.3	4100	4 x 0.8	1.88	42.6	2900	2.6	42.4	2500	249	209	284
4C x 185	30	1.6	0.5	2.5	2.2	51.5	4800	4 x 0.8	2.04	47.8	3600	2.8	47.7	3050	282	238	329
4C x 240	30	1.7	0.6	2.5	2.36	57.5	5900	4 x 0.8	2.2	53.8	4500	3	53.8	3850	327	276	392
4C x 300	30	1.8	0.7	3.15	2.52	64.5	7600	4 x 0.8	2.36	59.5	5400	3.2	59.6	4800	369	312	452
4C x 400	53	2	0.7	3.15	2.84	72.1	9200	4 x 0.8	2.68	67.1	6800	3.6	67.3	6175	420	356	526

TABLE - 21 - FOUR CORE COPPER CONDUCTOR, XLPE INSULATED, ARMOURED/UN-ARMOURED POWER CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING		
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Single way buried Duct @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps	Amps
4C x 4	1	0.7	0.3	1.4	1.24	16.5	600	—	—	—	—	1.8	14.8	300	45	38	41
4C x 4	7	0.7	0.3	1.4	1.24	17.3	600	—	—	—	—	1.8	15.5	300	45	38	41
4C x 6	1	0.7	0.3	1.4	1.24	17.7	700	—	—	—	—	1.8	16	400	56	47	52
4C x 6	7	0.7	0.3	1.4	1.24	18.5	700	—	—	—	—	1.8	16.7	400	56	47	52
4C x 10	7	0.7	0.3	1.4	1.4	21.4	950	—	—	—	—	1.8	19.6	575	74	62	70
4C x 16	6	0.7	0.3	1.6	1.4	22.8	1200	4 x 0.8	1.4	21.2	1050	1.8	21	775	95	79	89
4C x 25	6	0.9	0.3	1.6	1.4	23.8	1650	4 x 0.8	1.4	22.2	1450	2	22.4	1150	122	102	119
4C x 35	6	0.9	0.3	1.6	1.4	26	2100	4 x 0.8	1.4	24.4	1850	2	24.6	1550	146	122	147
4C x 50	6	1	0.3	1.6	1.56	29.5	2750	4 x 0.8	1.56	27.9	2475	2	27.8	2100	173	144	179
4C x 70	12	1.1	0.4	2	1.56	34.1	3850	4 x 0.8	1.56	31.7	3300	2.2	32	2900	212	177	226
4C x 95	15	1.1	0.4	2	1.72	37.9	4850	4 x 0.8	1.56	35.2	4200	2.2	35.5	3800	254	212	279
4C x 120	18	1.2	0.5	2	1.88	41.9	6000	4 x 0.8	1.72	39.1	5250	2.4	39.5	4775	287	240	320
4C x 150	18	1.4	0.5	2.5	2.04	46.3	7650	4 x 0.8	1.88	42.6	6450	2.6	43	5900	321	269	365
4C x 185	30	1.6	0.5	2.5	2.2	51.5	9200	4 x 0.8	2.04	47.8	7850	2.8	48.3	7250	362	304	422
4C x 240	34	1.7	0.6	2.5	2.36	57.5	11400	4 x 0.8	2.2	53.8	10000	3	54.6	9300	418	352	500
4C x 300	34	1.8	0.7	3.15	2.52	64.5	14500	4 x 0.8	2.36	59.5	12350	3.2	60.6	11600	469	396	574
4C x 400	53	1.9	0.7	3.15	2.84	72.1	18500	4 x 0.8	2.68	67.1	16000	3.6	68.3	15250	528	447	662

TABLE - 22 - 1.5 SQMM / 2.5 SQMM COPPER CONDUCTOR, PVC INSULATED, ARMOURED/UN-ARMOURED CONTROL CABLES
FOR WORKING VOLTAGES UP TO AND INCLUDING 1100 V

Reference standard: IS:7098-1

Nominal Size of class-2 conductor as per IS: 8130	No of wires	Nominal Thickness of XLPE Insulation	Minimum thickness of PVC Inner Sheath	WIRE ARMOURED (YWY)				STRIP ARMOURED (YFY)				UN-ARMOURED (YY)			CURRENT RATING	
				Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Min Thickness of PVC Outer sheath	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Nominal Dimension of Armour	Approx Overall diameter of Cable with ± 2 mm tol	Approx weight of cable	Buried Direct in the Ground @ 30°C	In Air @ 40°C
Sq.mm	No's	mm	mm	mm	mm	mm	Kg/Km	mm x mm	mm	mm	Kg/Km	mm	mm	Kg/Km	Amps	Amps
2C x 1.5	7	0.7	0.3	1.4	1.24	13.6	350	—	—	—	—	1.8	11.8	140	33	29
3C x 1.5	7	0.7	0.3	1.4	1.24	14.1	375	—	—	—	—	1.8	12.3	160	25	22
4C x 1.5	7	0.7	0.3	1.4	1.24	14.9	425	—	—	—	—	1.8	13.1	200	25	22
5C x 1.5	7	0.7	0.3	1.4	1.24	15.8	475	—	—	—	—	1.8	14	225	24	21
6C x 1.5	7	0.7	0.3	1.4	1.24	16.7	525	—	—	—	—	1.8	14.9	250	22	19
7C x 1.5	7	0.7	0.3	1.4	1.24	16.7	550	—	—	—	—	1.8	14.9	260	21	18
10C x 1.5	7	0.7	0.3	1.4	1.24	18.9	700	—	—	—	—	1.8	17.1	340	18	16
12C x 1.5	7	0.7	0.3	1.4	1.24	19.8	750	—	—	—	—	1.8	18	400	17	15
14C x 1.5	7	0.7	0.3	1.4	1.4	21.5	825	—	—	—	—	1.8	19.3	430	16	14
16C x 1.5	7	0.7	0.3	1.6	1.4	22.8	950	4 x 0.8	1.4	21.2	750	1.8	20.2	475	16	14
19C x 1.5	7	0.7	0.3	1.6	1.4	23.7	1025	4 x 0.8	1.4	22.1	850	1.8	21.1	540	15	13
24C x 1.5	7	0.7	0.3	1.6	1.4	26.8	1250	4 x 0.8	1.4	25.2	1000	2	24.6	665	13	12
27C x 1.5	7	0.7	0.3	1.6	1.4	27.3	1300	4 x 0.8	1.4	25.7	1050	2	25.1	750	13	11
30C x 1.5	7	0.7	0.3	1.6	1.4	28.1	1400	4 x 0.8	1.4	26.5	1150	2	25.9	820	12	11
37C x 1.5	7	0.7	0.3	1.6	1.4	29.9	1550	4 x 0.8	1.4	28.3	1300	2	27.7	975	11	10
44C x 1.5	7	0.7	0.3	1.6	1.56	33.4	1850	4 x 0.8	1.4	31.4	1500	2	30.8	1100	11	9
52C x 1.5	7	0.7	0.3	1.6	1.56	34.7	2000	4 x 0.8	1.56	33.1	1700	2	32.1	1275	10	9
61C x 1.5	7	0.7	0.4	2	1.56	37.3	2450	4 x 0.8	1.56	34.9	1950	2.2	34.5	1500	9	8
2C x 2.5	7	0.7	0.3	1.4	1.24	14.4	400	—	—	—	—	1.8	12.6	175	39	32
3C x 2.5	7	0.7	0.3	1.4	1.24	15	425	—	—	—	—	1.8	13.2	200	34	30
4C x 2.5	7	0.7	0.3	1.4	1.24	15.9	500	—	—	—	—	1.8	14.1	250	34	30
5C x 2.5	7	0.7	0.3	1.4	1.24	16.9	550	—	—	—	—	1.8	15.1	275	31	28
6C x 2.5	7	0.7	0.3	1.4	1.24	17.9	600	—	—	—	—	1.8	16.1	325	29	26
7C x 2.5	7	0.7	0.3	1.4	1.24	17.9	625	—	—	—	—	1.8	16.1	350	27	25
10C x 2.5	7	0.7	0.3	1.6	1.4	21.2	925	4 x 0.8	1.24	19.6	725	1.8	18.6	475	24	21
12C x 2.5	7	0.7	0.3	1.6	1.4	22.2	1000	4 x 0.8	1.4	20.6	800	1.8	19.6	525	22	20
14C x 2.5	7	0.7	0.3	1.6	1.4	23.6	1050	4 x 0.8	1.4	22	875	1.8	21	600	21	19
16C x 2.5	7	0.7	0.3	1.6	1.4	24.7	1150	4 x 0.8	1.4	23.1	950	2	22.5	675	20	18
19C x 2.5	7	0.7	0.3	1.6	1.4	25.7	1300	4 x 0.8	1.4	24.1	1050	2	23.5	775	19	17
24C x 2.5	7	0.7	0.3	1.6	1.4	29.2	1550	4 x 0.8	1.4	27.6	1300	2	27	950	17	16
27C x 2.5	7	0.7	0.3	1.6	1.4	29.7	1650	4 x 0.8	1.4	28.1	1375	2	27.5	1025	16	16
30C x 2.5	7	0.7	0.3	1.6	1.4	30.6	1750	4 x 0.8	1.4	29	1500	2	28.4	1125	16	14
37C x 2.5	7	0.7	0.3	1.6	1.56	33.1	2050	4 x 0.8	1.4	31.1	1700	2	30.5	1300	15	13
44C x 2.5	7	0.7	0.4	2	1.56	37.8	2600	4 x 0.8	1.56	35.4	2050	2.2	34.8	1600	14	12
52C x 2.5	7	0.7	0.4	2	1.56	39.2	2850	4 x 0.8	1.56	36.8	2300	2.2	36.2	1825	13	12
61C x 2.5	7	0.7	0.4	2	1.56	41.3	3200	4 x 0.8	1.56	38.9	2575	2.2	38.3	2050	12	11

DE-Rating Factors

RATING FACTORS FOR PVC INSULATED CABLES

The current ratings in Table - 1 & 2 are on the following normal conditions of installation as mentioned below:	
1. Maximum conductor temperature 70 °C	2. Max-short-circuit conductor temperature 160 °C
3. Ambient air temperature 40 °C	4. Ground temperature 30 °C
5. Thermal resistivity of soil 150 °C/watt	6. Depth of laying 750 mm (1.1 kV)

Table I: Rating Factors Variation in Ambient Air Temperature for Cables in Free Air

Max. conductor temperature	Ambient Air Temperature						
	25	30	35	40	45	50	55
Rating factor	1.17	1.12	1.06	1.00	0.94	0.87	0.79

Table II: Rating Factors for Variation in Ground Temperature for Cables Direct Ground and Ducts

Max. conductor temperature	Ground Temperature							
	15	20	25	30	35	40	45	50
Rating factor	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.70

Table IV: Rating factors for Depth of Laying (For 6501100V) Cable Laid Direct in the Ground

Sr. no.	Depth of Laying (mm)	Up to 25 mm2	Above 25 mm2 Up to 300 mm2	Above 300 mm2
I	750	1.00	1.00	1.00
ii	900	0.99	0.98	0.97
iii	1050	0.98	0.97	0.96
iv	1200	0.97	0.96	0.95
v	1500	0.96	0.94	0.92
vi	180 or more	0.95	0.93	0.91

Table V: Rating Factors for Depths of Lying (650/1100V) for Cables in Single-Way Ducts

Sr. no.	Depth of Laying (mm)	Rating Factor
I	750	1.00
ii	900	0.99
iii	1050	0.98
iv	1200	0.97
v	1500	0.96
vi	1800	0.95
vii	2700	0.92
viii	3600	0.91
ix	4500	0.90
x	540 or more	0.89

Table VI: Rating Factors for Variation in Soil Thermal Resistivity for Twin & Multi-Core Cables Laid Direct in Ground

Sr. no.	Nominal Area of Conductor mm2	Values of Soil Thermal Resistivity °C cm/W					
		100	120	150	200	250	300
I	1.5	1.10	1.05	1.00	0.92	0.86	0.81
ii	2.5	1.10	1.05	1.00	0.92	0.86	0.81
iii	4	1.10	1.05	1.00	0.92	0.86	0.81
iv	6	1.10	1.05	1.00	0.92	0.86	0.81
v	10	1.10	1.06	1.00	0.92	0.85	0.80
vi	16	1.12	1.06	1.00	0.91	0.84	0.79
vii	25	1.15	1.08	1.00	0.91	0.84	0.78
viii	35	1.15	1.08	1.00	0.91	0.84	0.77
ix	50	1.15	1.08	1.00	0.91	0.84	0.77
x	70	1.15	1.08	1.00	0.90	0.83	0.76
xi	95	1.15	1.08	1.00	0.90	0.83	0.76
xii	120	1.17	1.09	1.00	0.90	0.82	0.76
xiii	150	1.17	1.09	1.00	0.90	0.82	0.76
xiv	185	1.18	1.09	1.00	0.89	0.81	0.75
xv	240	1.18	1.09	1.00	0.89	0.81	0.75
xvi	300	1.18	1.09	1.00	0.89	0.81	0.75
xvii	400	1.19	1.10	1.00	0.89	0.81	0.75

Table VII: Rating Factors for Variation in Soil Thermal Resistivity for Twin & Multi-Core Cables in Single Way Duct

Sr. no.	Nominal Area of Conductor mm2	Values of Soil Thermal Resistivity °C cm/W					
		100	120	150	200	250	300
I	1.5	1.05	1.03	1.00	0.96	0.91	0.88
ii	2.5	1.05	1.03	1.00	0.96	0.91	0.88
iii	4	1.05	1.03	1.00	0.96	0.91	0.88
iv	6	1.05	1.03	1.00	0.96	0.91	0.88
v	10	1.05	1.03	1.00	0.95	0.90	0.89
vi	16	1.06	1.03	1.00	0.95	0.90	0.86
vii	25	1.07	1.04	1.00	0.95	0.90	0.85
viii	35	1.08	1.04	1.00	0.94	0.89	0.84
ix	50	1.08	1.04	1.00	0.94	0.89	0.84
x	70	1.08	1.04	1.00	0.94	0.88	0.83
xi	95	1.08	1.04	1.00	0.94	0.87	0.83
xii	120	1.09	1.05	1.00	0.94	0.87	0.82
xiii	150	1.09	1.05	1.00	0.93	0.86	0.82
xiv	185	1.10	1.05	1.00	0.93	0.86	0.81
xv	240	1.10	1.05	1.00	0.92	0.86	0.81
xvi	300	1.10	1.05	1.00	0.92	0.86	0.81
xvii	400	1.11	1.06	1.00	0.92	0.86	0.81

RATING FACTORS FOR XLPE INSULATED CABLES

The current ratings in Table - 1 & 2 are on the following normal conditions of installation as mentioned below:	
1. Maximum conductor temperature 90 °C	2. Max-short-circuit conductor temperature 250 °C
3. Ambient air temperature 40 °C	4. Ground temperature 30 °C
5. Thermal resistivity of soil 1.5 K.m/watt	6. Depth of laying 750 cm (1.1 kV)

Table I: Rating Factors Variation in Ambient Air Temperature for Cables in Free Air

Max. conductor emperature	Ambient Air Temperature							
	25	30	35	40	45	50	55	60
90 °C	1.14	1.10	1.05	1.00	0.95	0.89	0.84	0.77

Table II: Rating Factors for Variation in Ground Temperature for Cables Direct Ground and Ducts

Max. conductor temperature	Ground Temperature							
	15	20	25	30	35	40	45	50
90 °C	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82

Table III: Rating Factors for Depths of Lying for Direct Buried Cables

Sr. no.	Depth of Laying	Up to 25 mm2	Up to 50 mm2	Sr. no.	Depth of Laying	Up to 25 mm2	Up to 50 mm2
I	750	1.00	1.00	vi	1800	0.93	0.92
ii	900	0.98	0.98	vii	2000	0.92	0.91
iii	1050	0.97	0.97	viii	2500	0.90	0.89
iv	1200	0.96	0.95	ix	3000	0.90	0.88
v	1500	0.94	0.93				

Table IV: Rating Factors for Depths of Lying for Cables in Ducts

Sr. no.	Depth of Laying	Up to 25 mm2	Up to 50 mm2	Sr. no.	Depth of Laying	Up to 25 mm2	Up to 50 mm2
I	750	1.00	1.00	vi	1800	0.93	0.92
ii	900	0.98	0.98	vii	2000	0.92	0.91
iii	1050	0.97	0.97	viii	2500	0.90	0.89
iv	1200	0.96	0.95	ix	3000	0.90	0.88
v	1500	0.94	0.93				

Table V: Rating Factors for Variation in Soil Thermal Resistivity for Multi-Core Cables Laid Direct in Ground

Sr. no.	Nominal Area of Conductor mm2	Values of Soil Thermal Resistivity K.m/W					
		1.0	1.2	1.5	2.0	2.5	3.0
I	1.5	1.14	1.08	1.00	0.90	0.83	0.77
ii	2.5	1.15	1.08	1.00	0.90	0.82	0.78
iii	4	1.15	1.08	1.00	0.89	0.82	0.78
iv	6	1.16	1.09	1.00	0.89	0.81	0.75
v	10	1.16	1.09	1.00	0.89	0.81	0.75
vi	16	1.17	1.09	1.00	0.89	0.80	0.74
vii	25	1.17	1.09	1.00	0.89	0.80	0.74
viii	35	1.18	1.10	1.00	0.88	0.80	0.74
ix	50	1.18	1.10	1.00	0.88	0.80	0.74

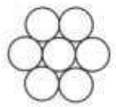
Table VI: Rating Factors for Variation in Soil Thermal Resistivity for Multi-Core Cables Laid Buried Duct

Sr. no.	Nominal Area of Conductor mm2	Values of Soil Thermal Resistivity K.m/W					
		1.0	1.2	1.5	2.0	2.5	3.0
I	1.5	1.05	1.03	1.00	0.96	0.92	0.88
ii	2.5	1.05	1.03	1.00	0.95	0.91	0.88
iii	4	1.06	1.03	1.00	0.95	0.91	0.87
iv	6	1.06	1.03	1.00	0.95	0.91	0.87
v	10	1.06	1.04	1.00	0.95	0.90	0.86
vi	16	1.06	1.04	1.00	0.95	0.90	0.86
vii	25	1.07	1.04	1.00	0.95	0.90	0.86
viii	35	1.07	1.04	1.00	0.94	0.90	0.85
ix	50	1.07	1.04	1.00	0.94	0.89	0.85

ELECTRICAL PARAMETER

TABLE 1A: TECHNICAL DATA FOR CLASS-1&2 CONDUCTOR AS PER IS: 8130 - 1984

Conductor cross sectional Area	Maximum D.C. Resistance @ 20°C			Maximum D.C. Resistance @ 90°C (XLPE)			Maximum D.C. Resistance @ 70°C (PVC)			Maximum D.C. Resistance @ 85°C (HR PVC)		
	Plain Copper	Tinned Copper	Aluminium	Plain Copper	Tinned Copper	Aluminium	Plain Copper	Tinned Copper	Aluminium	Plain Copper	Tinned Copper	Aluminium
Sq.mm	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km
0.5	36	36.7	-	46.08	46.98	-	43.2	44.04	-	45.36	46.242	-
0.75	24.5	24.8	-	31.36	31.74	-	29.4	29.76	-	30.87	31.248	-
1	18.1	18.2	-	23.168	23.30	-	21.72	21.84	-	22.806	22.932	-
1.5	12.1	12.2	18.1	15.5	15.63	23.17	14.50	14.62	21.70	15.20	15.33	22.80
2.5	7.41	7.56	12.1	9.48	9.67	15.5	8.90	9.08	14.50	9.30	9.49	15.30
4	4.61	4.7	7.41	5.9	6.01	9.48	5.52	5.63	8.90	5.79	5.90	9.35
6	3.08	3.11	4.61	3.94	3.98	5.9	3.69	3.73	5.54	3.87	3.91	5.82
10	1.83	1.84	3.08	2.34	2.35	3.94	2.19	2.20	3.70	2.30	2.31	3.89
16	1.15	1.16	1.91	1.47	1.48	2.44	1.38	1.39	2.30	1.44	1.45	2.41
25	0.727	0.734	1.2	0.93	0.94	1.54	0.87	0.88	1.44	0.913	0.92	1.51
35	0.524	0.529	0.868	0.671	0.68	1.11	0.63	0.64	1.04	0.658	0.66	1.10
50	0.387	0.391	0.641	0.495	0.5	0.82	0.464	0.469	0.770	0.486	0.491	0.809
70	0.268	0.27	0.443	0.343	0.323	0.567	0.321	0.323	0.533	0.337	0.340	0.559
95	0.193	0.195	0.32	0.247	0.25	0.41	0.232	0.234	0.385	0.243	0.246	0.404
120	0.153	0.154	0.253	0.196	0.197	0.324	0.184	0.185	0.305	0.193	0.194	0.320
150	0.124	0.126	0.206	0.159	0.162	0.264	0.150	0.152	0.249	0.157	0.160	0.261
185	0.0991	0.1	0.164	0.127	0.128	0.210	0.121	0.122	0.198	0.126	0.127	0.208
240	0.0754	0.0762	0.125	0.0965	0.0975	0.160	0.0930	0.0940	0.1520	0.0972	0.0982	0.1590
300	0.0601	0.0607	0.100	0.0769	0.0777	0.128	0.0750	0.0757	0.1220	0.0787	0.0795	0.1280
400	0.047	0.0475	0.0778	0.0602	0.0608	0.100	0.0604	0.0610	0.0961	0.0630	0.0636	0.1010
500	0.0366	0.0369	0.0605	0.0468	0.0472	0.0774	0.0490	0.0494	0.0761	0.0509	0.0513	0.0796
630	0.0283	0.0286	0.0469	0.0362	0.0366	0.0600	0.0401	0.0405	0.0606	0.0416	0.0420	0.0632
800	0.0221	0.0224	0.0367	0.0283	0.0287	0.0470	0.0339	0.0343	0.0495	0.0351	0.0355	0.0515
1000	0.0176	0.0177	0.0291	0.0225	0.0226	0.0372	0.0297	0.0298	0.0416	0.0306	0.0307	0.0431

Category	Properties
Class 1 	Not as flexible A single round wire
Class 2 	Flexible 7, 19, 37, 61 or 127 copper strands are commonly used, depending on the conductor size required

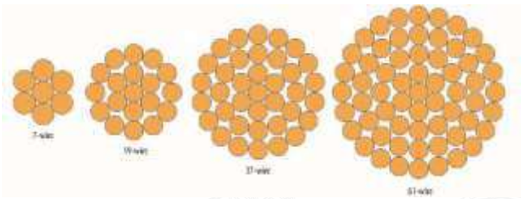


TABLE 1B: TECHNICAL DATA FOR CLASS-5 FLEXIBLE COPPER CONDUCTOR AS PER IS: 8130

Conductor cross sectional Area	Maximum dia of individual strand in conductor	Maximum D.C. Resistance @ 20°C		Maximum D.C. Resistance @ 90°C (XLPE)		Maximum D.C. Resistance @ 70°C (PVC)		Maximum D.C. Resistance @ 85°C (HR PVC)	
		Plain Copper	Tinned Copper	Plain Copper	Tinned Copper	Plain Copper	Tinned Copper	Plain Copper	Tinned Copper
Sq.mm	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km
0.50	0.21	39.00	40.10	49.76	51.16	46.69	48.01	49.16	50.54
0.75	0.21	26.00	26.70	33.18	34.07	31.14	31.98	32.84	33.72
1.00	0.21	19.50	20.00	24.89	25.53	23.36	23.96	24.68	25.30
1.50	0.26	13.30	13.70	17.03	17.54	15.94	16.41	16.71	17.21
2.50	0.26	7.98	8.21	10.21	10.50	9.58	9.86	10.02	10.31
4	0.31	4.95	5.09	6.33	6.51	5.93	6.09	6.22	6.39
6	0.31	3.30	3.39	4.22	4.34	3.95	4.06	4.15	4.26
10	0.41	1.91	1.95	2.44	2.49	2.29	2.33	2.40	2.45
16	0.41	1.21	1.24	1.55	1.58	1.45	1.49	1.52	1.55
25	0.41	0.780	0.795	0.9976	1.0167	0.933	0.951	0.980	0.999
35	0.41	0.554	0.565	0.7093	0.7233	0.666	0.679	0.696	0.710
50	0.41	0.386	0.393	0.4937	0.5027	0.463	0.471	0.485	0.494
70	0.51	0.272	0.277	0.3252	0.3315	0.304	0.310	0.320	0.326
95	0.51	0.206	0.210	0.2636	0.2687	0.248	0.252	0.259	0.264
120	0.51	0.161	0.164	0.2062	0.2100	0.194	0.197	0.203	0.207
150	0.51	0.129	0.132	0.1654	0.1692	0.156	0.160	0.163	0.167
185	0.51	0.106	0.108	0.1358	0.1383	0.129	0.132	0.135	0.137
240	0.51	0.0801	0.0817	0.1025	0.1045	0.0986	0.1005	0.1031	0.1051
300	0.51	0.0641	0.0654	0.0820	0.0837	0.0798	0.0813	0.0837	0.0854
400	0.51	0.0486	0.0495	0.0622	0.0634	0.0623	0.0634	0.0650	0.0662
500	0.61	0.0384	0.0391	0.0491	0.0500	0.0512	0.0520	0.0532	0.0541
30	0.61	0.0287	0.0292	0.0367	0.0373	0.0406	0.0412	0.0421	0.0427

Class 5 	Very flexible Multi-stranded

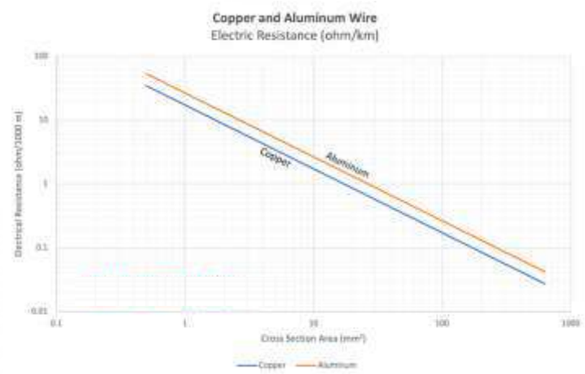
ELECTRICAL PARAMETER

TABLE 2A- COPPER CONDUCTOR 1.1kV CABLES - APPROXIMATE IMPEDANCE (ohms/km)

Conductor cross sectional Area	XPLE			PVC			HR PVC		
	Singe Core @90°C		Multi Core @90°C	Singe Core @70°C		Multi Core @70°C	Singe Core @85°C		Multi Core @85°C
	Unarmoured	Armoured		Unarmoured	Armoured		Unarmoured	Armoured	
Sq.mm	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km
1.50	15.5005	-	15.5004	14.5005	-	14.5004	15.2005	-	15.2004
2.50	9.4807	-	9.4805	8.9008	-	8.9007	9.3008	-	9.3006
4	5.9010	-	5.9008	5.5212	-	5.5210	5.7912	-	5.7909
6	3.9413	-	3.9410	3.6917	-	3.6913	3.8716	-	3.8712
10	2.3421	-	2.3416	2.1925	-	2.1919	2.3024	-	2.3018
16	1.4730	1.4735	1.4723	1.3836	1.3840	1.3827	1.4435	1.4439	1.4426
25	0.9348	0.9353	0.9336	0.8756	0.8762	0.8743	0.9183	0.9189	0.9171
35	0.6773	0.6780	0.6757	0.6373	0.6379	0.6355	0.6650	0.6656	0.6633
50	0.5035	0.5041	0.5013	0.4739	0.4746	0.4715	0.4955	0.4961	0.4932
70	0.3542	0.3549	0.3511	0.3336	0.3344	0.3303	0.3491	0.3498	0.3459
95	0.2617	0.2625	0.2577	0.2490	0.2499	0.2446	0.2593	0.2601	0.2551
120	0.2139	0.2148	0.2090	0.2042	0.2051	0.1989	0.2124	0.2132	0.2072
150	0.1809	0.1820	0.1750	0.1744	0.1755	0.1681	0.1804	0.1815	0.1743
185	0.1533	0.1542	0.1463	0.1497	0.1507	0.1424	0.1537	0.1547	0.1466
240	0.1286	0.1297	0.1204	0.1278	0.1288	0.1192	0.1308	0.1319	0.1225
300	0.1141	0.1151	0.1048	0.1149	0.1159	0.1054	0.1173	0.1184	0.1080
400	0.1031	0.1045	0.0927	0.1055	0.1067	0.0947	0.1070	0.1082	0.0964
500	0.0957	0.0971	0.0845	0.0992	0.1006	0.0881	0.1002	0.1016	0.0892
630	0.0904	0.0917	0.0785	0.0948	0.0963	0.0831	0.0954	0.0970	0.0838
800	0.0873	0.0888	-	0.0913	0.0927	-	0.0918	0.0932	-
1000	0.0853	0.0866	-	0.0889	0.0901	-	0.0892	0.0904	-

TABLE 2B- ALUMINIUM CONDUCTOR 1.1kV CABLES - APPROXIMATE IMPEDANCE (ohms/km)

Conductor cross sectional Area	XPLE			PVC			HR PVC		
	Singe Core @90°C		Multi Core @90°C	Singe Core @70°C		Multi Core @70°C	Singe Core @85°C		Multi Core @85°C
	Unarmoured	Armoured		Unarmoured	Armoured		Unarmoured	Armoured	
Sq.mm	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km
1.50	23.1703	-	23.1702	21.7004	-	21.7003	22.8003	-	22.8003
2.50	15.5004	-	15.5003	14.5005	-	14.5004	15.3005	-	15.3004
4	9.4806	-	9.4805	8.9008	-	8.9006	9.3507	-	9.3506
6	5.9009	-	5.9007	5.5411	-	5.5409	5.8211	-	5.8208
10	3.9412	-	3.9409	3.7015	-	3.7011	3.8914	-	3.8911
16	2.4418	2.4421	2.4414	2.3022	2.3024	2.3016	2.4121	2.4123	2.4116
25	1.5429	1.5432	1.5422	1.4434	1.4437	1.4426	1.5132	1.5136	1.5125
35	1.1138	1.1142	1.1128	1.0444	1.0448	1.0433	1.0146	1.0150	1.0134
50	0.8252	0.8255	0.8238	0.7760	0.7764	0.7745	0.8147	0.8151	0.8133
70	0.5738	0.5743	0.5720	0.5407	0.5412	0.5387	0.5664	0.5668	0.5644
95	0.4190	0.4195	0.4165	0.3955	0.3960	0.3927	0.4140	0.4145	0.4114
120	0.3351	0.3357	0.3320	0.3176	0.3182	0.3142	0.3320	0.3326	0.3288
150	0.2777	0.2785	0.2740	0.2644	0.2651	0.2603	0.2757	0.2764	0.2718
185	0.2269	0.2275	0.2222	0.2167	0.2174	0.2117	0.2259	0.2266	0.2211
240	0.1812	0.1819	0.1754	0.1754	0.1762	0.1693	0.1815	0.1823	0.1756
300	0.1532	0.1540	0.1464	0.1498	0.1507	0.1427	0.1548	0.1556	0.1479
400	0.1304	0.1315	0.1224	0.1293	0.1303	0.1207	0.1330	0.1340	0.1246
500	0.1138	0.1150	0.1046	0.1151	0.1163	0.1056	0.1174	0.1186	0.1081
630	0.1023	0.1034	0.0920	0.1051	0.1065	0.0947	0.1066	0.1080	0.0964
800	0.0950	0.0964	-	0.0982	0.0995	-	0.0992	0.1005	-
1000	0.0903	0.0915	-	0.0936	0.0947	-	0.0942	0.0954	-



ELECTRICAL PARAMETER

TABLE 3A - COPPER CONDUCTOR 1.1kV CABLES - APPROXIMATE VOLTAGE DROP (mV/A/m)

Conductor cross sectional Area	XPLE			PVC			HR PVC		
	Singe Phase @90°C		3 Phase @90°C	Singe Phase @70°C		3 Phase @70°C	Singe Phase @85°C		3 Phase @85°C
	Unarmoured	Armoured		Unarmoured	Armoured		Unarmoured	Armoured	
Sq.mm	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.50	31.0009	-	26.8156	29.0011	-	25.0857	30.4010	-	26.2967
2.50	18.9614	-	16.4013	17.8016	-	15.3981	18.6016	-	16.0901
4	11.8020	-	10.2083	11.0424	-	9.5513	11.5823	-	10.0183
6	7.8827	-	6.8180	7.3833	-	6.3860	7.7432	-	6.6972
10	4.6841	-	4.0509	4.3850	-	3.7920	4.6047	-	3.9822
16	2.9461	2.9469	2.5470	2.7672	2.7681	2.3922	2.8869	2.8878	2.4958
25	1.8696	1.8706	1.6151	1.7512	1.7523	1.5125	1.8367	1.8377	1.5865
35	1.3546	1.3559	1.1689	1.2746	1.2759	1.0994	1.3300	1.3312	1.1474
50	1.0070	1.0083	0.8673	0.9479	0.9492	0.8157	0.9910	0.9922	0.8532
70	0.7083	0.7097	0.6075	0.6673	0.6688	0.5715	0.6981	0.6996	0.5984
95	0.5234	0.5250	0.4458	0.4981	0.4997	0.4232	0.5186	0.5202	0.4413
120	0.4279	0.4296	0.3616	0.4084	0.4102	0.3441	0.4247	0.4264	0.3585
150	0.3618	0.3640	0.3028	0.3487	0.3510	0.2908	0.3608	0.3630	0.3016
185	0.3065	0.3085	0.2532	0.2994	0.3014	0.2463	0.3075	0.3095	0.2537
240	0.2573	0.2593	0.2082	0.2555	0.2576	0.2061	0.2617	0.2637	0.2119
300	0.2282	0.2302	0.1812	0.2297	0.2319	0.1823	0.2346	0.2367	0.1869
400	0.2061	0.2091	0.1604	0.2110	0.2135	0.1639	0.2140	0.2165	0.1668
500	0.1914	0.1942	0.1461	0.1985	0.2013	0.1524	0.2004	0.2031	0.1542
630	0.1808	0.1834	0.1359	0.1896	0.1927	0.1438	0.1909	0.1940	0.1451
800	0.1746	0.1775	-	0.1826	0.1854	-	0.1836	0.1863	-
1000	0.1706	0.1732	-	0.1778	0.1803	-	0.1784	0.1809	-

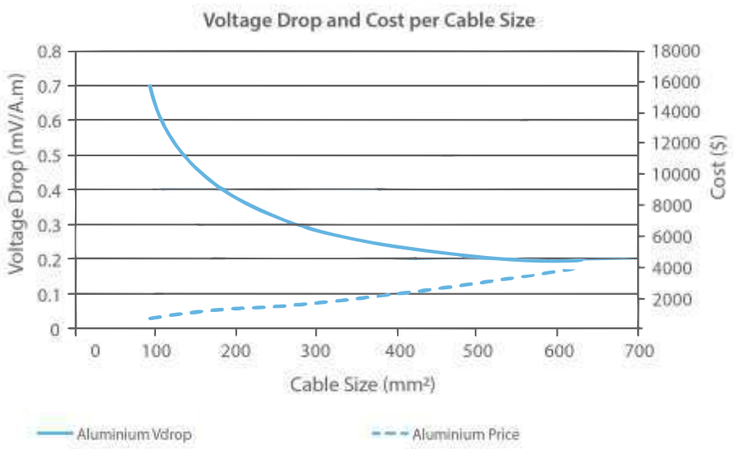


TABLE 3B - ALUMINIUM CONDUCTOR 1.1kV CABLES - APPROXIMATE VOLTAGE DROP (mV/A/m)

Conductor cross sectional Area	XPLE			PVC			HR PVC		
	Singe Phase @90°C		3 Phase @90°C	Singe Phase @70°C		3 Phase @70°C	Singe Phase @85°C		3 Phase @85°C
	Unarmoured	Armoured		Unarmoured	Armoured		Unarmoured	Armoured	
Sq.mm	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m	mV/A/m
1.50	46.3406	-	40.0845	43.4007	-	37.5415	45.6007	-	39.4445
2.50	31.0008	-	26.8156	29.0010	-	25.0857	30.6009	-	26.4697
4	18.9612	-	16.4012	17.8015	-	15.3980	18.7014	-	16.1765
6	11.8018	-	10.2082	11.0822	-	9.5857	11.6421	-	10.0700
10	7.8824	-	6.8178	7.4030	-	6.4030	7.7828	-	6.7316
16	4.8837	4.8842	4.2236	4.6043	4.6049	3.9819	4.8241	4.8246	4.1720
25	3.0858	3.0864	2.6679	2.8868	2.8875	2.4956	3.0265	3.0271	2.6165
35	2.2277	2.2284	1.9252	2.0889	2.0897	1.8050	2.0291	2.0300	1.7532
50	1.6503	1.6511	1.4252	1.5521	1.5529	1.3399	1.6295	1.6302	1.4070
70	1.1476	1.1485	0.9895	1.0814	1.0823	0.9319	1.1327	1.1336	0.9764
95	0.8380	0.8391	0.7206	0.7910	0.7921	0.6794	0.8280	0.8290	0.7117
120	0.6703	0.6714	0.5744	0.6352	0.6363	0.5436	0.6641	0.6652	0.5688
150	0.5555	0.5569	0.4740	0.5288	0.5303	0.4503	0.5514	0.5529	0.4702
185	0.4537	0.4550	0.3845	0.4334	0.4348	0.3663	0.4518	0.4531	0.3825
240	0.3624	0.3639	0.3035	0.3509	0.3524	0.2928	0.3631	0.3645	0.3038
300	0.3065	0.3080	0.2533	0.2997	0.3013	0.2469	0.3095	0.3111	0.2558
400	0.2608	0.2631	0.2117	0.2586	0.2606	0.2088	0.2660	0.2679	0.2156
500	0.2277	0.2300	0.1809	0.2301	0.2325	0.1827	0.2348	0.2372	0.1871
630	0.2046	0.2069	0.1591	0.2102	0.2130	0.1639	0.2133	0.2160	0.1668
800	0.1901	0.1928	-	0.1964	0.1990	-	0.1984	0.2010	-
1000	0.1805	0.1831	-	0.1871	0.1894	-	0.1885	0.1908	-

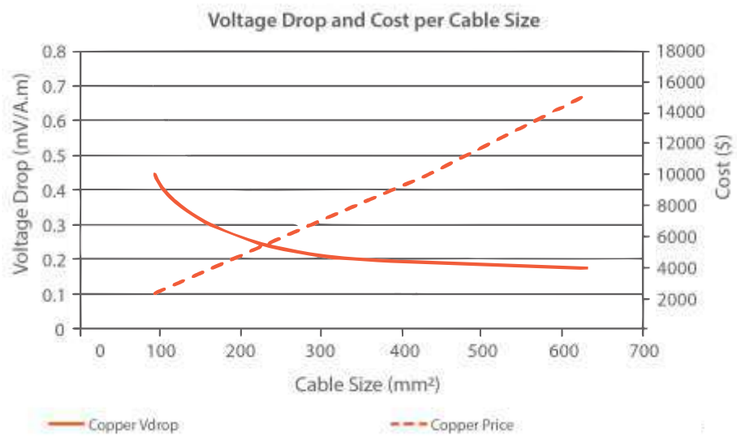


TABLE: 4 - 1.1kV XLPE/PVC/HR PVC INSULATED CABLES - APPROXIMATE CAPACITANCE AND REACTANCE

Nominal Conductor cross sectional Area	CAPACITANCE								REACTANCE					
	XPLE				PVC/HR PVC				XPLE			PVC/HR PVC		
	Singe Core		Two Core	Multi Core	Singe Core		Two Core	Multi Core	Singe Core		Multi Core	Singe Core		Multi Core
	Unarmoured	Armoured			Unarmoured	Armoured			Unarmoured	Armoured		Unarmoured	Armoured	
Sq.mm	uf/km	uf/km	uf/km	uf/km	uf/km	uf/km	uf/km	uf/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km	Ω/km
1.50	0.189	-	0.064	0.161	0.433	-	0.153	0.369	0.120	-	0.108	0.1239	-	0.1116
2.50	0.229	-	0.071	0.191	0.481	-	0.166	0.408	0.113	-	0.1007	0.1201	-	0.1077
4	0.300	-	0.081	0.244	0.576	-	0.186	0.482	0.107	-	0.0947	0.1160	-	0.1035
6	0.354	-	0.087	0.283	0.673	-	0.201	0.554	0.103	-	0.0902	0.1106	-	0.0980
10	0.441	-	0.096	0.347	0.831	-	0.221	0.671	0.098	-	0.0852	0.1045	-	0.0918
16	0.515	0.371	0.100	0.401	0.965	0.776	0.236	0.770	0.094	0.101	0.0815	0.0999	0.1058	0.0871
25	0.512	0.391	0.105	0.406	1.005	0.833	0.245	0.809	0.095	0.100	0.0816	0.0989	0.1037	0.0861
35	0.592	0.450	0.111	0.464	1.156	0.955	0.259	0.922	0.092	0.097	0.0794	0.0962	0.1004	0.0833
50	0.598	0.483	0.115	0.479	1.160	0.982	0.268	0.933	0.092	0.096	0.0792	0.0966	0.0997	0.0837
70	0.624	0.512	0.117	0.490	1.306	1.102	0.275	1.024	0.088	0.091	0.0752	0.0910	0.0937	0.0780
95	0.723	0.592	0.122	0.564	1.341	1.153	0.282	1.060	0.086	0.089	0.0734	0.0905	0.0928	0.0775
120	0.774	0.641	0.127	0.605	1.539	1.320	0.297	1.207	0.0857	0.0879	0.0726	0.0886	0.0906	0.0755
150	0.734	0.607	0.126	0.569	1.494	1.302	0.296	1.165	0.0863	0.0886	0.0732	0.0889	0.0911	0.0758
185	0.712	0.617	0.127	0.563	1.515	1.338	0.300	1.189	0.0858	0.0875	0.0727	0.0881	0.0898	0.0750
240	0.763	0.665	0.130	0.594	1.564	1.395	0.304	1.218	0.0851	0.0866	0.0719	0.0876	0.0891	0.0745
300	0.790	0.693	0.130	0.616	1.570	1.412	0.306	1.229	0.0843	0.0857	0.0711	0.0870	0.0884	0.0740
400	0.839	0.705	0.132	0.649	1.693	1.488	0.308	1.314	0.0837	0.0855	0.0705	0.0865	0.0880	0.0730
500	0.857	0.707	0.133	0.666	1.646	1.471	0.310	1.292	0.0835	0.0851	0.0703	0.0863	0.0879	0.0732
630	0.917	0.766	0.137	0.714	1.690	1.493	0.316	1.334	0.0829	0.0843	0.0697	0.0859	0.0876	0.0728
800	0.946	0.778	-	-	1.867	1.647	-	-	0.0826	0.0841	-	0.0848	0.0863	-
1000	0.965	0.803	-	-	2.031	1.791	-	-	0.0823	0.0836	-	0.0838	0.0851	-

TABLE 5 - SHORT CIRCUIT CURRENT RATINGS FOR XLPE/PVC CABLES

Conductor cross sectional Area	XLPE Insulated (for 90°C)		Type "A" PVC Insulated (for 70°C)		Type "C" HR PVC Insulated (for 85°C)	
	Copper	Aluminium	Copper	Aluminium	Copper	Aluminium
Sq.mm	k.amp	k.amp	k.amp	k.amp	k.amp	k.amp
1.50	0.21	0.14	0.173	0.114	0.16	0.10
2.50	0.36	0.24	0.283	0.190	0.26	0.17
4	0.57	0.38	0.46	0.303	0.42	0.27
6	0.86	0.57	0.69	0.455	0.62	0.41
10	1.43	0.94	1.15	0.758	1.04	0.69
16	2.29	1.51	1.84	1.21	1.66	1.01
25	3.58	2.36	2.88	1.90	2.59	1.72
35	5.01	3.31	4.03	2.65	3.63	2.40
50	7.15	4.72	5.75	3.79	5.19	3.43
70	10.02	6.61	8.05	5.31	7.26	4.80
95	13.59	8.98	10.90	7.20	9.86	6.52
120	17.17	11.34	13.80	9.10	12.45	8.23
150	21.46	14.17	17.30	11.40	15.57	10.29
185	26.47	17.48	21.30	14.02	19.2	12.69
240	34.34	22.68	27.60	18.20	24.91	16.46
300	42.92	28.34	34.50	22.80	31.13	20.58
400	57.23	37.79	46.00	30.40	41.51	27.44
500	71.54	47.24	57.50	38.00	51.89	34.30
630	90.14	59.52	72.50	47.25	65.38	43.21
800	114.46	75.58	92.00	60.00	83.02	54.88
1000	143.08	94.48	115.00	75.00	103.78	68.59

1) Maximum Initial Conductor tempearture before short circuit:
for cross linked Polyethelene (XLPE) - 90°C
for general purpose PVC (Type A) - 70°C
for Heat Resistant PVC (Type C) - 85°C

2) Maximum final Conductor temperature during short circuit (XLPE): 250°C
Maximum final Conductor temperature during short circuit (PVC): 160°C

3) Short Circuit Rating for other duration can be calculated from :

$$Isc = K \sqrt{\frac{A}{T}}$$

Where, A = Area of cross section
Isc = Short circuit rating for "T" second
t = duration in seconds.
k = a constant depends on Conductor & Insulation material
k = 0.094 for Al conductor & XLPE Insulation
k = 0.143 for Cu conductor & XLPE Insulation
k = 0.076 for Al conductor & PVC-A Insulation
k = 0.115 for Cu conductor & PVC-A Insulation
k = 0.069 for Al conductor & PVC-C Insulation
k = 0.104 for Cu conductor & PVC-C Insulation

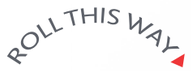
HANDLING & INSTALLING GUIDANCE

Damage to cables can occur due to the incorrect handling to which the drums & cables may be subjected,causing breakdown of the drum flanges & in exceptional cases,movement of the drum barrel takes place. Once the cable is immediately exposed to damage.

The cable drums should not be dropped or thrown from railway wagons or trucks during unloading operations as the shock may cause serious damage to cable layers. A crane should be used for unloading cable drums. When lifting drums with the crane, it is recommended that the lagging should be kept in place to prevent the flanges from curshing on to the cable. If the crane is not available, a ramp should be prepared with approximate inclination. The cable drum should be rolled over the ramp by means of ropes and winches. Additionally a sand bed at the foot of the ramp may be prepared to brake the rolling the cable drum.
Cable should not be dragged along the earth surface.

Cable ends should always be sealed by means of suitable end sealing materials to prevant moisturisation of cores and armour.

Drums should be rolled in direction of arrow marked on the drum.



STORAGE :

Cables should be stored in a dry covered place to prevent exposure to climatic conditions and wear and tear of wooden drums and it should preferably on a concrete surface/firm surface which will not cause the drums to sink and thus lead to flange rot and extreme difficulty in moving the drums.

All drums should be stored in such a manner as to leave sufficient space between them for air circulation. It is desirable for drums to stand on battens placed directly under the flanges.

In no case should the drums be stored, "On the Flat", i.e., with flange (see fig.)

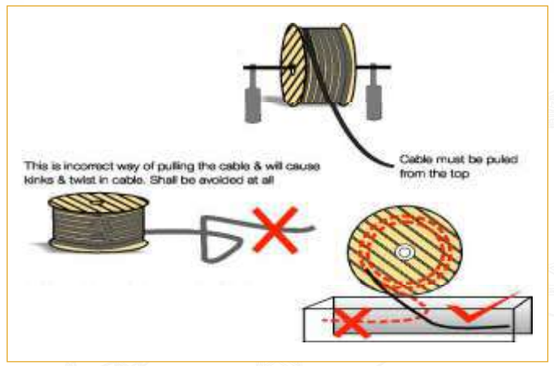
Cables should be protected from direct rays of the sun by leaving the battens on or covering the cables with thick black polythene sheet.

Note:- Cable ends must be sealed with enend caps during storage & transportation.

LAYING :

For laying of cables special cares to be taken to prevent sharp bending, kinking, twisting. Cable should be unwound from drum by proper mounting the cable drum on a cable wheel making sure the spindle is strong enough to carry the weight without bending and that it is lying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating. It is important that the rolling of the drum to this position should be in accordance with the arrow on the flange-to prevent loose turns from developing during unwinding.

Provision should be made to break the drum to avoid further rolling & buckling of cable during sudden stop. A simple wooden plank can server this purpose.



HOWEVER, FOLLOWING SALIENT POINTS ARE TO BE CONSIDERED DURING LAYING PROCEDURE OF CABLES LAID IN RACKS AND IN BUILT-IN TRENCHES.

- For laying of cables power cables to be placed at the bottom most layer and control cables at top most layer.
- Single core power cable for use on A.C. system shall be laid in delta formation supported by non-magnetic material.
- Trefoil clamps of suitable size are to be placed at regular intervals but preferably not more than 800 mm.
- Axial spacing of two circuits in delta formation shall not be less than 4 times the cable dia.
- In case of multicore power cables, cables shall be laid side by side, with spacings not less than one cable diameter.
- However derating factors for cables laid on trenches are to be referred.
- Multicore power cables and single core D.C. circuits may be clamped by means of galvanised mild steel saddles but 1.1 kV single core cables should be clamped by means of non-magnetic saddles. The saddles shall not be placed at intervals more than 1500 mm. for horizontal and 1200 mm. for vertical runs.
- Multicore control cables can be laid touching each other on cable racks and wherever required may be taken in two layers.
- They should be clamped by means of PVC straps both for horizontal and vertical runs (alternatively, fabricated aluminum clamps may be used) at regular intervals.

a. If the cables are buried directly in ground I.S. 1255 is to be followed for code of practice. However, generally cables are laid 1000 mm. below finished ground level at any point of cable run and 75 mm. of sand cushioning to be provided.

b. In loose soil concrete pillar should be provided for as support and hence pipes are recommended to the used for cable Path.

- If there is a possibility of mechanical damage, cables should be protected by means of mild steel covers placed on racks.
- While laying cables, special care to be taken at bends. Followings are the recommended bending radius for power and
- control cables.

MINIMUM BENDING RADIUS FOR L.V. CABLES:

Type of cables	:	Minimum internal radius of bend
• Single core Cables	:	15 D
• Multicore Cables	:	12 D

Where 'D' is the tabulated overal diameter of cable

MAXIMUM PERMISSIBLE TENSILE STRENGTH FOR CABLES

A) Maximum safe pulling force for cables (when pulled by pulling eye) :
For Copper Conductor Cables

For Aluminium Conductor Cables

B) Side wall Pressure :- =(Maximum Pulling force(Kgf) x 100)
/Minimum Bending Radius(mm) (Subject to a maximum of 500kgf or 5,000 N/m)

C) For cables pulled with stocking :-

Armoured cables P = 9 D2 = 5.0 Kgf x number of cores x conductor cross-section
Un-armoured cables P = 9 D2 = 50 N x number of cores x conductor cross-section
= 3.0 Kgf x number of cores x conductor cross-section
= 30 N x number of cores x conductor cross-section
(Subjected to maximum of 2000kgf or 20,000 N)

Where,
P = Pulling force in Newtons
D = Outer diameter of cables in mm

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