

THE POWER IS WITHIN



Company Profile And Technical Brochures

THE POWER IS WITHIN...

"GLOSTER CABLES LIMITED" was incorporated in the year 1995, with Fort Gloster Industries Limited (FGI) as one of the Equity Participants. FGI are also our Technical & Marketing Collaborators. Manufacturers of Quality Power and Control Cables, we have inherited the 'GLOSTER' brand name, and along with it, the high standards of manufacturing and quality, that FGI is renowned for. The Plant has been accredited for conforming to the quality standards of **ISO 9001:2008 by DNV.**

Located at around 35 kms from Secunderabad on National Highway NH 7, the plant encompasses an area of 41,000 sq.mts., with a total built-up area of 23,000 sq.mts. Production facilities have been designed to match customer expectations and are compatible with the requirements of the National and International Standards. A vigilant internal quality control cell ensures that every Gloster Cable is tested to conform to the highest standards in the state-of-the-art in-house laboratory.

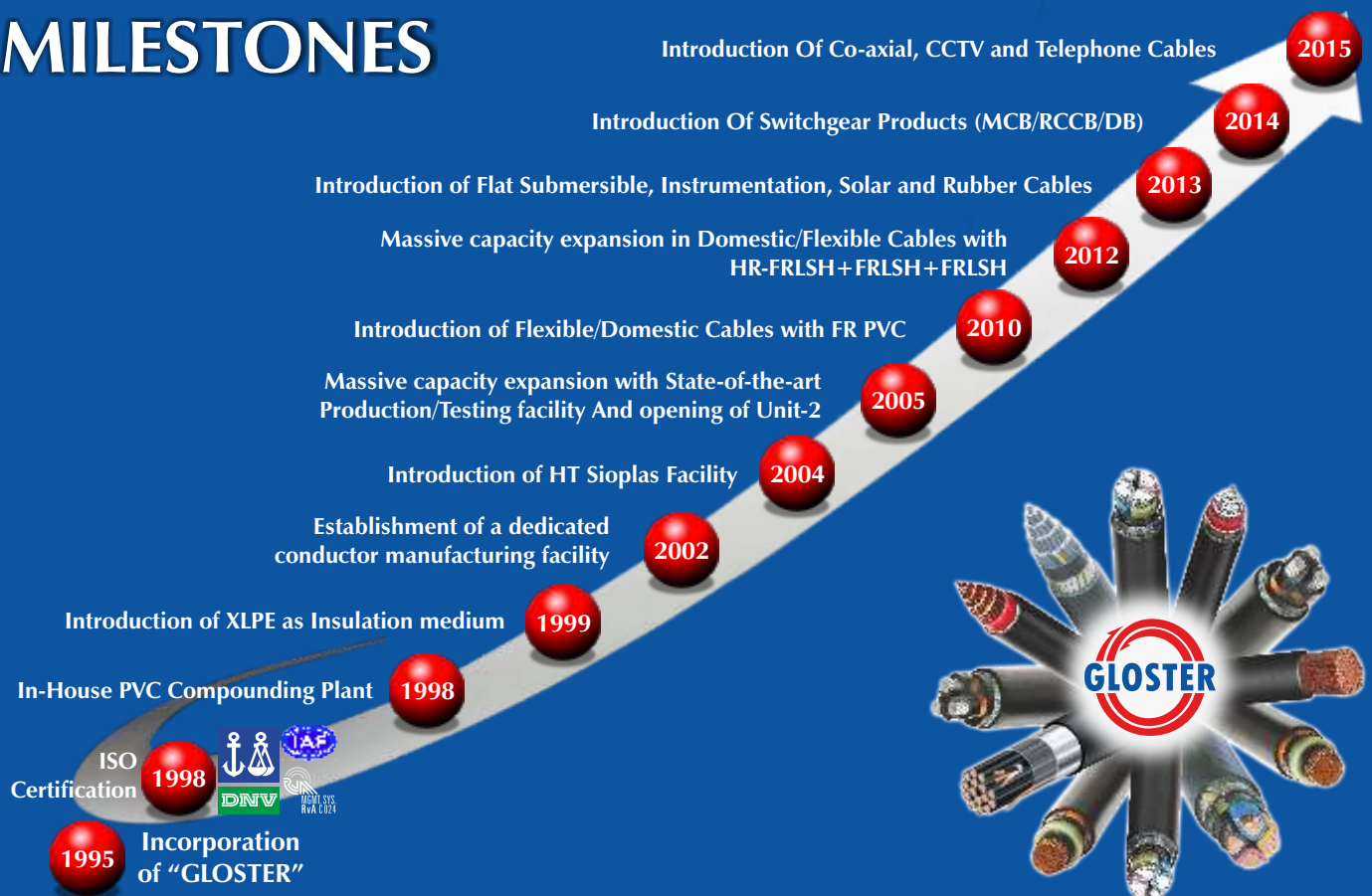
Obsessed with a vision of delivering not only a product of the highest quality but also ensuring utmost customer satisfaction through prompt and personalized service, a highly networked marketing and distribution arrangement spread across the length and breadth of the country has been set up to forge intimate relationship with its numerous clients.

Quality and service are the cornerstones of Gloster Cables. An extremely stringent vendor selection mechanism ensures all raw materials are sourced only from the top manufacturers in their respective fields, irrespective of their premium pricing. It has a state-of-the-art in-house PVC/XLPE compounding plant and is well-equipped with all manufacturing and testing facilities.

STRENGTHS

- One of the most reputed brands in India.
- Brand having goodwill of over 50 years.
- ISO 9001:2008 Certified company.
- One of the finest quality product manufactures in India.
- Products manufactured as per relevant IS standards.
- Products approved by CPRI and ERDA.
- Equipped with Sophisticated Machineries.
- Triple Line Extrusion for HT Cables.
- Triple Line Extrusion For Domestic/Flexible Cables
- In-house production of all grades of PVC compounds.
- For operating HT Line continuously, the plant is equipped with 1010 KVA DG Set (Caterpillar make) and connected with 320 KVA UPS for Un-interrupted power supply.
- In-house facilities to carry out Routine Tests, Acceptance Tests and Type Tests (As per National and International Standards).
- Sourcing the best qualities of raw materials from renowned manufactures in India.
- Inspection and testing of all input raw materials.
- Inspection and testing at every stage of manufacturing.
- Conductor manufactured with Uni-Directional Lay to have better compactness resulting in reducing gaps amongst the wire.
- Having all India presence through branches and dealers.

MILESTONES





DNV-GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: DNTS-2008-MQ-002-RUB Initial certification date: 27, September, 2008 Valid: 27, September, 2010 - 16, September, 2012

This is to certify that the management system of

Gloster Cables Limited
Unit I: Survey No. 310/E, NH - 44, Kallakal Village, Tootpran Mandal, Medak District, Telangana, India
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2008

This certificate is valid for the following scope:
Manufacture, testing and supply of LT & HT XLPE and LT PVC aluminium/copper, armoured/unarmoured power and control cables, LT/HT FRLS cables, LT aerial bunched cables, signalling cables & flexible cables

Place and date:
Chennai, 06, October, 2009



For the issuing office:
DNV GL - Business Assurance
BOMA, No. 10, GST Road, Bangalore,
Chennai - 560 016, India



Shankar Reddy
Management Representative

Link of Statement of Conformity as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., P.O. Box 1, 2200 AA, ROTTERDAM, THE NETHERLANDS. Tel: +31 (0)78 656 6000. dnv-cert@dnv.com

DNV-GL

Certificate No.: DNTS-2008-MQ-002-RUB
Place and date: Chennai, 06, October, 2009

Appendix to Certificate

Gloster Cables Limited
Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
Gloster Cables Limited	Unit I: Survey No. 310/E, NH - 44, Kallakal Village, Tootpran Mandal, Medak District, Telangana, India	Manufacture, testing and supply of LT & HT XLPE and LT PVC aluminium/copper, armoured/unarmoured power and control cables, LT/HT FRLS cables, LT aerial bunched cables, signalling cables & flexible cables
Gloster Cables Limited	Unit II: Survey No. 293, NH - 44, Kallakal Village, Tootpran Mandal, Medak District, Telangana, India	Manufacture, testing and supply of LT & HT XLPE and LT PVC aluminium/copper, armoured/unarmoured power and control cables, LT/HT FRLS cables, LT aerial bunched cables, signalling cables & flexible cables

Link of Statement of Conformity as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., P.O. Box 1, 2200 AA, ROTTERDAM, THE NETHERLANDS. Tel: +31 (0)78 656 6000. dnv-cert@dnv.com

Branch Offices & Sales Network

BANGALORE	Chandra Kiran Building, 4th. Floor, Kasturba Road, Bangalore - 560 001 Tel: +91 80 22233041, 22129305 Fax: +91 80 22226098 Email: gclbangalore@glostercable.com
BHUBANESHWAR	Flat No. 103, Block-A, Srusti Plaza, Kantilo, Dist-Khurda, Bhubaneswar - 751 007 Tel : +91 7873156876, E-mail : ckpanda@glostercable.co.in
CALICUT	Tel : +91 8129011811, Email : nadhan71@gmail.com
CHENNAI	Flat No. 3, VIIth. Floor, "A" Wing, Parsn Manere, 602 Anna Salai, Chennai - 600 006 Tel: +91 44 28222627, 28213952 Fax: +91 44 28255826 Email: gclchennai@glostercable.com
COIMBATORE	5/219, M.R. Complex, Thadagam Road, Kanuvai, Coimbatore - 641 108 Tel: +91 0422 2401210 Email: ksmgcl@gmail.com
COCHIN	3/3, No.4/58A, Marankulangara Temple, Eroor Post - 682 306 Tel: +91 484 6461378 Email: gclcochin@glostercable.com
HYDERABAD	302-303, Mittal Chambers, 3rd. Floor, 2-2-51, M. G. Road, Secunderabad-500 003 Tel : +91 40 2770 3011 E-mail : hyd11gcl@gmail.com
INDORE	33-Barwani Plaza, 12, Old Palasia, Indore, Madhya Pradesh- 452018 Tel : +91 0731 4264000, 3046811 Fax : +91 0731-4090570 E-mail: p.trivedi@glostercable.co.in
KANPUR	59, Birhana Road, Kanpur, Uttar Pradesh - 208001, Tel : + 91-512-2312142/43 Fax : + 91-512-2356938, Email : manoj.nigam@glostercable.co.in
KOLKATA	31, Chowringhee Road, Kolkata 700 016 Tel: +91 33 3058 5123/24/25 Fax: +91 33 3058 5130 Email: gclkolkata@glostercable.com
KOTTAYAM	Tel : +91 9539932353, Email : k.shahul07@gmail.com
MUMBAI	Shreenivas House, 3rd. Floor, H. Somani Marg, Mumbai - 400 001 Tel : +91 22 22018246/8436 Fax : +91 22 22018213 Email: gclmumbai@glostercable.com
NAGPUR	Plot No. 2019, Dhobi Nagar, Post-Waddhamna, Tehsil-Hingna, Dist-Nagpur, Maharashtra-440 023 Tel : +91 9874829898, 9330155553
NEW DELHI	M-71, Connaught Circus, New Delhi - 110 001 Tel : +91 11 23412425/6141/6599 Fax : +91 11 23415663/7818 Email: gcldelhi@glostercable.com
PUNE	B-203, Ganga Erika, Near Bishops School, Undri, Pune - 411 060, Maharashtra Tel : +91 97654 90551 Email: saurabhmishra@glostercable.com
RAIPUR	Flat No. 202 Nano Tower 2nd floor, Hirapur Road, Raipur 492001, Chattisgarh Tel: +91 9111199772 Email : saleem.khan@glostercable.co.in, gclraipur@glostercable.co.in
SILIGURI	Tel: +91 83350 39302 E-mail: biswajit.saha@glostercable.co.in
THRISSUR	Tel: +91 9995802824 Email: menons.gloster@gmail.com
TRIVANDRUM	Tel: +91 94474 07678 E-mail: saji.baby@glostercable.co.in
VADODARA	612, Saffron Complex, Fathegunj Fountain, Vadodara - 390 002 Tel: +91 265 2795347 Fax: +91 265 2794761 Email: gclbaroda@glostercable.com
VIZAG	50-59-1, Flat No.404, Geeta Mansion - IV, Rajendranagar, Visakhapatnam - 530 016 Tel: +91 891 2519767 Fax: +91 891 2743408 Email: vepurikishore@rediffmail.com



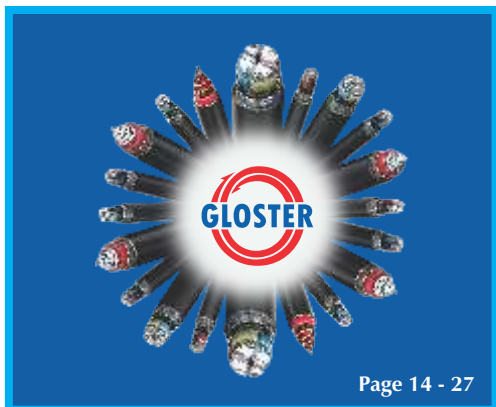
Gloster Cables Limited

Corp. Office : 183/184, (5-3-370 to 372-A), 2nd Floor, Above Mody Motors, R P Road, Secunderabad 500 003, Tel: +91 40 2753 4985 / 27534986
Works : Survey No.310/E & 293, NH-44, Kallakal (Vill), Toopran (M), Medak (Dist), Telangana State - 502 336. Tel: +91 8454 250511/250202

www.glostercable.com

OUR PRODUCT RANGE

LOW VOLTAGE XLPE CABLES



Voltage Grade: 1.1 KV

Aluminium Power Cables:

Single Core upto 1000mm²

Multi Core upto 630 mm²

Copper Control Cables:

1.5 mm², 2.5 mm²: upto 61 Core

Copper Power Cables:

Single Core upto 1000mm²

Multi Core upto 630 mm²

(Above cables can also be manufactured with PVC insulation on requirement).

Special application cables with special PVC:

FR/FRLS / HR / HRFRLS / ZHLS / ZFFR etc.

MEDIUM AND HIGH VOLTAGE HT CABLES



Medium Voltage Cables:

Voltage Grade: 3.3 KV To 11 KV (Earthed/Uneearthed)

Single Core upto 1000 mm²

Three Core upto 400 mm²

High Voltage Cables:

Voltage Grade: 22 KV to 33 KV (Earthed/Uneearthred)

Single Core upto 1000 mm²

Three Core upto 400 mm²

Airport lighting cables

Copper conductor cables

Cables with special technical specification

AERIAL BUNCHED CABLES (LT & HT)



With the growing need for long term economy, safety and reliability overhead conductors are now being replaced by Aerial Bunched Cables both in LT & HT distribution network with limited space for clearance.

LT AERIAL BUNCHED CABLES

Manufactured as per IS-14255-1995 as amended upto date

HT AERIAL BUNCHED CABLES

Manufactured as per customer requirement.

DOMESTIC CABLES : TRIPLE LAYER FRLSH



Standard manufacturing with Triple Layer FRLSH PVC

HR-FRLSH+FRLSH+FRLSH

(With Heat Resistant+Flame Retardant+Low Smoke +Low Halogen)

Product Range : Single Core 0.50 sqmm To 6.0 sqmm.

Standard Packing : 90/180/270 meters.

Any required colour can be manufactured and supplied.

Manufacturing facility also available with special PVC

HR / HR-FR / HR-FRLS / ZHFR etc.

OUR PRODUCT RANGE

DOMESTIC CABLES : TRIPLE LAYER ZHFR



Page 50

Manufacturing with Triple Layered **ZHFR** PVC.

HR-ZHFR + ZHFR + ZHFR

(Heat Resistant-Zero Halogen Flame Retardant + Zero Halogen Flame Retardant + Zero Halogen Flame Retardant)

Product Range : Single Core 0.50 sqmm To 6.0 sqmm.

Standard Packing : 90/180/270 meters.

Any required colour can be manufactured and supplied.

FLEXIBLE CABLES WITH FR PVC



Page 51- 52

Single Core and Multi Core with FR PVC

Product Range : Single Core 10 sqmm To 630 sqmm.

(Option : With any colour)

Multi Core 2 Core To 4 Core

Upto 120 sqmm.

Multi Core 5 Core To 24 Core

Upto 6 sqmm.

Also available with HR / HR-FR / HR-FRLS / ZHFR etc.

FLAT SUBMERSIBLE CABLES



Page 53

Connecting cable to Submersible Motors, Pumps and industrial machines

Product Range : 1.5/2.5/4/6/10/25/35 sqmm.

(Other sizes also available on requirement)

INSTRUMENTATION CABLES



Page 54 - 56

Product Range : 0.50 sqmm to 2.5 sqmm.

Overall Shielded Pair : Armoured / Unarmoured

Overall Shielded Triad : Armoured / Unarmoured

Individual Shielded Pair & Overall Shielded Pair

Armoured and Unarmoured Cables

Individual Shielded Triad & Overall Shielded Triad

Armoured and Unarmoured Cables

Multi Core Armoured and Unarmoured Cables

SOLAR CABLES



Page 57 - 58

Single core copper DC Solar cables upto 240 sqmm with UV & Ozone protection, insulated & sheathed with cross linked LSZH compounds.

Single core copper DC solar cables upto 240 sqmm with HR 105°C PVC insulation and UV protected HR 105°C PVC sheath.

Single core copper DC solar cable upto 240 sqmm with XLPE insulation and UV stabilized PVC ST2 sheath.

RG-6 CO-AXIAL CABLES



RG-6 Co-Axial Cables, suitable for Cable TV / VSAT networks, are manufactured with superior features to enable customers to get high quality in picture and sound. Cables are available with both Solid Copper Conductor (SBC) and Copper Clad Steel Conductor (CCS).

OUR PRODUCT RANGE

DB / MCB / RCCB ISOLATOR / CHANGEOVER SWITCH



DB (Distribution Boards)

IP 30 for Single Door and IP 43 for Double Door, Available with SPN & TPN.

MCB (Miniature Circuit Breaker)

Available in Single, Double, Triple and Four Pole, In B, C & D Curves, From 6-A to 63-A.

RCCB (Residual Current Circuit Breaker)

Available in Double and Four Pole, From 25-A to 63-A, In 30, 100 & 300 ma.

ISOLATOR : Available in Double, Triple & Four Pole

CHANGE OVER SWITCH : I-O-II

Available in Double and Four Pole

RECENTLY LAUNCHED PRODUCTS

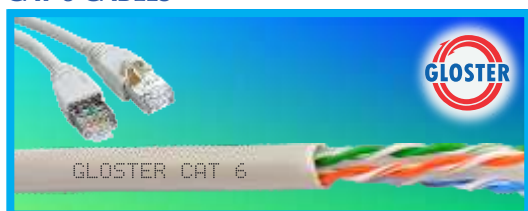
ELASTOMERIC CABLES



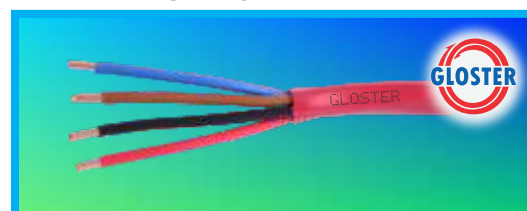
TELEPHONE & SWITCHBOARD CABLES



CAT-6 CABLES



FIRE ALARM CABLES



RTD CABLES



LOAD CELL CABLES



THERMOCOUPLE CABLES



WINDING WIRE FOR SUBMERSIBLE CABLE



MANUFACTURING CAPACITY (Per Annum)

PRODUCT TYPE	CAPACITY (Kms)	CAPACITY (Value ₹/CrS)
LT Power Cables	6000	250.00
HT Power Cables	960	60.00
LT Control Cables	9600	60.00
Copper Multi Core Cables	720	18.00
Industrial Flexible Cables	300000	60.00
TOTAL CAPACITY	317280	448.00

AREA OF THE MANUFACTURING UNIT

Area (Sqmters)	UNIT-1	UNIT-2	TOTAL
Built-up area	10000	13000	23000
Open area	8000	10000	18000
Total area (Sq.Mtrs)	18000	23000	41000

MAJOR RAW MATERIAL SOURCES

RAW MATERIAL PARTICULARS	SOURCES		
ALUMINIUM ROD (E.C. Grade 61.5%)	 NALCO NATIONAL ALUMINIUM CO LTD	 HINDALCO HINDALCO INDUSTRIES LTD	 VEDANTA VEDANTA ALUMINIUM WIRE
COPPER ROD/WIRE (99.9% Purity)	 Sterlite Industries India Limited	 Hindalco (Birla Copper)	 Hindustan Copper Limited
DOP/ STABILIZERS AND CATALYSTS	 KLJ Plastizers Ltd.	 Makwell Plastisizers Pvt. Ltd.	 Aditya Birla Chemicals
ARMOURING WIRE/STRIP	 Tata Steel Limited	 Usha Martin Industries Limited	
PVC RESIN	 Finolex Industries	 Reliance Industries Limited	
COPPER TAPE (HT Cables)	 Amex Resources		
LT XLPE/HT XLPE INSULATING COMPOUND	 Kalpena Industries Limited	 KLJ Plastizers	 DOW Chemiclax (33 KV Grade-Imported)
SEMICONDUCTING COMPOUND	 Kalpena Industries Limited	 Shakun Polymers	
PVC COMPOUND	In-House Production (PVC-A/PVC-ST1/PVC-ST2/HR/FR/FRLS/HR-FRLS etc)		

CERTIFICATES, APPROVALS AND TEST REPORTS

TEST CERTIFICATE

345174

Test Certificate No.	Date of Issue	Code No.	Page	No. of Page
WTC/001/001/00000000	21.08.2012	120160009907	01	01

Issued to & address: M/S. Gloster Cables Limited, Survey No. 293, 4th & 5th, Kadakal (V), Pongalur (M), Madhavur, AP - 505 134.

Customer's Ref. No.: GCL/001/001/00000000

Description of Test Item: 2.5 core heavy duty electric cable with stranded and shielded Aluminium conductors, Code: G20FY, class 2.

Modifications of Test Item: 2.5 core X 480 mm² XLPE insulated and PVC sheathed heavy duty electric cable with stranded and shielded Aluminium conductors, 1000 V Grade, BS 5303 (For improved fire performance), Category C2.

Date of Receipt of Sample: 14.05.2012

Method used for test/Specification: As per IS 3088 (Part 1) - 1988, Reinforced 2000 kV up to accelerated test.

Remarks: The sample meets the requirements of the specification IS 3088 (Part 1) 1988, and Reinforced 2000 kV up to accelerated test. Additional test for improved fire performance for category C2.

Checked By & Approved By: (Signature) (Signature)

Checked By & Approved By: (Signature) (Signature)

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Checked By & Approved By: (Signature) (Signature)

Checked By & Approved By: (Signature) (Signature)

CERTIFICATE OF PRODUCT APPROVAL

No. 08 / 08 / 49 ASC / TABRS / dated 17.12.2012

The assessment committee constituted by the Government of Tamil Nadu under the chairmanship of Engineer-in-Chief (Buildings), Public Works Department examined various aspects of the following product in its 49th meeting held on 26th November 2012 and have accorded approval.

Products / Product Range: Cables

Manufacturer / Company: M/s. GLOSTER CABLES LIMITED, S-3-372, RP Road, Secunderabad-500003.

References: BIS License Number 6098679, 6353609, 6536475 & 6487791

Standards / Specifications: IS 1554 (Part 1) 1986, IS 7096 (Part 1) 1986, IS 7096 (Part 2) 1985 and IS 694-1980

Limitations: Approval is subject to validity of BIS License for the product and compliance to the specification mentioned. Test results produced at the time of approval should be adhered to.

Any change of materials, manufacturing process, quality control routines that may affect the validity of this certificate should be notified to the Assessment Committee, PWD, Government of Tamil Nadu in advance.

17.12.2012

Member Secretary, Assessment Committee & Superintending Engineer, PWD, Planning and Designs Circle (Buildings), Chempauk, Chennai - 600 905.

COMPLETION CERTIFICATE

No. AAH/ENGO/982(20)/08/P 34

29.09.2008

Name & Address of the Issuing officer: Deputy General Manager Engrg (E) Airport Maintenance Electrical Circle, Chennai Airport, Chennai - 600 027.

Details of work executed by: M/s. Gloster Cables Ltd., Secunderabad-500 073.

Name of Work: Providing perimeter lighting in operational area at Chennai Airport. S4: Supply of LT XLPE Cables.

Agreement No.: 62/AMED-1/ 2006- 07

Date of Commencement of work: 01.02.2007

Stipulated date of Completion: 09.05.2007

Actual date of Completion: 24.09.2007

Details of compensation levied for delay if any: NIL.

Tendered Amount: Rs. 1,32,28,902/-

Gross Amount of completed Work: Rs. 96,09,895/-

Amount of work paid on reduced rates: NIL.

17.12.2012

Member Secretary, Assessment Committee & Superintending Engineer, PWD, Planning and Designs Circle (Buildings), Chempauk, Chennai - 600 905.

CERTIFICATES, APPROVALS AND TEST REPORTS



हिन्दुस्तान एरोनॉटिक्स लिमिटेड
HINDUSTAN AERONAUTICS LTD.
 अयुध प्रविण १९६१, रायसि
AIRCRAFT MANUFACTURING DIV, NASK
 (Part of India Licensing)

PHONE: 02255-275841 to 43 (Capacity 3000/line/100)
 02255-275846 to 48 (22x2) inward calling & digit auto

FAX No: 02255-275815, 277265

TELEPHONE १११६१
 GURKAR TOWER#1 P.O. NASK 422 207

FAX No: 02555-275846
 Telefax: 02555-277265

TO:
GLOSTER CAD LIMITED
 5-3-332, KP ROAD,
 SECUNDERABAD
 ANDHRA PRADESH-500003

Ref: NK/2515 (0488) / VR / MP/03/2023 *187*

DATE: 27.3.2023

SUB-REGISTRATION OF FIRM AS APPROVED VENDOR

Dear Sir,

- We are pleased to inform you that your firm has been registered with us as an approved supplier/contractor as per details given below:

a) Supplier Registration No. _____

b) Date and Validity of Registration _____

c) Validity of Registration _____

d) Category of work for which registered: _____

1. MP/03/2023

25th March 2023

3 years from date of registration
- Like XLPE Insulated, armoured/unarmoured, power control cables.
- 1.1 KV LT PVC Insulated, armoured/unarmoured, power control cables.
- XLPE Insulated, armoured/unarmoured, power control HT cables.
- KV PVC Insulated sheathed/unsheathed, domestic/industrial copper flexible cables.

The HAL, reserves the right to cancel your registration at any time with or without any of the following grounds:

- Failure to observe, while tendering the instructions given in the tender form etc.
- Failure to quote in response to invitation to tender on ten successful occasions.
- Failure to execute the contract(s) properly and satisfactorily.
- Supplying of false information in the application for registration/operation.
- Any other grounds which in the opinion of the HAL, render intensive undesirable.

By registering your firm on our list we are not under an obligation to issue an order to you and/or every time. Enquiries will be issued depending upon the nature of procurement solely at the discretion of the HAL.

This registration will be valid initially for the period of 3 years and renewed thereafter at the discretion of the HAL considering your firm's performance during the preceding period of 3 years.

Please inform any change in your address, telephone no. etc. to the Manager (Purchase), HAL.

Please acknowledge receipt.

Yours faithfully,
 For Hindustan Aeronautics Limited

 AIRCRAFT MANUFACTURING DIV
 (Part of India Licensing)

सांकेतिक संदर्भ: १११६१, कलकत ११६, पिन कोड ४२२ २०७, नास्क, महाराष्ट्र ४२२ २०७

CORPORATE OFFICE: 15/1, CUBBER ROAD, 7th FLOOR, 5100, BANGALORE 560 095

	मेकॉन लिमिटेड (भारत सरकार का प्रशासन) MECON LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)	
आपका प्रस्ताव प्रेषित करें:	आपका पता: MECON Ltd., Government of India, New Delhi - 110 055, India आपका फोन: 011-26100000, 011-26100001 आपका ईमेल: info@meconlimited.co.in, sales@meconlimited.co.in	आपका पैन: 28-0000000
Reference No: 01/01/01/MECON/2005-11/19-0000 Date: 25-APR-13		
SUBJECT: CABLES LIMITS 3-3-370-A FIND FLOOR, ABOVE MODI MOTORS, RASHTRAPATI ROAD, SECUNDERABAD 500032 Andhra Pradesh, Tel: 043 2753 4366-2753 4368 (0430432753)		
Sub: Acknowled of Vendor Registration with MECON (Vendor code: V-4838)		
Ref: Your letter No. GCLR/01/01/MECON dated 30-June-12		
Dear Sir,		
Kindly refer to your above mentioned letter. We are pleased to inform you that your company (MECON Ltd) is enlisted in our Approved Vendor List for the following items to new visit to SS-MAR-13		
ELECTRICAL INSTALLATION TO FLOORS & SUBSTATION, POWER DISTRIBUTIONSHIP, POWER CABLE & CABLES		
1. CABLE - 11 KV POWER CABLE (20/11 KV) Manufacturer		
2. CABLE - 11 KV POWER CABLE Manufacturer		
3. CABLE - 11 KV POWER CABLE Manufacturer		
Please note that this relationship is subject to satisfaction of supplier of material delivery and quality of above mentioned items under contract for various projects.		
Key features to noted Relatively changeable plant, location of assets substation, Management Organization structure etc. details referred to as properly stated and relevant information for necessary action. Taking all our supplier must report and after your organization with an active policy for completed. Kindly keep sending your annual report every year. Your performance shall be periodically reviewed by us on completion of your settlement with MECON.		
The discontinuation of our supply will be subject to your registration, which is active and discontinuation of MECON/MECON's client. It is your responsibility to apply for renewal of your registration at least 2 months advance of expiry of this validity period.		
Encl: Bank Receipt & Bank statement		
Trusting you		
Yours faithfully		
for MECON Limited		
<i>(Signature)</i> Manoj Gang, DGM (JVCS) email: manojg@meconlimited.co.in Phone: 011-26100000		





अभियांत्रिकी रेलवे
रेल अभियंता
Transforming Railways



RESEARCH DESIGNS & STANDARDS ORGANIZATION
Mamuknagar, Lucknow, Uttar Pradesh, INDIA – 226011

QA/S&T Directorate

CERTIFICATE OF APPROVAL

This is to certify that:

M/s. Gloster Cables Ltd.,

With facilities located at the following address(es):

Office Address	Works Address
83/372, R.P. Road, Secunderabad-500032	Survey No.316/E, N.H.7, Kailakal Village, Topran Mandal, Distt. Medak-502335, A.P

Is approved as a supplier for the following item(s)

S.No.	Item Description	Drawing / Specification	Status of Approval (Part-I / Part-II)
1.	PVC Insulated Armoured, Unscreened Underground Power Cable	IRS S-43/2007 (Amd.3) & IS-1554 (Part-1)	Part-II (TWO)

Certificate Details:

Contract No.:	RDSO/2013/QS/0126	Registration / File Number	RDSO/2010/QS/CABLE/1397 Vol-I
Date of Issue:	16-October-2013	Date of Expiry:	30-June-2015


(G. Govil)

Director (QA/S&T)

For Director General/QA/S&T

Note : This certificate is subject to the conditions given overleaf.

[illegible]

MAJOR CUSTOMERS

MAJOR CUSTOMER LIST

AUTOMOBILE

• TM Tyres & Tubes Pvt. Ltd., AP • Mahindra & Mahindra Ltd., AP • Hyundai Motor India Ltd., TN • MRF Ltd., TN • Ashok Leyland Ltd., Chennai • Tata Engineering & Locomotive Co. Ltd, Pune

CEMENT

• Maharaja Shree Umaid Mills Ltd., Rajasthan • Binani Cements Limited • J.K. Lakshmi Cement Limited • Shree Cements Limited • The Associated Cement Companies Ltd., TN • The India Cements Ltd., TN • Vasavdatta Cement, Gulbarga • Arsmeta Cement Plant, Chattisgarh • Dalmia Cement • Orient Cement • Penna Cements • Chettinad Cement Corporation Limited • Sourashtra Cement Ltd., Gujarat • Digvijay Cement, Gujarat • My Home cement Ind. Ltd., AP • Sonadih Cement Plant • Hirimi Cement Works

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COAL & MINERAL

• National Mineral Development Corp., MP • Cochin Minerals & Rutile Ltd, Kerala • Indian Rare Earths Ltd., TN • Indian Rare Earths Ltd., Kerala • National Mineral Development Corp., Karnataka • Uranium Corporation of India Ltd., Raipur

DAIRY

• Amudham Dairy Product Pvt.Ltd., TN • Kanakpura Milk Chilling Centre, Karnataka • NDDDB Mega Dairy Project, Karnataka • NDDDB, AP • Sabar Dairy, AP • Tumkara Distict. Co-Operative Milk Producers Ltd., AP • Baroda District CO-Operative Milk, Baroda • Dudh Sagar Dairy, Mehsana • Indian Dairy Machinery Co. Ltd., Gujarat • Mother Dairy, Gujarat • NDDDB, Anand

DEFENCE & RESEARCH CENTRE

• Ordnance Factory, Tiruchirapally • Military Engineering Services, Belgaum • Hyudai Motor India Ltd., TN • MRF Ltd., TN • Ashok Leyland Ltd., Chennai • DRDO, Jagadapur, • DIVI's Laboratories Ltd., AP • Bharat Dynamics Ltd., AP • Indian Navy, INS Vasura, Jamnagar • Department Of Atomic Energy, Indore • Military Engineering Services, Vasco • Institute For Plasma Research, Gandhinagar • National Defence Academy, Pune • Ordnance Factory, Ambasari • Director General Naval Project, Mumbai • Centre for Advanced Technology, Indore • Bhabha Atomice Reserch Centre, Mumbai • Ordnance Factory, Jabalpur • Central Fuel Research, Dhanbad

ENGINEERING (OEM'S/COMMUNICATION/AIRPORT/IT/CONSULTANTS)

• HCL Computers, Noida • Indira Gandhi International Airport, Delhi • Controls & Switchgear Co.Ltd., Delhi • Procter & Gamble India Ltd., Delhi • Greater Noida Industrial Development Authority • Amara Raja Batteries Ltd., AP • Apollo Tyres Ltd., Kerala • Samaria Pipes Pvt. Ltd., AP • Controls & Schematics Ltd., AP • Heritage Granites Ltd., TN • Hindustan Sanitaryware & Inds.Ltd., AP • Hyderabad Industries Ltd., AP • India Meters Ltd., Chennai • Indian Telephone Indutries Ltd., Karnataka • ITC, Banglore • Kamal Wineries, AP • Kerala Karkarshakha Federation Ltd., Kerala • Kerry Jost Engineering Ltd., AP • Babuchand Engineers, Kochi • BTP India Ltd., TN • Cethar Vessels Pvt. Ltd., TN • Markwel Hose Industries Ltd., AP • Mahindra Holidays & Resorts India Ltd., Karnataka • Nithiya Packaging Pvt. Ltd., Kerala • Pokarna Ltd., TN • Pomona Farms & Products, TN • Prime Properties Developers, Kerala • Satellite Printing Pvt. Ltd., TN • Vatech Vabag Ltd., Chennai • Max India Ltd., Karnataka • National Aerospace Laboratories, Karnataka • Popuri Enggineering Consultancy AP • Rank Cranes P.Ltd., AP • Reliance Fire & Safety Equipments, AP • Schaltech Automation Pvt. Ltd., AP • Transformer & Elctrical Kerala Ltd., Kerala • Tranvancore Titanium Products Ltd., Kerala • Popuri Enggineering Consultancy, AP • Rank Cranes Pvt. Ltd., AP • Reliance Fire & Safety Equipments, AP • Schaltech Automation P.Ltd., AP • Transformer & Elctrical Kerala Ltd., Kerala • Tranvancore Titanium Products Ltd.,Kerala • Alfa Laval India Ltd., Pune • Thermax Babcock & Wilcox Ltd., Pune • Fag Bearings India Ltd., Baroda • Emco Ltd., Mumbai • Filatex India Ltd., Daman • Megi Control systems P.Ltd., Goa • Ion Exchange (India) Ltd., Mumbai • Kalpataru Properties, Thane • National Highways Authority of India, Pune • Rainbow Plastic Industry, Daman • Sahara India Ltd., Pune • National Aluminim Company, Orissa • Lurgi India Co.Ltd., Kolkata • Exide Industries Ltd., Kolkata • Paharpur Cooling Towers Ltd., Kolkata • Bhutan Constructions

MAJOR CUSTOMER LIST

EPC CONTRACTOR

• Subhash Projects & Marketing Ltd., Karnataka • SNC Lavalin/Acres INC. • Bharat Heavy Electricals Ltd., Hardwar • Aar Gee Consultants Pvt. Ltd., Delhi • Omaxe Limited • Jeet Builders • AREVA T&D India Limited • Bajaj Eco-Tec India Limited • Voltas Limited, Secunderabad • Shriram EPC Limited, Chennai • Singhal Enterprises Pvt.Ltd., RaigarH • Tata Honeywell Ltd., Pune • Quilon Consulting Engineers, Trivendram • Reunion Engineering Co.Ltd., AP • Samsung Engineering Ltd., Baroda • P. L. Raju Construction Ltd., AP • Nagarjuna Construction Co. Ltd., AP • Kumar Raja Associates, Vishakhapatnam • KW Kumar Raju , AP • L&T Komatsu Limited, Karnataka • Kirloskar Electric Co.Ltd., Bangalore • Siemens Ltd., Bangalore • IVRCL Infrastructure & Porjects Ltd., AP • Harrison Malyalam Ltd., Kerala • M/s Greaves Ltd., Chennai • FEE Minerals India P.Ltd., Chennai • Bharat Heavy Electricals Ltd., AP • HCL Technologies Limited • K B Contractors • Pokarna Limited • Mantri Developers • MAYTAS • Promac Engineering • Purvankara Project • Seimens Limited • Best & Crompton Engg. Ltd., AP • J.K. Paper Limited • J.K. Coporation Limited • Kirloskar Brothers Ltd. • Danielli Engineering, Kolkata • Durgapur Porjects Ltd., WB • Thermax Ltd., Pune • Larsen & Toubro Limited, Mumbai • M/s Greaves Ltd., Pune • Krupp Industries Limited, Pune • Hindustan Dorr Oliver Ltd., Mumbai • Elecon Engineering Co. Ltd., Baroda • Crompton Greaves Ltd., Mumbai • Batliboi Ltd., Mumbai • Bechtel International Ltd., Mumbai • Bells Control Ltd., Mumbai • Blue Star Ltd., Mumbai • BSES Ltd., Mumbai • Bajaj Electricals Ltd., Mumbai • Godrej & Boyce • John Galt International

INFORMATION TECHNOLOGY

• Arihant Techno Park • Satyam Computers • Cyber Park • HCL Computers • IBM • Motorola • Pristige Technology Park • WIPRO

IRON AND STEEL

• Bhushan Steel & Strips • Raipur Alloys • Abhishek Steels Ltd., AP • AGP Steels Pvt. Ltd., Medak • Bilasaraika Spong Iron P. Ltd., A.P., • Drolia Electro Steels Pvt. Ltd., Raipur • FLSMIDTH Minerals Pvt. Ltd. • Gasha Steels Pvt. Ltd., Palakkad • Jaiswal NECO Ltd.(SPD), Chennai • Jaycee Sponge Profiles Pvt. Ltd., AP • Kairally Steel & Alloys Pvt. Ltd., Pallakad • Kalyani Steels Ltd., Hospet • Kirloskar Ferrous Ind. Ltd., Bovinhalli • Mahendra Sponge & Power Pvt. Ltd., Raipur • Mangal Sponge & Steel Ltd., Raipur • Raipur Sponge & Power Ltd.,Raipur • Ramnivash Ispat Ltd., Medak • Salem Steel Plant , Salem • Satyarth Steel & Power Ltd., Raipur • SJK Steels Ltd., Hyderabad • Steel Abrasive Ltd., Raipur • Steel Authority Of India Ltd., Bhilai Plant • Steel Industries Ltd., Kerala • Sunder Ispat Ltd., AP • Tirupathi Udyog, AP • Hindalco Industries Ltd., Dahej • Ispat Industries Ltd., Mumbai • Mondovi Pallest Ltd., Thane • Mukand Ltd., Thane • S.A.L. Steels Ltd., Gujarat • Steelco Gujarat Ltd. • SWIL Ltd., Bharuch • Vikram Ispat, Raigad • Ballasore Alloys Ltd., Orissa • Bhihar Sponge Iron Ltd., Chandil • Haldia Steels Ltd., WB • Jindal Stainless Ltd., Orissa • Neelachal Ispat Ltd., Dhubri • Ram Saroop Lohh Udyog • Satyam Iron & Steel Co. Ltd., Ranigunj • Scan Steels Ltd., Rajgangapur • Shivam Iron & Steel Co. Ltd., Jharkhand • Shri Madhav Ispat Ltd., Orissa • Shrishti Ispat Ltd., Orissa

LIGHTING

• Glaxo Pharmaceuticals • Bajaj Electricals, AP • Philips India Ltd., AP • Bajaj Electricals, Mumbai

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MAJOR CUSTOMER LIST

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• Vamsi Organics Pvt. Ltd., AP • Smithkline Becham Pharmaceuticals, Bangalore • Satyam Plasticizers & Chemicals, AP • Reliance Cellulose Products Ltd., AP • Dr. Reddy's Lab • Tonira Pharma Ltd., Baroda • Taiyo Lucid Pvt. Ltd., Aurangabad • Sovereign Pharma, Daman • Ranbaxy Laboratories Ltd., Goa • Emcure Pharmaceuticals Pvt. Ltd., Pune • Serum Institute of India, Pune • Ronit Pharma Ltd., AP • Mega Fine Pharma Pvt. Ltd., Nasik

POWER AND ENERGY

• Uttaranchal Power Corp. Ltd., Dehradun • National Hydroelectric Power, HP • Nuclear Power Corporation of India, Rajasthan • BSES Rajdhani Power Ltd., Delhi • BSES Yamina Power Ltd., Delhi • Jaipur Vidyut Vitaran Nigam Limited • Amrit Bio Energy • Maharshi Solar Technology Pvt. Ltd., AP • Karnataka Power Transmission Corp., Bangalore • Kerala State Electricity Board, Kochi • Chattisgarh State Electricity Co. Ltd., Raipur • AP Power Generation Corp. Ltd, AP • Jaiprakash Industries Ltd., Sikkim • CESC Ltd., Kolkata • Gujarat Paguthan Energy Corp., Bharuch • Gujrat Electric Company, Vadodara • Ahmedabad Electricity Co. Ltd., Gujarat • Adani Energy Limited

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• Central Railway, MP • Arihant Educational Society, AP • Bank of Baroda, AP • Dataware Design Lab Pvt. Ltd., TN • Hotel Babylon International Pvt. Ltd., AP • Hyderabad Control University, AP • M.M. Publication, Kerala • PSG Industrial Institute, TN • MES College Of Engineering, Kerala • Rajan Hotels Pvt. Ltd., Chennai • Sankara Eye Hospital, AP • Shree Sadguru Seva Sangh Trust, AP • Siddharth Academy Of Education, AP • Shri Kanchi Kamkoti Medical Trust, Kerala • Vishakhapatnam Port Trust, Vishakhapatnam • VSNL, Pune • Western Railways, Ahmedabad • MIDC, Mhapa • Goa State Co-op. • State Bank, Panaji • Hyatt Regency, Goa • I.I.M., Indore • Indian Institute of Geomagnetism, Mumbai • Mormugao Port Trust, Goa • National Institute Of Fashion Design, Ahmedabad • State Bank of India, Mumbai • Indian Institute Of Management, Indore • Municipal Corporation of Pharola, Aurangabad • Tulsi Eye Hospital, Nashik • Aisan Hotels Ltd., Kolkata

SUGAR & FOOD

• The SIRSA Co-Op. Sugar Mills Ltd., Haryana • The Pratap Pur Sugar & Industries Ltd. • Sarjoo Sahakari Chinni Mills, UP • Dwarikesh Sugar Industries Ltd., UP • Lakshmi Sugar Mills Ltd., Uttaranchal • Kisan Sahakari Chinni mills Ltd., UP • Ch. Devilal Co-Op. Sugar Mills Ltd., UP • Arunachal Sugar Mills Ltd., TN • Chilwaria Sugars • India Glycols Limited • Balarampur Chinni Mills • Van Melle Confectionary (I) Pvt. Ltd., TN • Vimala Feeds Pvt. Ltd., AP • The Trident Sugars Ltd., AP • The Mysore Sugar Co.Ltd., Karnataka • The Nizam Sugars Ltd., AP • SCM Sugars Ltd., Karnataka • Shamanur Sugars Ltd., Karnataka • Naranja Sahakari Sakhar Karkhana, Bidar • Mysore Fruit Products Ltd., AP • Shakti Sugars Ltd., Orisa • SPR Sugars P.Ltd., Bangalore • KCP Sugar & industries Ltd., AP • Kamapur Sugar Industries, Karnataka • HIC ABF Special Foods P.Ltd., Kochi • Ganapati Sugar industries Ltd., Medak,A.P., Gayatri Sugars Ltd., AP • Davengare Sugar Co. Ltd., Karnataka • Bannari Amman Sugars Ltd., Kerala • West Kenya Sugars • Walchandnagar Industries Ltd., Pune • Parakh Foods Ltd., Pune • IDMC Limited • Pooja Food products Ltd., Pune

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• Maharaja Shree Umaid Mills Ltd., Rajasthan • Vijay Anand Textile Mills Pvt. Ltd., AP • VKSM Cotton Mills Ltd., Coimbatore • Surya Lakshmi Cotton Mills Ltd., AP • Suryavanshi Spinning Mills Ltd., AP • Sanghi Polysters Ltd., AP • Raymond Ltd., Bilaspur • KalaiMangal Textiles, Coimbatore • Selvapathy Spinning Mills, Coimbatore • GTN Textiles Ltd., Alwaye • Grasim industries Ltd., Karnataka • GTN Textiles Ltd., Medak, A.P., Welspun India Ltd., Gujarat • Surya Lakshmi Cotton Mills Ltd., Nagpur • Maruti Textiles Ltd., Surat • DCL Polyesters Ltd., Nagpur • Arvind Mills Ltd., Santej • Ludlow Jute Mills, Howrah

UTILITIES

• Airport Authorities Of India • Central Organisation Railway • Northern Railway • Global Auto • Hero Motors • North Western Railway • KESCO • Airport Authorities Of India • ABG Shipyard • Central Railway • Western Railway • Konkan Railway • Cochin Shipyard • Integrated Coach Factory • Mormogao Port Trust, Goa • National Highways Authorities of India • Airport Authorities of India Calicut • Vishakhapatnam Port Trust, Vishakhapatnam • South West Port • Airport Authorities of India

MAJOR INSPECTIONS

GOVERNMENT INSTITUTIONS

• Airport Authority Of India (AAI) • Bhabha Atomic Research Centre (BARC) • Central Power Research Institute (CPRI) • Centre For Advance Technology (CAT) • Cochin International Airport • Department Of Atomic Energy • Director General - Aeronautical • Electronics Trust & Development Centre (ETDC) • Hindustan Aeronautical Ltd • Indian Institute of Technology (IIT) • Indian Institute of Space Research Organisation (IISRO) • Maharashtra Electricity Board • Maharashtra Industrial Development Corporation • Military Engineering Services (MES) • Mumbai Port Trust • National Remote Sensing Agency • Naval Academy • RITES • Western Railways

PUBLIC SECTOR UNITS

• Bharat Heavy Electricals Limited (BHEL) • Bharat Petroleum Corporation Ltd (BPCL) • Electronics Trust & Development Centre • FACT Engg and Design Organisation • Greater Noida Industrial Authority • Indian Oil Corporation Ltd (IOCL) • Kochi Refineries Ltd • National Bank Of Agriculture And Rural Development • National Hydroelectric Power Corporation • National Mineral Development Corp. Ltd (NMDC) • National Remote Sensing Agency • National Thermal Power Corporation Ltd • Nuclear Power Corporation Of India Ltd • Oil And Natural Gas Commission (ONGC) • Projects & Development India Ltd (PDIL) • Rashtriya & Ispat Nigam Ltd • Rashtriya Chemicals & Fertilisers • Royal Government of Bhutan

PRIVATE INSPECTING AUTHORITIES

• AREVA T & D India Limited • Bajaj Electricals Ltd • Bureau Veritas Industrial Serum India Pvt. Ltd • Crompton Greaves Ltd • Engineering Projects India Ltd • Engineers India Ltd (EIL) • E.G.S.C.T. Pvt. Ltd • Enviro Clean Systmes Ltd • Gherzi Eastern Ltd • Hindustan Dorr-O-Lever Ltd • Hindustan Organic & Chemical Ltd • Hindustan Petroleum Corpn. Ltd. (HPCL) • Intertek • ISGEC John Thompson • JMC • Kirloskar Electric Company • KRIBHCO • Larsen & Toubro (L&T) • Lloyds Register Asia • M.N.Dastur & Co • My Home Industries • Nagarjuna • Nirma Ltd • Orient Cement • Paramount Ltd • Praxair • Promac • Ramsarup Lohh Udyog • SAAB Controls (India) Ltd • Semi-Conductors Complex • SGS India Ltd. • Siemens • Simplex Engineering • Tata Consultancy Services • Tata Project • Team Asia Greaves Semi-Conductors • Thermopads • Toyo Engineering Corp. Ltd • Tuv India • Voltas • Walchandnagar Industries

POWER SECTOR

• Adani Energy • AP Transco • CESC Limited • Kerala State Electricity Board • Kochi Refineries • MESCOM • Nuclear Power Corp • Reliance Energy





LOW VOLTAGE XLPE CABLES

Low Voltage XLPE Cables are manufactured according to IS:7098 (Part -I), up to and including the latest amendments. All cables have the ISI Certification.

XLPE, as insulation has the following superior features:

- Low dielectric loss.
- Higher power rating and higher emergency overload rating.
- Superior short circuit rating.
- Much better insulation resistance
- Higher resistance to moisture
- Capacity to withstand localized hot spot temperature, very vital to steel plants, power stations, etc.
- Resistant to chemicals and corrosive gases, etc.
- Exhibits better properties, such as resistance to vibration, impact, ageing and hot deformation.
- Termination and jointing methods are very easy, simple and non-expensive as compared to other cables.

DESIGN AND CONSTRUCTION

CONDUCTORS

The conductors of power cables are made from electrical purity aluminium, and those of control cables are of annealed high conductivity copper. However, copper conductor power cables can also be supplied against orders. All conductors conform to IS:8130-1984.

INSULATION

High quality Cross Linked Polyethylene (XLPE) unfilled insulating compound is used for XLPE Cables.

LAYING UP

In multicore cables, cores are laid up as per the above color scheme and interstices are filled up wherever necessary to make the laid up cable circular.

INNER SHEATH

For all cables having two or more cores, a common covering (inner sheath) is applied over the laid up cores either by extruded sheath of PVC Compound or wrapping of thermoplastic or proofed tapes.

ARMOURING

For multi-core cables, armouring is applied over the inner sheath. In case of cables where the fictitious diameter over the inner sheath does not exceed 13mm., the armour consists of galvanised round steel wires; above this size, normally the armour is of galvanised formed steel wires. Any metallic, non-metallic wire/strip can be available on request.

OUTER SHEATH

Outer sheath is extruded over the armouring. In case of multi-core unarmoured cables, over the inner sheath, whereas, in case of unarmoured single-core cables, it is extruded over the insulation. This is always black in colour for best resistance to outdoor exposure. Any other colour can be available on request.

CORE IDENTIFICATION

Colour Scheme: Cores are identified by the colour scheme of insulation. The following colour scheme is normally adopted:

- 1 Core red, black, yellow, blue or natural (non pigmented)
- 2 Core red and black
- 3 Core red, yellow and blue
- 4 Core red, yellow, blue and black (also 3½ core reduced neutral is black)
- 5 Core red, yellow, blue, black and grey

For cables having more than 5 cores:

Two adjacent cores (counting and direction core) in each layer are coloured blue and yellow respectively and the remaining cores are grey.

Alternatively, cores with number printing can be offered.

TESTING AND QUALITY ASSURANCE

The various tests carried out on Low Voltage cables are classified in three different groups: • Routine Tests • Type Tests and • Acceptance Tests.

ROUTINE TESTS

The following tests constitute Routine Tests which are carried out on each and every length of cable as per relevant IS specification before it leaves the factory.

(A) Conductor Resistance Test

The Test ensures that conductor resistance is within the specified limit, thereby verifying that the continuity of conductor is maintained throughout the cable length and that the conductor has the required electrical section. D.C. resistance is measured at room temperature and is then corrected to standard reference temperature of 20°C.

(B) High Voltage Test

The test ensures that insulation will safely withstand the rated voltage with permissible variation in normal operation.



TYPE TESTS

These tests are carried out on samples taken from each production lot as per relevant IS specification. They are carried out to prove conformity as regards the general qualities and design to the specification of particular type of cables.

ACCEPTANCE TESTS

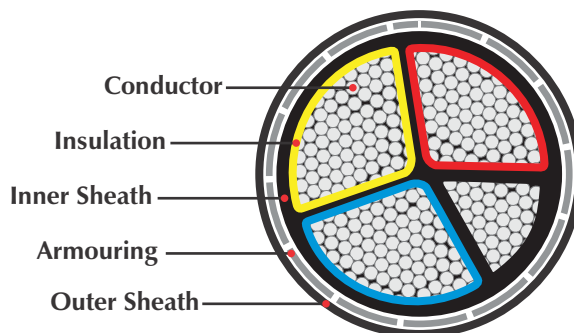
These tests are again carried out as per relevant IS specification in the presence of the concerned Inspecting Authority for testing, approval and release of material offered for inspection.

PACKING

Cables are normally supplied in wooden drums. Special drums are also provided on request. While installing LT PVC/LT XLPE cables, the following minimum bending radii should be observed in order so that the cable, especially insulation, may not undergo damage. Wherever possible larger bending radii should be used.

CABLES EXPOSED TO SUN

On account of heating of the exposed core due to solar radiation, the rating of the cable installed out-doors and not shielded from the sun is less than if so shielded. To reduce the effect of solar radiation, it is recommended that the cores should be shielded from the direct rays of the Sun without restricting the ventilation.





SHORT CIRCUIT RATING OF XLPE CABLES:

Thermally admissible short circuit current are depicted in the graph below:-

Full load conductor temperature prior to short circuit
90° C

Maximum short circuit conductor temperature: 250° C

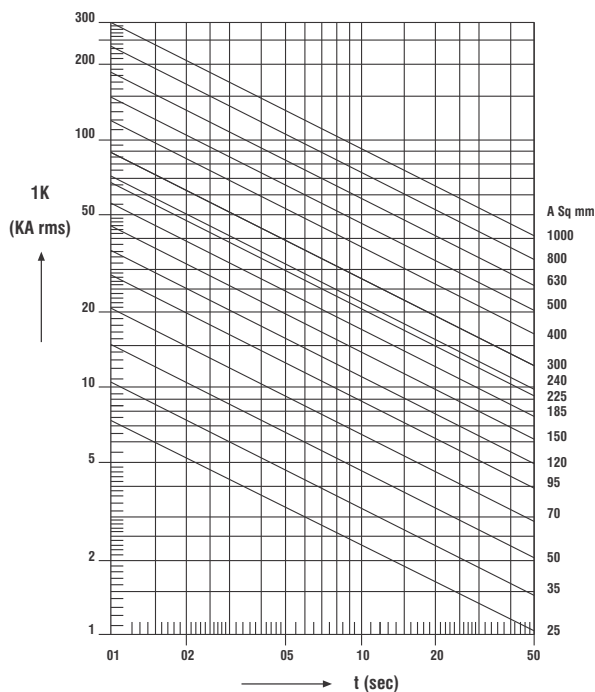
Formula $I_k = 0.094 A / \sqrt{t}$

I_k : Short Circuit Current In KA (rms)

t : Duration of short circuit in seconds

A : Area of aluminum conductor in mm²

Short circuit ratings of cables for one-second duration are given in the respective tables 1-10. For any other duration of t seconds divide the value given in the respective table by ($\sqrt{t}$).



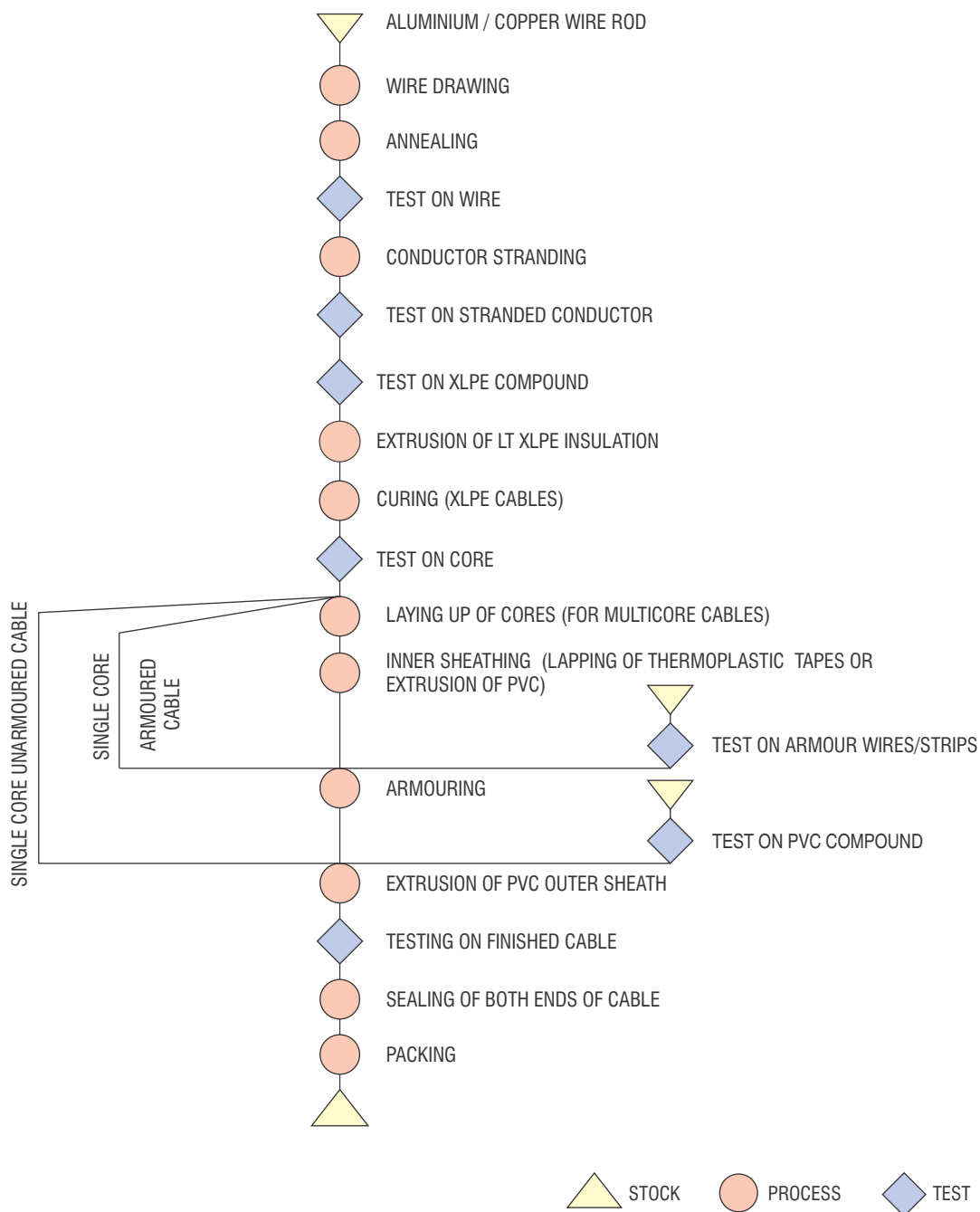
OPERATING CHARACTERISTICS:

The construction data and current rating of cables with aluminum conductor are shown in tables. These are based on standard conditions of installations as provided below:

Maximum continuous operating conductor temperature for XLPE Cables	= 90° C
Standard ground temperature	= 30° C
Ambient air temperature	= 40° C
Thermal Resistivity of soil	= 150° C
Depth of laying (for cables laid direct in ground)	= 75 cms for cables up to 1.1 KV



Flow Chart for Manufacturing Processes & Quality Control Checks for Cables Conforming to IS: 7098 (Part - I)





1.1 KV SINGLE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured, PVC OUTER SHEATH CABLES CONFORMING TO IS:7098 (Part - I)

TABLE - 1

Nominal size of conductor	UN-ARMoured CABLES A2XY				ARMoured CABLES								
	Nominal thickness of insulation	Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Single Layer - Wire (A2XWY)					Single Layer - Strip (A2XFaY)			
					Nominal thickness of insulation	Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable
Sq. mm	mm	mm	mm	Kg/Km	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km
4	0.7	1.8	9.0	70	1.0	1.4	1.24	11.5	120	-	-	-	-
6	0.7	1.8	10.0	80	1.0	1.4	1.24	12.5	140	-	-	-	-
10	0.7	1.8	11.0	100	1.0	1.4	1.24	13.0	160	-	-	-	-
16	0.7	1.8	12.0	120	1.0	1.4	1.24	14.0	200	-	-	-	-
25	0.9	1.8	14.0	170	1.2	1.4	1.24	16.0	260	-	-	-	-
35	0.9	1.8	15.0	210	1.2	1.4	1.24	17.0	300	-	-	-	-
50	1.0	1.8	16.0	260	1.3	1.4	1.24	18.0	360	-	-	-	-
70	1.1	1.8	18.0	340	1.4	1.4	1.24	20.0	460	-	-	-	-
95	1.1	1.8	20.0	420	1.4	1.6	1.40	22.0	580	0.8	1.40	20.0	520
120	1.2	1.8	22.0	510	1.5	1.6	1.40	24.0	690	0.8	1.40	22.0	610
150	1.4	2.0	24.0	640	1.7	1.6	1.40	25.5	800	0.8	1.40	24.0	710
185	1.6	2.0	26.0	770	1.9	1.6	1.40	28.0	960	0.8	1.40	26.5	870
240	1.7	2.0	29.0	970	2.0	1.6	1.40	30.5	1190	0.8	1.40	29.0	1060
300	1.8	2.0	31.5	1160	2.1	1.6	1.56	33.0	1400	0.8	1.56	31.5	1290
400	2.0	2.2	35.0	1480	2.4	2.0	1.56	38.0	1770	0.8	1.56	35.0	1610
500	2.2	2.2	39.0	1840	2.6	2.0	1.56	41.0	2210	0.8	1.56	39.0	1980
630	2.4	2.2	44.0	2300	2.8	2.0	1.72	45.5	2690	0.8	1.72	43.0	2490
800	2.6	2.4	48.0	3000	3.1	2.0	1.88	51.0	3460	0.8	1.72	48.0	3230
1000	2.8	2.6	52.0	3670	3.3	2.5	2.04	56.0	4430	0.8	1.88	54.0	3930

1.1 KV TWO CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured, PVC OUTER SHEATH CABLES CONFORMING TO IS:7098 (Part - I)

TABLE - 2

Nominal size of conductor	Nominal thickness of insulation	Minimum thickness of inner sheath	UN-ARMoured CABLES A2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFaY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable
Sq. mm	mm	mm	mm	mm	Kg /Km	mm	mm	mm	Kg /Km	mm	mm	mm	Kg /Km
4	0.7	0.3	1.8	13.5	130	1.40	1.24	15.0	380	-	-	-	-
6	0.7	0.3	1.8	15.0	150	1.40	1.24	16.0	440	-	-	-	-
10	0.7	0.3	1.8	16.0	190	1.40	1.24	17.0	450	-	-	-	-
16	0.7	0.3	1.8	15.0	230	1.40	1.40	17.0	480	-	-	-	-
25	0.9	0.3	2.0	18.0	340	1.60	1.40	20.0	670	0.8	1.40	18.0	530
35	0.9	0.3	2.0	19.5	410	1.60	1.40	21.0	780	0.8	1.40	19.5	590
50	1.0	0.3	2.0	21.5	510	1.60	1.40	23.0	930	0.8	1.40	21.5	740
70	1.1	0.3	2.0	25.0	700	1.60	1.56	26.0	1180	0.8	1.56	24.5	960
95	1.1	0.4	2.2	27.5	880	2.00	1.56	29.5	1590	0.8	1.56	27.0	1160
120	1.2	0.4	2.2	29.5	1060	2.00	1.56	32.0	1840	0.8	1.56	29.5	1380
150	1.4	0.4	2.2	33.0	1320	2.00	1.72	35.0	2170	0.8	1.72	33.0	1660
185	1.6	0.5	2.4	37.0	1600	2.00	1.88	39.0	2590	0.8	1.72	36.0	1990
240	1.7	0.5	2.6	42.0	2090	2.50	2.04	44.0	3470	0.8	1.88	44.0	2450
300	1.8	0.6	2.8	45.0	2500	2.50	2.20	48.0	4040	0.8	2.04	44.0	2970
400	2.0	0.6	3.0	51.0	3230	2.50	2.36	53.5	4860	0.8	2.36	50.0	3700
500	2.2	0.7	3.4	56.0	4030	3.15	2.68	60.0	6540	0.8	2.52	55.5	4600
630	2.4	0.7	3.6	62.0	5090	3.15	2.84	65.5	7760	0.8	2.68	60.5	5620

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**1.1 KV THREE CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured,
PVC OUTER SHEATH CABLES CONFORMING TO IS:7098 (Part - I)**

TABLE - 3

Nominal size of conductor	Nominal thickness of insulation	Minimum thickness of inner sheath	UN-ARMoured CABLES A2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable
Sq. mm	mm	mm	mm	mm	Kg /Km	mm	mm	mm	Kg/Km	mm	mm	mm	Kg /Km
4	0.7	0.3	1.8	14.0	160	1.40	1.24	15.0	400	-	-	-	-
6	0.7	0.3	1.8	15.5	190	1.40	1.24	16.5	490	-	-	-	-
10	0.7	0.3	1.8	17.0	240	1.40	1.24	18.5	570	-	-	-	-
16	0.7	0.3	1.8	17.0	300	1.60	1.40	19.0	670	0.8	1.24	17.5	500
25	0.9	0.3	2.0	20.5	450	1.60	1.40	22.5	870	0.8	1.40	20.5	670
35	0.9	0.3	2.0	22.0	550	1.60	1.40	24.0	1000	0.8	1.40	22.5	800
50	1.0	0.3	2.0	25.0	690	1.60	1.56	26.5	1250	0.8	1.40	25.0	990
70	1.1	0.4	2.2	28.5	960	2.00	1.56	31.0	1760	0.8	1.56	28.5	1310
95	1.1	0.4	2.2	31.0	1210	2.00	1.56	34.0	2090	0.8	1.56	31.5	1610
120	1.2	0.4	2.2	34.0	1470	2.00	1.72	36.5	2470	0.8	1.56	34.0	1910
150	1.4	0.5	2.4	38.0	1830	2.00	1.88	41.0	2960	0.8	1.72	38.0	2310
185	1.6	0.5	2.6	42.0	2270	2.50	2.04	45.5	3830	0.8	1.88	42.0	2820
240	1.7	0.6	2.8	47.0	2900	2.50	2.20	50.0	4660	0.8	2.04	47.0	3500
300	1.8	0.6	3.0	52.0	3550	2.50	2.36	55.0	5460	0.8	2.20	51.0	4200
400	2.0	0.7	3.2	59.0	4510	3.15	2.68	63.0	7370	0.8	2.52	58.0	5320
500	2.2	0.7	3.6	65.0	5650	3.15	2.84	69.0	8820	0.8	2.68	64.0	6550
630	2.4	0.7	3.8	72.0	7180	4.00	3.00	77.5	11570	0.8	2.84	71.0	8090

**1.1 KV 3 1/2 CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured,
PVC OUTER SHEATH CABLES CONFORMING TO IS:7098 (Part - I)**

TABLE - 4

Nominal size of conductor	Nominal thickness of insulation Main/Neutral	Minimum thickness of inner sheath	UN-ARMoured CABLES A2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable
Sq. mm	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km
25	0.9/0.7	0.3	2.0	21.5	510	1.60	1.40	23.5	930	0.8	1.40	21.5	740
35	0.9/0.7	0.3	2.0	23.0	610	1.60	1.40	25.0	1070	0.8	1.40	23.0	860
50	1.0/0.9	0.3	2.0	26.0	780	1.60	1.56	28.0	1320	0.8	1.40	26.0	1070
70	1.1/0.9	0.4	2.2	30.0	1080	2.00	1.56	32.5	1880	0.8	1.56	30.0	1400
95	1.1/1.0	0.4	2.2	33.0	1380	2.00	1.56	35.5	2270	0.8	1.56	33.0	1740
120	1.2/1.1	0.4	2.2	36.5	1700	2.00	1.72	39.5	2720	0.8	1.72	37.0	2130
150	1.4/1.1	0.5	2.4	40.5	2060	2.00	1.88	43.0	3190	0.8	1.72	40.5	2520
185	1.6/1.1	0.5	2.6	45.0	2580	2.50	2.04	48.5	4160	0.8	1.88	45.0	3060
240	1.7/1.2	0.6	2.8	51.0	3300	2.50	2.20	54.0	5060	0.8	2.04	50.0	3840
300	1.8/1.4	0.6	3.0	56.0	4040	2.50	2.36	59.0	5970	0.8	2.20	55.5	4630
400	2.0/1.6	0.7	3.4	63.0	5170	3.15	2.68	67.0	7970	0.8	2.52	62.5	5800
500	2.2/1.7	0.7	3.6	69.5	6510	3.15	2.84	73.5	9580	0.8	2.68	69.0	7190
630	2.4/1.8	0.7	4.0	77.5	8230	4.00	3.00	83.0	12700	0.8	3.00	76.5	8950

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**1.1 KV FOUR CORE ALUMINIUM CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured,
PVC OUTER SHEATH CABLES CONFORMING TO IS:7098 (Part - I)**

TABLE - 5

Nominal size of conductor	Nominal thickness of insulation	Minimum thickness of inner sheath	UN-ARMoured CABLES A2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable
Sq. mm	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km
4	0.7	0.3	1.8	15.0	180	1.40	1.24	16.0	470	-	-	-	-
6	0.7	0.3	1.8	17.0	230	1.40	1.24	17.5	550	-	-	-	-
10	0.7	0.3	1.8	19.5	290	1.40	1.40	20.0	670	-	-	-	-
16	0.7	0.3	1.8	19.0	370	1.60	1.40	20.0	780	0.8	1.40	19.5	590
25	0.9	0.3	2.0	23.5	550	1.60	1.40	24.5	1030	0.8	1.40	22.5	800
35	0.9	0.3	2.0	24.5	680	1.60	1.40	26.5	1220	0.8	1.40	24.5	970
50	1.0	0.3	2.0	27.0	870	1.60	1.56	30.0	1480	0.8	1.56	27.5	1200
70	1.1	0.4	2.2	32.0	1210	2.00	1.56	34.0	2110	0.8	1.56	32.0	1600
95	1.1	0.4	2.2	35.0	1540	2.00	1.72	38.0	2570	0.8	1.56	35.0	2010
120	1.2	0.5	2.4	38.5	1930	2.00	1.88	41.5	3050	0.8	1.72	39.0	2440
150	1.4	0.5	2.6	43.0	2380	2.50	2.04	46.5	3970	0.8	1.88	43.0	2950
185	1.6	0.5	2.8	47.5	2950	2.50	2.20	51.0	4740	0.8	2.04	47.8	3590
240	1.7	0.6	3.0	53.0	3760	2.50	2.36	56.5	5760	0.8	2.20	53.0	4490
300	1.8	0.7	3.2	59.0	4630	3.15	2.52	63.0	7490	0.8	2.36	58.0	5490
400	2.0	0.7	3.6	66.0	5850	3.15	2.84	70.0	9080	0.8	2.68	65.5	6820
500	2.2	0.7	3.8	73.0	7420	4.00	3.00	79.0	11910	0.8	2.84	72.5	8400
630	2.4	0.7	4.0	81.0	9330	4.00	3.00	86.5	14230	0.8	3.00	80.0	10350

**1.1 KV 1.5 Sq.mm SOLID COPPER CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured,
PVC OUTER SHEATH COPPER CONTROL CABLES CONFORMING TO IS:7098 (Part - I)**

TABLE - 6

Number of cores	Nominal thickness of insulation	Minimum thickness of inner sheath	UN-ARMoured CABLES 2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	Single Layer - Wire (2XWY)				Single Layer - Strip (2XFY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	Nominal thickness of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable
Sq. mm	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km
2	0.7	0.3	1.8	11.0	120	1.4	1.24	13.0	310	-	-	-	-
3	0.7	0.3	1.8	11.5	140	1.4	1.24	14.0	340	-	-	-	-
4	0.7	0.3	1.8	12.5	160	1.4	1.24	14.5	390	-	-	-	-
5	0.7	0.3	1.8	13.0	190	1.4	1.24	15.0	400	-	-	-	-
6	0.7	0.3	1.8	14.0	210	1.4	1.24	15.5	450	-	-	-	-
7	0.7	0.3	1.8	14.0	230	1.4	1.24	15.5	470	-	-	-	-
8	0.7	0.3	1.8	15.0	260	1.4	1.24	16.5	500	-	-	-	-
9	0.7	0.3	1.8	16.0	280	1.4	1.24	17.5	540	-	-	-	-
10	0.7	0.3	1.8	17.0	310	1.4	1.24	19.0	590	-	-	-	-
12	0.7	0.3	1.8	17.5	350	1.4	1.24	19.5	640	-	-	-	-
14	0.7	0.3	1.8	18.5	390	1.4	1.40	20.0	680	-	-	-	-
16	0.7	0.3	1.8	19.0	440	1.6	1.40	21.5	850	0.8	1.40	20.0	670
19	0.7	0.3	1.8	20.0	500	1.6	1.40	22.0	930	0.8	1.40	21.0	730
24	0.7	0.3	2.0	21.5	640	1.6	1.40	25.0	1100	0.8	1.40	23.5	890
27	0.7	0.3	2.0	24.0	690	1.6	1.40	25.5	1170	0.8	1.40	24.0	940
30	0.7	0.3	2.0	24.5	750	1.6	1.40	26.0	1250	0.8	1.40	25.0	1020
37	0.7	0.3	2.0	26.0	890	1.6	1.40	28.0	1430	0.8	1.40	26.0	1190
44	0.7	0.3	2.0	29.0	1050	1.6	1.56	30.8	1680	0.8	1.40	29.0	1380
52	0.7	0.3	2.0	30.0	1240	1.6	1.56	32.0	1900	0.8	1.56	31.0	1620
61	0.7	0.4	2.2	32.5	1420	2.0	1.56	35.0	2290	0.8	1.56	32.5	1790

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**1.1 KV 2.5 Sq.mm SOLID COPPER CONDUCTOR, XLPE INSULATED, ARMoured / UN-ARMoured,
PVC OUTER SHEATH COPPER CONTROL CABLES CONFORMING TO IS:7098 (Part - I)**

TABLE - 7

Number of cores	Nominal thickness of insulation	Minimum thickness of inner sheath	UN-ARMoured CABLES 2XY			ARMoured CABLES							
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	Single Layer - Wire (2XWY)				Single Layer - Strip (2XFY)			
						Nominal diameter of armour wire	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	Nominal diameter of armour strip	Minimum thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable
	mm	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km	mm	mm	mm	Kg/Km
2	0.7	0.3	1.8	12.0	140	1.4	1.24	14.5	370	-	-	-	-
3	0.7	0.3	1.8	14.0	170	1.4	1.24	15.0	410	-	-	-	-
4	0.7	0.3	1.8	15.0	210	1.4	1.24	16.0	450	-	-	-	-
5	0.7	0.3	1.8	16.0	240	1.4	1.24	17.0	480	-	-	-	-
6	0.7	0.3	1.8	17.0	280	1.4	1.24	18.0	540	-	-	-	-
7	0.7	0.3	1.8	17.0	310	1.4	1.24	18.0	560	-	-	-	-
8	0.7	0.3	1.8	18.0	340	1.4	1.24	19.0	610	-	-	-	-
9	0.7	0.3	1.8	20.0	380	1.4	1.40	20.0	670	-	-	-	-
10	0.7	0.3	1.8	22.0	420	1.6	1.40	22.0	820	0.8	1.40	20.0	650
12	0.7	0.3	1.8	22.5	480	1.6	1.40	22.5	890	0.8	1.40	21.0	730
14	0.7	0.3	1.8	23.0	540	1.6	1.40	23.0	960	0.8	1.40	21.5	790
16	0.7	0.3	2.0	24.5	620	1.6	1.40	24.5	1060	0.8	1.40	22.0	880
19	0.7	0.3	2.0	25.0	710	1.6	1.40	25.0	1160	0.8	1.40	23.0	990
24	0.7	0.3	2.0	28.0	880	1.6	1.40	28.5	1400	0.8	1.40	26.0	1200
27	0.7	0.3	2.0	29.0	960	1.6	1.40	29.0	1500	0.8	1.40	27.0	1280
30	0.7	0.3	2.0	30.0	1050	1.6	1.40	29.5	1620	0.8	1.40	28.0	1390
37	0.7	0.3	2.0	32.0	1260	1.6	1.56	32.0	1890	0.8	1.40	30.0	1660
44	0.7	0.4	2.2	36.0	1520	2.0	1.56	36.0	2420	0.8	1.56	33.0	1940
52	0.7	0.4	2.2	37.5	1800	2.0	1.56	37.0	2720	0.8	1.56	34.5	2230
61	0.7	0.4	2.2	39.5	2020	2.0	1.56	38.5	3010	0.8	1.56	36.0	2480

CURRENT RATING FOR XLPE INSULATED COPPER CONDUCTOR 1.1 KV GRADE POWER CABLES

TABLE - 8

Nominal size of conductor	CABLE IN GROUND			CABLE IN AIR		
	Three Single Core Cable	Two Core Cable	Three, Three & Half & Four Core Cables	Three Single Core Cable	Two Core Cable	Three, Three & Half & Four Core Cables
	Sq.mm	Amp.	Amp.	Amp.	Amp.	Amp.
1.5	28	31	26	24	27	-
2.5	36	41	34	31	36	-
4	47	54	45	41	48	41
6	58	67	56	52	61	52
10	77	89	74	71	83	70
16	98	115	95	94	108	89
25	126	147	122	126	140	119
35	150	176	146	154	172	147
50	177	208	173	187	208	179
70	216	253	212	238	262	226
95	260	302	254	303	322	279
120	295	346	287	354	368	320
150	329	379	321	403	419	365
185	371	425	362	468	482	422
240	427	486	418	553	566	500
300	477	541	460	634	644	574
400	537	602	528	737	734	662
500	598	665	593	844	831	760
630	661	728	661	961	936	870
800	721	-	-	1077	-	-
1000	772	-	-	1188	-	-

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



CURRENT RATING FOR XLPE INSULATED ALUMINIUM CONDUCTOR 1.1 KV GRADE POWER CABLES

TABLE - 9

Nominal size of conductor	CABLE IN GROUND				CABLE IN AIR			
	SINGLE CORE CABLES		Two Core Cable	Three, Three & Half & Four Core	SINGLE CORE CABLES		Two Core Cable	Three, Three & Half & Four Core
	Two Cables	Three Cables			Two Cables	Three Cables		
Sq.mm	Amp.	Amp.	Amp.	Amp.	Amp.	Amp.	Amp.	Amp.
4	43	37	43	35	38	33	38	32
6	55	47	55	46	50	43	50	42
10	69	59	68	57	64	55	64	54
16	89	76	89	74	84	72	83	69
25	115	98	114	95	112	98	109	93
35	137	114	136	114	137	119	133	114
50	161	137	161	134	165	145	162	138
70	198	168	197	164	209	185	204	175
95	243	202	235	197	264	235	251	216
120	276	230	266	223	308	276	287	249
150	308	256	296	249	350	314	328	284
185	349	290	335	282	406	366	379	329
240	404	335	385	327	480	434	448	392
300	455	376	432	369	551	500	513	452
400	518	429	487	420	647	587	593	526
500	588	485	548	478	751	685	683	612
630	663	546	612	542	868	793	784	712
800	740	608	-	-	992	907	-	-
1000	812	665	-	-	1117	1022	-	-

**CURRENT RATING (A.C.) FOR
COPPER CONDUCTOR 1.1 KV XLPE INSULATED
CONTROL CABLES CONF. TO IS:7098 (Part-1)
XLPE INSULATION**

TABLE - 10

No. of Cores	1.5 Sq. mm		2.5 Sq. mm	
	Laid in Ground	Laid in Air	Laid in Ground	Laid in Air
	Amp.	Amp.	Amp.	Amp.
2	31	27	41	36
3	26	23	34	30
4	26	23	34	30
5	26	23	34	30
6	24	21	32	28
7	24	21	30	25
8	22	19	28	24
9	20	18	25	22
10	18	16	24	21
12	17	15	22	20
14	16	14	21	19
16	16	14	20	18
19	15	13	19	17
21	14	12	18	16
24	13	12	17	16
27	13	11	16	15
30	12	11	15	14
37	11	10	15	13
44	11	9	14	12
52	10	9	13	12
61	9	8	12	11



SOLID / STRANDED CONDUCTOR FOR INSULATED CABLES CONFORMING TO IS:8130

TABLE - 11

Nominal size of conductor Sq.mm	SOLID CONDUCTOR CLASS-1		STRANDED CONDUCTOR CLASS - 2					
	Minimum Resistance Conductor at 20°C		Minimum number of Wires in Conductors				Maximum Resistance Conductor at 20°C	
			Circular Conductor (non-compacted)		Circular Conductor (Shaped Compacted)		Plain Copper	Aluminium
	Plain Copper Ohm / km	Aluminium Ohm / km	Copper	Aluminium	Copper	Aluminium	Ohm / km	Ohm / km
1.5	12.10	18.10	3	3	-	-	12.10	18.10
2.5	7.41	12.10	3	3	-	-	7.41	12.10
4	4.61	7.41	7	3	-	-	4.61	7.41
6	3.08	4.61	7	3	-	-	3.08	4.61
10	-	3.08	7	7	6	-	1.83	3.08
16	-	-	7	7	6	6	1.15	1.91
25	-	-	7	7	6	6	0.727	1.200
35	-	-	7	7	6	6	0.524	0.868
50	-	-	19	19	6	6	0.387	0.641
70	-	-	19	19	12	12	0.268	0.443
95	-	-	19	19	15	15	0.193	0.320
120	-	-	37	37	18	15	0.153	0.253
150	-	-	37	37	18	15	0.1240	0.206
185	-	-	37	37	30	30	0.0991	0.164
240	-	-	61	61	34	30	0.0754	0.125
300	-	-	61	61	34	30	0.0601	0.1000
400	-	-	61	61	53	53	0.0470	0.0778
500	-	-	61	61	53	53	0.0366	0.0605
630	-	-	91	91	53	53	0.0283	0.0469
800	-	-	91	91	53	53	0.0221	0.0367
1000	-	-	91	91	53	53	0.0176	0.0291

CALCULATED VALUE OF A.C. RESISTANCE / REACTANCE / CAPACITANCE OF XLPE CABLES

TABLE - 12

Nominal size of conductor	AC resistance of Aluminium Conductor. Maximum Operating Temperature (Ohm/Km) Maximum Conductor Temperature 90°C	Reactance @ 50Hz (Ohm / Km)			Capacitance (Micro Faradas / Km)		
		XLPE INSULATED CABLE		Twin & Multicore	XLPE INSULATED CABLE		Twin & Multicore
		Single Core Cables			Single Core Cables		
		(Sq.mm)	Ohm / km		Un-armoured	Armoured	
4	9.48	0.132	-	0.0927	0.29	-	0.22
6	5.90	0.123	-	0.0884	0.34	-	0.25
10	3.94	0.114	0.134	0.0837	0.43	0.32	0.31
16	2.44	0.108	0.125	0.0808	0.51	0.38	0.36
25	1.54	0.1030	0.120	0.0805	0.49	0.38	0.41
35	1.11	0.0986	0.114	0.0783	0.57	0.44	0.47
50	0.820	0.0937	0.108	0.0750	0.58	0.46	0.50
70	0.567	0.0900	0.102	0.0740	0.63	0.51	0.53
95	0.410	0.0865	0.1000	0.0724	0.73	0.59	0.61
120	0.325	0.0841	0.0968	0.0712	0.74	0.61	0.63
150	0.265	0.0839	0.0941	0.0716	0.73	0.61	0.60
185	0.211	0.0836	0.0932	0.0718	0.69	0.59	0.60
240	0.162	0.0813	0.0900	0.0710	0.74	0.64	0.63
300	0.1300	0.0795	0.0881	0.0705	0.80	0.69	0.67
400	0.1023	0.0787	0.0873	0.0704	0.83	0.70	0.67
500	0.0808	0.0779	0.0859	0.0702	0.83	0.71	0.69
630	0.0648	0.0765	0.0843	0.0698	0.87	0.75	0.73
800	0.0530	0.0750	0.0820	-	0.95	0.86	-
1000	0.0440	0.0690	0.0810	-	0.99	0.88	-



SHORT CIRCUIT RATING OF XLPE INSULATED HEAVY DUTY CABLES (FOR ONE SECOND DURATION)

TABLE - 13

Nominal size of conductor	ALUMINIUM CONDUCTOR	COPPER CONDUCTOR
Sq.mm	K.Amp.	K.Amp.
1.5	-	0.210
2.5	-	0.360
4	0.380	0.570
6	0.570	0.860
10	0.940	1.430
16	1.500	2.290
25	2.350	3.580
35	3.290	5.010
50	4.700	7.150
70	6.580	10.010
95	8.930	13.590
120	11.280	17.160
150	14.100	21.450
185	17.390	26.460
240	22.560	34.320
300	28.200	42.900
400	37.600	57.200
500	47.000	71.500
630	59.220	90.090
800	75.500	114.300
1000	94.000	143.000

RATING FACTOR FOR VARIATION IN GROUND AND DUCT TEMPERATURE

TABLE - 14

Temperature °C	Rating Factor (Maximum conductor temperature 90° C)
15	1.12
20	1.08
25	1.04
30	1.00
35	0.96
40	0.91
45	0.87
50	0.82
55	0.78

RATING FACTOR FOR VARIATION IN AMBIENT AIR TEMPERATURE FOR XLPE CABLES

TABLE - 15

Temperature °C	Rating Factor (Maximum conductor temperature 90° C)
25	1.14
30	1.10
35	1.06
40	1.00
45	0.95
50	0.89
55	0.84
60	0.77

RATING FACTOR FOR DEPTH OF LAYING (CABLES LAID DIRECT IN THE GROUND)

TABLE - 16

Depth of Laying Cm	1.1 KV XLPE Cables
90	1.00
105	0.99
120	0.97
150	0.95
180	0.94
200	0.93
250	0.91
300	0.90
or more	

GROUP RATING FACTORS FOR CIRCUITS OF THREE SINGLE - CORE CABLES, IN TREFOIL LAID 'DIRECT IN THE GROUND

TABLE - 17

No. of Circuits	Spacing between Trefoil Group Centres (Cm)				
	Touching	20	40	60	80
2	0.76	0.83	0.87	0.90	0.92
3	0.64	0.72	0.79	0.83	0.86
4	0.58	0.67	0.75	0.80	0.84
5	0.53	0.63	0.71	0.77	0.81
6	0.50	0.60	0.69	0.76	0.80
7	0.47	0.58	0.67	0.74	0.79
8	0.45	0.56	0.66	0.73	-
9	0.43	0.55	0.65	0.73	-
10	0.42	0.54	0.64	-	-
11	0.41	0.53	0.64	-	-
12	0.40	0.52	0.63	-	-



RATING FACTORS FOR CABLES LAID ON RACKS IN AIR WITH CABLE TOUCHING, TRAYS ARE IN TIERS SPACED BY 30cm AND CLEARANCE BETWEEN THE WALL AND CABLE IS 25cm

TABLE - 18

No. of Racks	Number of Cables per Rack				
	1	2	3	6	9
1	1.00	0.84	0.80	0.75	0.73
2	1.00	0.80	0.76	0.71	0.69
3	1.00	0.78	0.74	0.70	0.68
6	1.00	0.76	0.72	0.68	0.66

RATING FACTORS FOR THREE SINGLE CORE CABLES IN TREFOIL ON RACKS IN AIR (WITH SPACING BETWEEN CABLES EQUAL TO TWICE THE CABLE DIAMETER)

TABLE - 19

No. of Racks	Number of Cables per Rack		
	1	2	3
1	1.00	0.98	0.96
2	1.00	0.95	0.93
3	1.00	0.94	0.92
6	1.00	0.93	0.90

GROUP RATING FACTORS FOR MULTICORE CABLES IN GROUND HORIZONTAL FORMATION

TABLE - 20

Number of Cables in group	Spacing			
	Touching	15 cm	30 cm	45 cm
2	0.78	0.81	0.85	0.88
3	0.68	0.71	0.76	0.79
4	0.61	0.65	0.71	0.75
5	0.56	0.60	0.67	0.72
6	0.53	0.57	0.64	0.69
7	0.50	0.55	0.62	0.67
8	0.48	0.53	0.60	0.66
9	0.46	0.51	0.59	0.65
10	0.45	0.50	0.58	0.64

RATING FACTORS FOR MULTICORE CABLES LAID ON RACKS IN AIR (WITH CABLE SPACING BETWEEN CABLES EQUAL TO DIAMETER OF CABLE)

TABLE - 21

Number of racks	Number of cables per rack				
	1	2	3	6	9
1	1.00	0.98	0.96	0.93	0.92
2	1.00	0.95	0.93	0.90	0.89
3	1.00	0.94	0.92	0.89	0.88
6	1.00	0.93	0.90	0.87	0.86

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE SINGLE - CORE CABLES AND THREE CORE XLPE CABLES LAID DIRECT IN THE GROUND

TABLE - 22

Nominal size of conductor	Three single core cables Thermal Resistivity of Soil in °C CM/W						Three core cables Thermal Resistivity of Soil in °C CM/W					
	Sq. mm	100	120	150	200	250	300	100	120	150	200	250
25	1.17	1.09	1.00	0.88	0.80	0.74	1.16	1.08	1.00	0.90	0.82	0.75
35	1.18	1.10	1.00	0.88	0.80	0.74	1.16	1.08	1.00	0.90	0.81	0.75
50	1.19	1.10	1.00	0.88	0.80	0.73	1.16	1.08	1.00	0.88	0.81	0.75
70	1.19	1.10	1.00	0.88	0.80	0.73	1.16	1.09	1.00	0.88	0.81	0.75
95	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
120	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
150	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
185	1.19	1.10	1.00	0.88	0.79	0.72	1.16	1.09	1.00	0.88	0.81	0.75
240	1.20	1.11	1.00	0.88	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
300	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
400	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
500	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.74
630	1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-
800	1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-
1000	1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-



Estimated Voltage Drops in XLPE Cables (Aluminium Conductor)
(Voltage drop unit: Volts/Km/Amps)

TABLE- 23

Cores	Cable Sqmm.																		
	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000
Single Core	18.98	11.80	7.88	4.90	3.08	2.23	1.65	1.15	0.83	0.66	0.55	0.44	0.35	0.30	0.24	0.23	0.21	0.20	0.18
Multi Core	16.44	10.22	6.82	4.24	2.67	1.94	1.44	1.00	0.70	0.56	0.48	0.40	0.30	0.26	0.22	0.20	0.18	----	----

* Above voltage drops (volts/km/amps) to be multiplied with rated current and length of cable in K.M. to calculate total voltage drop in particular length and size of Cables.

Estimated Voltage Drops in XLPE Cables 1100 Volts Armoured Control Cables (Copper Conductor)
(Voltage drop unit: Volts/Km)

TABLE- 24

Sqmm.	No. of Cores																			
	2	3	4	5	6	7	8	9	10	12	14	16	19	24	27	30	37	44	52	61
1.5	725	859	859	644	564	537	510	483	483	456	430	403	376	349	322	295	295	268	268	242
2.5	584	691	691	522	445	430	415	399	384	369	338	322	307	276	261	230	230	215	215	200

"The above Data are approximate and subject to manufacturing tolerance"

GROUP RATING FACTORS FOR TWIN AND MULTI - CORE CABLES IN HORIZONTAL FORMATION, LAID DIRECT IN THE GROUND

TABLE - 25

No. of Cables	Spacing of Cables (Centre to Centre)				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2	0.80	0.84	0.87	0.90	0.91
3	0.68	0.74	0.79	0.83	0.86
4	0.62	0.69	0.75	0.80	0.83
5	0.58	0.65	0.72	0.77	0.80
6	0.55	0.62	0.69	0.75	0.78
7	0.52	0.59	0.67	0.73	0.77
8	0.50	0.57	0.66	0.72	0.75
9	0.48	0.55	0.65	0.71	0.75
10	0.46	0.54	0.64	0.70	0.74
11	0.45	0.53	0.63	0.70	0.74
12	0.44	0.52	0.62	0.69	0.73

GROUP RATING FACTORS FOR TWIN AND MULTI - CORE CABLES IN TIER FORMATION, LAID DIRECT IN THE GROUND

TABLE - 26

No. of Cables	No. of Tiers	Spacing of Cables (Centre to Centre)				
		Touching	15 Cm	30 Cm	45 Cm	60 Cm
2	1	0.80	0.84	0.87	0.90	0.91
3	1	0.68	0.74	0.79	0.83	0.86
4	2	0.60	0.66	0.73	0.77	0.79
5	2	0.55	0.61	0.68	0.71	0.73
6	2	0.51	0.57	0.63	0.67	0.69
7	3	0.48	0.54	0.59	0.63	0.64
8	3	0.46	0.51	0.56	0.60	0.61
9	3	0.44	0.48	0.53	0.57	0.58
10	4	0.42	0.47	0.52	0.55	0.56
11	4	0.41	0.46	0.50	0.54	0.55
12	4	0.40	0.45	0.49	0.53	0.54



BENDING RADIUS:

While Installing 'GLOSTER' Cables, the following minimum bending radius should be observed such that the cables, and especially the insulation, are not damaged. Wherever possible, larger bending radii should be used.

RECOMMENDED MINIMUM BENDING RADII

(12 X D) For Multi Core Cables

(15 X D) For Single Core Cables

Where 'D' is the overall diameter of Cables.

TESTING INSULATION RESISTANCE MEASUREMENT OF CABLE

The voltage rating of I R Tester (Megger) should be chosen as following table:

VOLTAGE GRADE OF CABLES	RATING OF IR TESTER (MEGGER)
1.1 KV	500 V

TESTING DURING LAYING:

All new cables shall be megger-tested before jointing. After jointing is completed all cables shall be megger-tested.

JOINTING OF CABLE:

The emphasis should be laid on quality and selection of proper cable accessories, proper jointing techniques and skill and workmanship of the working personnel. The quality of joint should be such that it does not add any resistance to the circuit. The materials and techniques employed should give adequate mechanical and electrical protection to the joints under all service conditions. The joint should further be resistant to corrosion and other chemical effects. Termination and jointing of power and control cables shall be done by means of compression methods using solder less tinned copper/Aluminum terminal lugs.

HIGH VOLTAGE TEST:

Cables after jointing and terminations are subjected to dc high voltage test. The recommended test voltage are given in I.S. 1255 - 1983.

The cable cores must be discharge after completion of dc high voltage test.



HIGH VOLTAGE CABLES

Cross Linked Polyethylene Cable i.e. XLPE Cable was developed in late 1970 to overcome the susceptibility of PILC Cables to ingress of moisture. Hence the advent of XLPE cables marked the beginning of a gradual but steady replacement of Paper Cables in almost all voltage applications.

The excellent thermal properties of XLPE Cable permit maximum continuous conductor operating temperature of 90°C and short circuit temperature of 250°C. Moreover, it has low dielectric loss, which does not vary much over the entire operating temperature range. These characteristics, along with the low dielectric constant, make XLPE Cable particularly suitable for high voltage applications. Given below are additional outstanding features.

HIGH CONTINUOUS CURRENT RATING:

Its ability to withstand higher operating temperature of 90°C enables much higher current rating than those of PVC or PILC cables.

HIGH SHORT CIRCUIT RATING:

Maximum allowable conductor temperature during short circuit of 250°C is considerably higher than for PVC or PILC Cables resulting in greater short circuit withstand capacity.

HIGH EMERGENCY LOAD CAPACITY:

XLPE Cables can be operated even at 130°C during emergency, therefore in systems, where cables are installed in parallel; failure of one of two cables will not bring down the system capacity for some time.

LOW DIELECTRIC LOSSES:

XLPE Cables have low dielectric loss angle. Moreover, these losses occur continuously in every charged cable whether it carries load or not. Hence use of XLPE Cable at higher voltage would result in considerable saving in costs.

LOWER CHARGING CURRENTS:

The charging currents are considerably lower permitting close setting of protection relays.

EASY LAYING AND INSTALLATION:

Low weight and small bending radii make laying and installation of cable very easy. The cable requires less supports due to low weight.

HIGH SAFETY:

Cables have High safety against mechanical damage and vibrations.

APPLICATIONS:

- 1 Used extensively in all power generating plants and industrial plants.
- 2 Used in chemical and fertilizer units where cables are exposed to chemical corrosion.
- 3 Used in heavy industries where severe load fluctuations occur.
- 4 Used in systems where there are frequent over voltages.
- 5 Used at higher ambient temperatures on account of their higher operating temperatures.
- 6 Used even under most difficult cable route conditions such as city distribution network.

DESIGN AND CONSTRUCTION

CONDUCTOR

The conductors made from E.C. grade aluminum wires, are stranded together and compacted. All sizes of conductors of single or three core cables are circular in shape.

Conductor construction and testing comply to IS 8130-1984 as amended up to date.

Cables with copper conductor can also be offered.

CONDUCTOR SCREENING

Conductor screening is employed for all cables above 3.3 KV grade in the form of a semi conducting extrusion over the conductor.

XLPE INSULATION

High quality XLPE unfilled insulating compound of natural color is used for insulation. Insulation is applied by extrusion process and is chemically cross-linked by silane process.



INSULATION SCREENING

The cables rated above 3.3 KV are provided with insulation shielding over the insulation. The screening is provided with an extruded layer of semi conducting compound. Over the semi conducting covering, a metallic screen in the form of copper tape is provided.

CORE SHIELDING

XLPE insulation and insulation shielding are all extruded in one operation by a special process. This process ensures perfect bonding of inner and outer shielding with insulation. The bond prevents the formation of cavities at the surface of the conductor when the cable is subjected to bends. The void formation, at the interface of the semi conducting layer and insulation, too is eliminated even during heating and cooling cycles in the operation.

INNER SHEATH (COMMON COVERING)

In case of multi core cables, cores are stranded together with suitable non-hygroscopic fillers in the interstices and provided with common covering of plastic tapes wrapping. As an alternative to wrapped inner sheath, extruded PVC inner sheath can also be provided.

ARMOURING:

Armouring is applied over the inner sheath and normally comprise of galvanized Steel Wire or galvanized Steel Strips for multi core Cables. For Mining use and other special applications, double Wire/Strip armoured cables with Tinned Copper wires can also be offered. Single core armoured cables are provided with non-magnetic armour consisting of hard drawn flat or round aluminum wires.

OUTER SHEATH:

A tough Outer Sheath of Heat Resisting PVC compound (Type ST2) as per IS - 5831 is extruded over the armouring in case of armoured cables or over non-magnetic metallic tape covering the insulation or over the non-magnetic metallic part of insulation screening in case of unarmoured single core cables. This is always black in color for best resistance to outdoor exposure. The Outer Sheath is embossed with "Gloster", the voltage grade and the year of manufacture.

CORE IDENTIFICATION

The Core identification complies with the requirements of IS-7098 (Part II) as shown below:

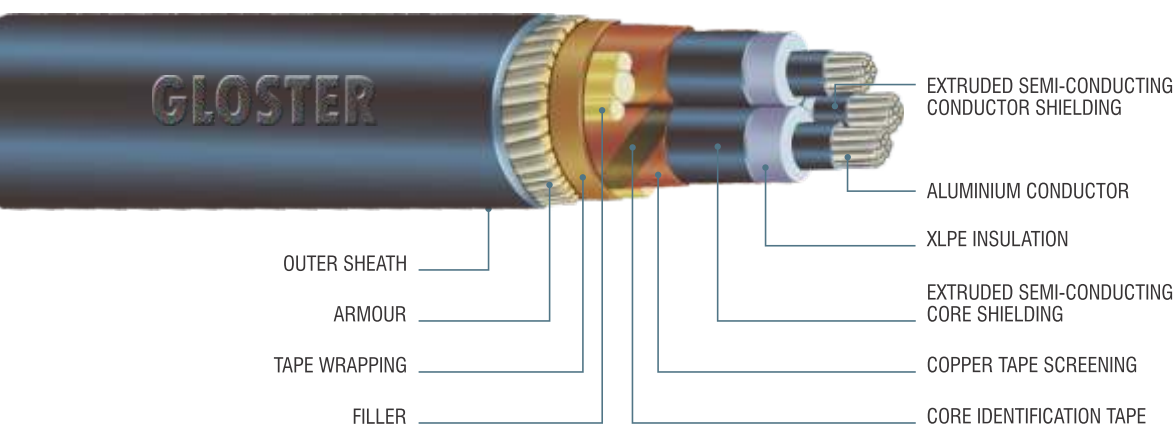
- By numerals (1, 2, 3) printed on cores. OR
- By colored strips applied on the cores.

TESTING AND QUALITY ASSURANCE

XLPE Cables are manufactured under advanced manufacturing and testing facilities. The cables are type tested and routine tested in accordance with IS - 7098 (Part - II) 1985.

The following tests are carried out as routine tests on every length of cables manufactured:

- a) Conductor resistance test
- b) Partial discharge tes
- c) High Voltage test





TEST VOLTAGES:

The following test voltage is applied between conductor and screen / armour:

VOLTAGE RATING OF CABLES	TEST VOLTAGE
1.9/3.3 or 3.3/3.3KV	10 KV (rms) for 5 Minutes
3.8/6.6 KV (E)	12 KV (rms) for 5 Minutes
6.35/11 KV (E)	17 KV (rms) for 5 Minutes
11/11 KV (UE)	28 KV (rms) for 5 Minutes
12.7/22 KV (E)	32 KV (rms) for 5 Minutes
19/33 KV (E)	48 KV (rms) for 5 Minutes

In order to achieve consistency in quality, in addition to above tests, rigorous quality control measures are effected at every stage of production. Accordingly every batch of raw materials and process cables are tested to check for their physical and electrical properties.

SHORT CIRCUIT RATING OF HT XLPE CABLES:

Thermally admissible short circuit current are depicted in the graph below:-

Full load conductor temperature prior to short circuit 90° C

Maximum short circuit conductor temperature: 250° C

Formula $I_k = 0.094 A / \sqrt{t}$

I_k : Short Circuit Current In KA (rms)

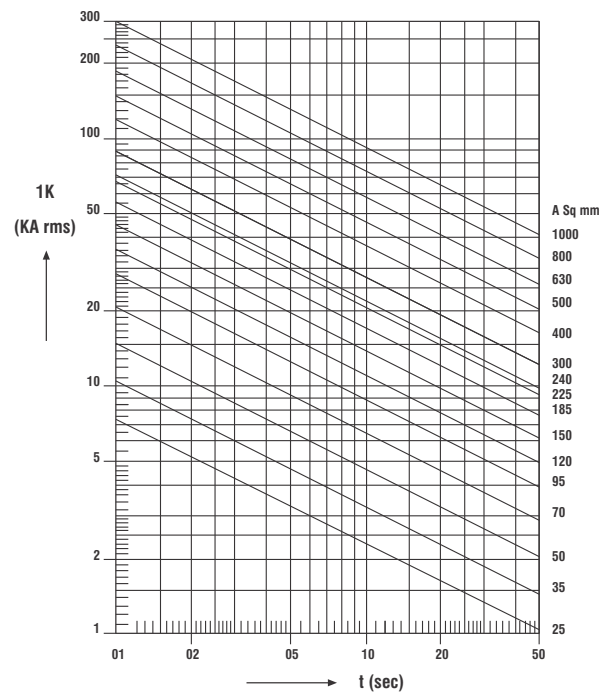
t : Duration of short circuit in seconds

A : Area of aluminum conductor in mm²

Short circuit ratings of cables for one-second duration are given in the respective tables 1-10. For any other duration of t seconds divide the value given in the respective table by $(\sqrt{t})$.

OPERATING CHARACTERISTICS:

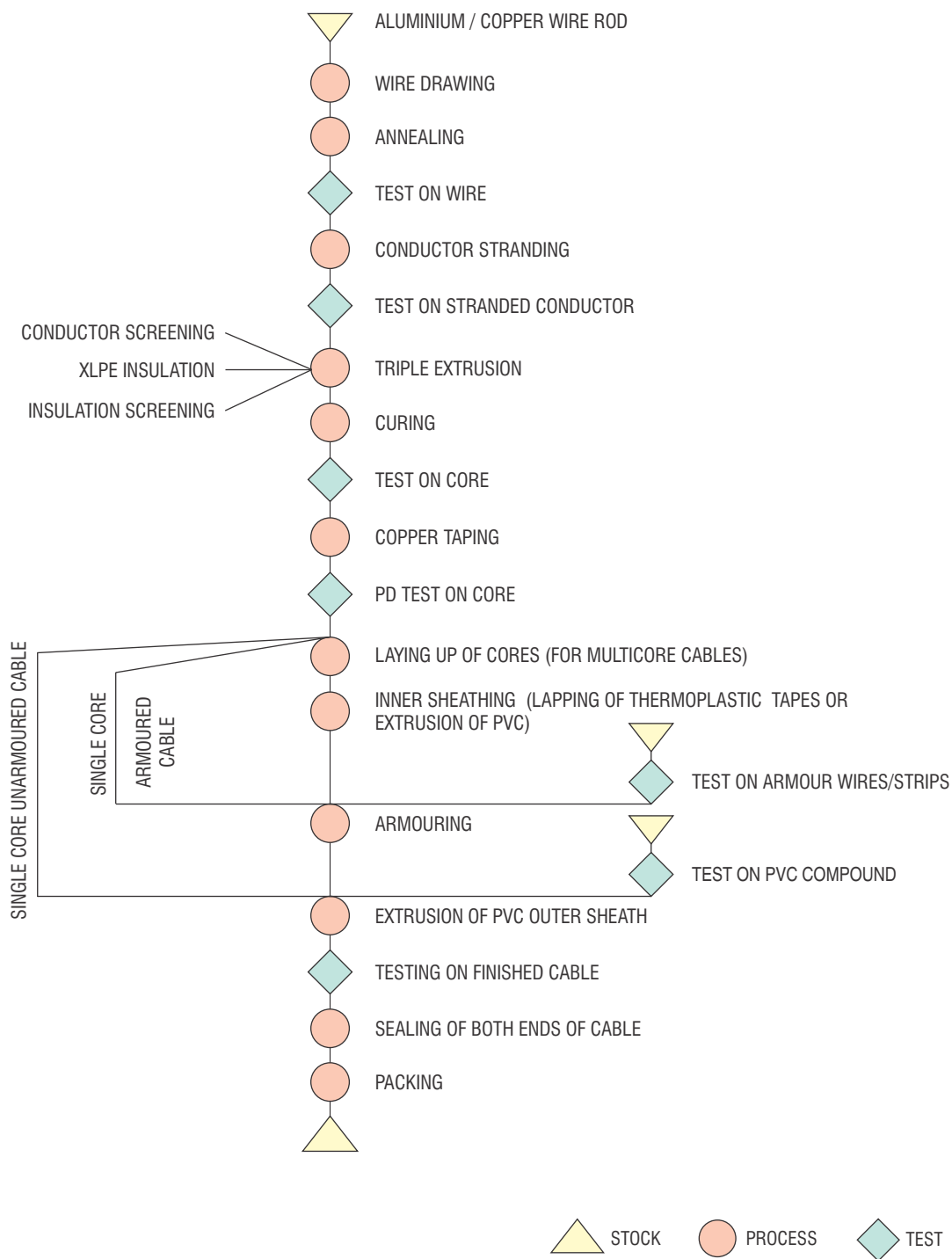
The construction data and current rating of cables with aluminum conductor are shown in tables. These are based on standard conditions of installations as provided below:



Maximum continuous operating conductor temperature for XLPE Cables	=90° C
Standard ground temperature	=30° C
Ambient air temperature	=40° C
Thermal Resistivity of soil	=150° C
Depth of laying (for cables laid direct in ground)	=90 cms for cables up to 11 KV (E) / (UE) grade =105 cms for 22KV and 33 KV grade cables



FLOW CHART FOR MANUFACTURING PROCESSES AND QUALITY CONTROL CHECKS FOR XLPE CABLES CONFORMING TO IS: 7098 (PART - II) 85





3.3 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, UNSCREENED, ARMoured / UNARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 1

Nominal area of conductor	UNARMoured CABLE				HARD DRAWN ALUMINIUM WIRE ARMOUR					CURRENT RATING	
	Nominal thickness of insulation	Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal thickness of insulation	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	mm	kg/km	Amps	Amps
25	2.2	1.8	14.4	240	2.5	1.4	1.24	16.8	330	97	104
35	2.2	1.8	15.4	310	2.5	1.4	1.24	17.8	380	115	127
50	2.2	1.8	16.5	370	2.5	1.4	1.4	19.3	450	136	153
70	2.2	1.8	18.0	470	2.5	1.6	1.4	21.4	560	166	192
95	2.2	2.0	20.0	610	2.5	1.6	1.4	23.0	670	196	237
120	2.2	2.0	21.6	720	2.5	1.6	1.4	24.5	770	225	275
150	2.2	2.0	23.0	850	2.5	1.6	1.4	25.7	870	253	317
185	2.2	2.0	24.7	1010	2.5	1.6	1.4	27.5	1010	285	362
240	2.2	2.0	27.0	1250	2.5	1.6	1.56	30.0	1230	330	433
300	2.2	2.0	29.0	1490	2.5	1.6	1.56	32.2	1440	373	504
400	2.2	2.2	32.4	1890	2.6	2.0	1.56	36.0	1780	427	598
500	2.4	2.2	36.0	2360	2.8	2.0	1.56	39.7	2170	485	694
630	2.6	2.2	39.6	2940	3.0	2.0	1.72	43.6	2700	551	815
800	2.8	2.4	44.5	3720	3.3	2.0	1.88	48.6	3360	625	969
1000	3.0	2.6	49.1	4630	3.5	2.5	2.04	54.3	4320	692	1103

3.8 / 6.6 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured / UNARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 2

Nominal area of conductor	Nominal thickness of insulation	UNARMoured CABLE			HARD DRAWN ALUMINIUM WIRE ARMOUR				CURRENT RATING	
		Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	2.8	1.8	18.0	350	1.6	1.40	21.3	520	97	106
35	2.8	2.0	19.3	420	1.6	1.40	22.3	580	115	130
50	2.8	2.0	20.4	470	1.6	1.40	23.4	650	135	156
70	2.8	2.0	22.0	570	1.6	1.40	25.1	760	166	196
95	2.8	2.0	23.6	660	1.6	1.40	26.7	870	197	239
120	2.8	2.0	25.1	770	1.6	1.40	28.2	990	224	286
150	2.8	2.0	26.4	860	1.6	1.56	29.8	1120	252	318
185	2.8	2.0	28.0	1000	1.6	1.56	31.7	1280	284	368
240	2.8	2.2	31.0	1230	2.0	1.56	35.0	1560	329	440
300	3.0	2.2	33.3	1460	2.0	1.56	37.5	1820	372	509
400	3.3	2.2	36.8	1790	2.0	1.72	41.3	2220	427	602
500	3.5	2.4	40.8	2220	2.0	1.88	45.5	2720	484	699
630	3.5	2.4	44.0	2670	2.0	1.88	48.7	3210	550	817
800	3.5	2.6	48.5	3290	2.5	2.04	54.1	4050	620	965
1000	3.6	2.8	52.9	4010	2.5	2.20	58.8	4920	690	1096

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



6.35 / 11 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED / ARMoured / UNARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 3

Nominal area of conductor	Nominal thickness of insulation	UNARMoured CABLE			HARD DRAWN ALUMINIUM WIRE ARMOUR				CURRENT RATING	
		Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	3.6	2.0	20.0	420	1.6	1.40	23.0	600	97	107
35	3.6	2.0	21.0	470	1.6	1.40	24.0	660	115	134
50	3.6	2.0	22.0	530	1.6	1.40	25.0	730	135	160
70	3.6	2.0	23.5	630	1.6	1.40	26.6	830	165	200
95	3.6	2.0	25.0	740	1.6	1.40	28.3	960	197	245
120	3.6	2.0	26.7	850	1.6	1.56	30.2	1100	224	286
150	3.6	2.0	28.0	940	1.6	1.56	31.4	1210	251	324
185	3.6	2.2	30.0	1110	2.0	1.56	34.5	1440	283	373
240	3.6	2.2	32.4	1310	2.0	1.56	36.6	1670	328	445
300	3.6	2.2	34.5	1520	2.0	1.56	38.1	1900	371	513
400	3.6	2.2	37.5	1820	2.0	1.72	42.0	2270	425	603
500	3.6	2.4	41.0	2240	2.0	1.72	45.3	2690	484	705
630	3.6	2.4	44.0	2690	2.0	1.88	48.1	3230	550	821
800	3.6	2.6	48.6	3300	2.5	2.04	54.3	4100	623	964
1000	3.6	2.8	52.8	4010	2.5	2.20	58.8	4920	690	1094

11 / 11 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED / ARMoured / UNARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 4

Nominal area of conductor	Nominal thickness of insulation	UNARMoured CABLE			HARD DRAWN ALUMINIUM WIRE ARMOUR				CURRENT RATING	
		Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	5.5	2.0	23.8	560	1.6	1.40	26.8	770	97	112
35	5.5	2.0	24.8	620	1.6	1.40	27.8	840	115	137
50	5.5	2.0	25.9	690	1.6	1.56	29.3	940	136	165
70	5.5	2.0	27.5	790	1.6	1.56	31.0	1060	166	206
95	5.5	2.0	29.1	910	2.0	1.56	33.3	1220	198	250
120	5.5	2.2	31.0	1050	2.0	1.56	35.2	1390	225	291
150	5.5	2.2	32.3	1160	2.0	1.56	36.5	1510	252	330
185	5.5	2.2	34.2	1310	2.0	1.56	38.3	1680	285	379
240	5.5	2.2	36.3	1530	2.0	1.72	40.8	1960	330	450
300	5.5	2.2	38.4	1750	2.0	1.72	43.0	2210	373	518
400	5.5	2.4	41.8	2110	2.0	1.88	45.6	2620	427	608
500	5.5	2.4	45.0	2500	2.5	2.04	51.0	3280	486	709
630	5.5	2.6	48.5	3020	2.5	2.04	53.5	3720	553	822
800	5.5	2.8	53.0	3670	2.5	2.20	58.9	4580	628	964
1000	5.5	2.8	56.9	4350	2.5	2.36	62.7	5270	697	1090

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**12.7 / 22 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED / ARMoured / UNARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 5

Nominal area of conductor	Nominal thickness of insulation	UNARMoured CABLE			HARD DRAWN ALUMINIUM WIRE ARMOUR				CURRENT RATING	
		Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
35	6.0	2.0	25.8	660	1.6	1.40	29.0	900	114	143
50	6.0	2.0	26.9	730	1.6	1.56	30.4	990	134	167
70	6.0	2.0	28.5	840	1.6	1.56	32.1	1110	164	207
95	6.0	2.2	30.5	990	2.0	1.56	34.9	1320	195	253
120	6.0	2.2	32.0	1110	2.0	1.56	36.4	1460	221	291
150	6.0	2.2	33.5	1220	2.0	1.56	37.7	1580	250	333
185	6.0	2.2	35.3	1370	2.0	1.56	39.4	1760	280	380
240	6.0	2.2	37.4	1590	2.0	1.72	42.0	2040	326	450
300	6.0	2.2	39.6	1820	2.0	1.72	44.1	2290	367	521
400	6.0	2.4	42.7	2180	2.0	1.88	47.6	2700	420	616
500	6.0	2.6	46.4	2620	2.5	2.04	52.1	3380	478	709
630	6.0	2.6	49.6	3100	2.5	2.04	55.2	3900	530	770
800	6.0	2.8	54.0	3730	2.5	2.20	60.1	4700	590	920
1000	6.0	3.0	58.2	4500	2.5	2.36	64.1	5490	640	980

**19 / 33 KV, SINGLE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED / ARMoured / UNARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 6

Nominal area of conductor	Nominal thickness of insulation	UNARMoured CABLE			HARD DRAWN ALUMINIUM WIRE ARMOUR				CURRENT RATING	
		Nominal thickness of sheath	Approx overall dia of cable	Approx wt of cable	Nominal dia of Aluminium wire	Minimum thickness of outer sheath	Approx overall dia of cable	Approx wt of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
50	8.8	2.2	33.0	1040	2.0	1.56	37.3	1400	135	170
70	8.8	2.2	34.7	1160	2.0	1.56	38.9	1540	165	212
95	8.8	2.2	36.3	1300	2.0	1.72	40.9	1730	196	258
120	8.8	2.2	37.8	1430	2.0	1.72	42.4	1880	223	297
150	8.8	2.2	39.0	1550	2.0	1.72	43.7	2020	250	339
185	8.8	2.4	41.3	1770	2.0	1.88	46.0	2270	282	386
240	8.8	2.4	43.6	2010	2.0	1.88	48.2	2530	326	464
300	8.8	2.6	46.1	2300	2.5	2.04	51.7	3050	369	526
400	8.8	2.6	48.9	2650	2.5	2.04	54.6	3450	423	617
500	8.8	2.8	52.6	3120	2.5	2.20	58.5	4020	481	713
630	8.8	2.8	55.7	3640	2.5	2.36	62.0	4630	530	770
800	8.8	3.0	60.2	4340	2.5	2.36	66.2	5330	590	920
1000	8.8	3.2	64.5	5120	3.15	2.52	72.0	6380	640	980

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



1.9 / 3.3 KV & 3.3 / 3.3 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, UNSCREENED, ARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 7

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	2.2	0.3	1.6	1.56	30.2	1360.0	4.0x0.80	1.40	28.2	1070.0	93	97
35	2.2	0.3	1.6	1.56	32.3	1600.0	4.0x0.80	1.56	30.7	1260.0	111	119
50	2.2	0.4	2.0	1.56	35.7	2070.0	4.0x0.80	1.56	33.3	1550	132	148
70	2.2	0.4	2.0	1.56	39.1	2470.0	4.0x0.80	1.56	36.7	1870	160	185
95	2.2	0.4	2.0	1.72	43.0	2740.0	4.0x0.80	1.72	40.7	2250	192	225
120	2.2	0.5	2.0	1.88	46.7	3410.0	4.0x0.80	1.72	44.0	2660	218	253
150	2.2	0.5	2.5	2.04	50.9	4280.0	4.0x0.80	1.88	46.3	3080	245	290
185	2.2	0.5	2.5	2.04	54.8	4890.0	4.0x0.80	2.04	51.4	3600	275	330
240	2.2	0.6	2.5	2.20	60.1	5790.0	4.0x0.80	2.20	56.7	4410	318	400
300	2.2	0.6	2.5	2.36	65.1	6690.0	4.0x0.80	2.20	61.3	5100	360	453
400	2.2	0.7	3.15	2.68	73.4	8890.0	4.0x0.80	2.52	68.5	6370	410	530

3.8 / 6.6 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)

TABLE - 8

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	2.8	0.4	2.00	1.72	38.4	2260.0	4.0x0.80	1.56	36.0	1640	94	100
35	2.8	0.4	2.00	1.72	40.6	2510.0	4.0x0.80	1.72	38.5	1880	111	121
50	2.8	0.5	2.00	1.88	43.6	2840.0	4.0x0.80	1.72	41.0	2120	130	145
70	2.8	0.5	2.00	1.88	47.0	3240.0	4.0x0.80	1.88	45.0	2540	160	181
95	2.8	0.5	2.50	2.04	51.8	4140.0	4.0x0.80	1.88	48.5	2970	191	221
120	2.8	0.6	2.50	2.20	55.6	4770.0	4.0x0.80	2.04	52.0	3440	217	254
150	2.8	0.6	2.50	2.20	58.4	5210.0	4.0x0.80	2.20	55.0	3900	243	290
185	2.8	0.6	2.50	2.36	62.6	5960.0	4.0x0.80	2.20	57.8	4250	274	330
240	2.8	0.7	3.15	2.52	69.2	7670.0	4.0x0.80	2.36	64.5	5310	317	390
300	3.0	0.7	3.15	2.68	74.9	8810.0	4.0x0.80	2.52	70.2	6280	358	450
400	3.3	0.7	4.00	3.00	84.9	11720.0	4.0x0.80	2.84	78.6	7790	408	525

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**6.6 / 6.6 KV & 6.35 / 11 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 9

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	3.6	0.4	2.0	1.72	42.0	2540.0	4.0x0.80	1.72	40.0	1940	93	100
35	3.6	0.5	2.0	1.88	44.8	2890.0	4.0x0.80	1.72	41.5	2020	111	121
50	3.6	0.5	2.5	2.04	48.4	3600.0	4.0x0.80	1.88	45.0	2400	130	145
70	3.6	0.5	2.5	2.04	52.0	4100.0	4.0x0.80	1.88	47.9	2700	160	181
95	3.6	0.6	2.5	2.20	56.0	4660.0	4.0x0.80	2.04	52.0	3180	191	221
120	3.6	0.6	2.5	2.36	59.5	5270.0	4.0x0.80	2.20	54.9	3660	217	254
150	3.6	0.6	2.5	2.36	62.4	5770.0	4.0x0.80	2.20	59.0	4260	243	290
185	3.6	0.7	3.15	2.52	68.0	7220.0	4.0x0.80	2.36	61.9	4640	274	330
240	3.6	0.7	3.15	2.68	73.2	8260.0	4.0x0.80	2.52	67.1	5400	317	390
300	3.6	0.7	3.15	2.84	78.0	9300.0	4.0x0.80	2.68	72.0	6300	357	450
400	3.6	0.7	4.00	3.00	86.3	11990.0	4.0x0.80	2.84	78.1	7580	408	525

**11 / 11 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 10

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
25	5.5	0.5	2.50	2.04	52.0	3860	4.0x0.80	1.88	49.0	2570.0	94	100
35	5.5	0.5	2.50	2.20	55.0	4210	4.0x0.80	2.04	51.0	2820.0	112	121
50	5.5	0.6	2.50	2.20	57.5	4550	4.0x0.80	2.20	54.0	3130.0	131	145
70	5.5	0.6	2.50	2.36	61.0	5250	4.0x0.80	2.20	57.8	3560.0	160	181
95	5.5	0.6	3.15	2.52	66.4	6560	4.0x0.80	2.36	61.8	4100.0	191	221
120	5.5	0.7	3.15	2.52	70.0	7190	4.0x0.80	2.52	65.0	4620.0	217	257
150	5.5	0.7	3.15	2.68	73.0	7810	4.0x0.80	2.52	67.2	5030.0	243	221
185	5.5	0.7	3.15	2.84	77.2	8640	4.0x0.80	2.68	71.1	5690.0	273	331
240	5.5	0.7	3.15	3.00	82.2	9760	4.0x0.80	2.84	76.3	6630.0	316	390
300	5.5	0.7	4.00	3.00	88.6	12010	4.0x0.80	3.00	82.5	7520.0	357	448
400	5.5	0.7	4.00	3.00	94.8	13640	4.0x0.80	3.00	88.6	8890.0	408	523

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



**12.7 / 22 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 11

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
35	6.0	0.6	2.50	2.20	57.0	4570	4.0x0.80	2.04	53.5	3170	110	132
50	6.0	0.6	2.50	2.36	59.1	4910	4.0x0.80	2.20	56.0	3520	129	157
70	6.0	0.6	2.50	2.36	63.5	5430	4.0x0.80	2.36	60.0	4010	158	194
95	6.0	0.7	3.15	2.52	69.0	6870	4.0x0.80	2.36	63.7	4560	188	224
120	6.0	0.7	3.15	2.68	72.4	7540	4.0x0.80	2.52	67.0	5100	213	257
150	6.0	0.7	3.15	2.68	75.2	8160	4.0x0.80	2.68	70.4	5630	239	292
185	6.0	0.7	3.15	2.84	79.5	8990	4.0x0.80	2.68	73.3	6030	269	332
240	6.0	0.7	4.00	3.00	86.2	11250	4.0x0.80	2.84	79.4	7230	312	390
300	6.0	0.7	4.00	3.00	90.8	12390	4.0x0.80	3.00	84.3	8200	352	448
400	6.0	0.7	4.00	3.00	96.9	14030	4.0x0.80	3.00	90.5	9520	402	523

**19 / 33 KV, THREE CORE, ALUMINIUM CONDUCTOR, XLPE INSULATED, SCREENED, ARMoured
AND PVC SHEATHED CABLES CONFORMING TO IS : 7098 (PART - 2)**

TABLE - 12

Nominal area of conductor	Nominal thickness of insulation	Nominal thickness of inner sheath	ROUND GALVANISED STEEL WIRE ARMoured				FLAT GALVANISED STEEL STRIP ARMoured				CURRENT RATING	
			Nominal diameter of round wire	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Nominal dimensions of flat strip	Minimum thickness of outer sheath	Approx overall diameter of cable	Approx weight of cable	Direct in ground 30°C	In Air 40°C
Sq mm	mm	mm	mm	mm	mm	kg/km	mm	mm	mm	kg/km	Amps	Amps
50	8.8	0.7	3.15	2.68	74.7	7540	4.0x0.80	2.52	69.6	5010	130	158
70	8.8	0.7	3.15	2.84	78.4	8240	4.0x0.80	2.68	73.3	5580	158	198
95	8.8	0.7	3.15	3.00	82.2	8960	4.0x0.80	2.84	77.0	6130	188	236
120	8.8	0.7	4.00	3.00	87.0	10880	4.0x0.80	2.84	80.3	6780	214	270
150	8.8	0.7	4.00	3.00	90.0	11570	4.0x0.80	3.00	83.5	7360	239	293
185	8.8	0.7	4.00	3.00	93.9	12420	4.0x0.80	3.00	86.4	7680	270	348
240	8.8	0.7	4.00	3.00	98.0	13630	4.0x0.80	3.00	91.2	9050	312	408
300	8.8	0.7	4.00	3.00	103.2	14850	4.0x0.80	3.00	96.7	9740	352	449
400	8.8	0.7	4.00	3.00	109.4	16610	4.0x0.80	3.00	101.5	11010	402	522

● Above data are approximate and subject to manufacturing tolerance. ● Conductor constructions are indicative only and will be such that requirement of conductor resistance is complied as per relevant IS standards. ● Approximate weight of cables are only for the purpose of transportation. ● Packing length tolerance +/- 5%. ● Longer lengths as per customer requirement.



STRANDED CONDUCTOR FOR INSULATED CABLES CONFORMING TO IS:8130

TABLE - 13

Nominal size of conductor	STRANDED CONDUCTOR CLASS - 2					
	Number of Wires in Conductors				Maximum dc Resistance Conductor at 20°C	
	Circular Conductor (non-compacted)		Circular Conductor Shaped Conductor		Plain Copper	Aluminium
Sq.mm	Copper	Aluminium	Copper	Aluminium	Ohm / km	Ohm / km
25	7	7	7	7	0.727	1.200
35	7	7	7	7	0.524	0.868
50	19	19	7	7	0.387	0.641
70	19	19	19	19	0.268	0.443
95	19	19	19	19	0.193	0.320
120	19	19	19	19	0.153	0.253
150	19	19	19	19	0.1240	0.206
185	37	37	37	37	0.0991	0.164
240	37	37	37	37	0.0754	0.125
300	37	37	37	37	0.0601	0.1000
400	59	59	59	59	0.0470	0.0778
500	59	59	59	59	0.0366	0.0605
630	59	59	59	59	0.0283	0.0469
800	59	59	59	59	0.0221	0.0367
1000	91	91	91	91	0.0176	0.0291

SHORT CIRCUIT RATING OF XLPE INSULATED HEAVY DUTY CABLES (FOR ONE SECOND DURATION)

TABLE - 14

Nominal size of conductor	ALUMINIUM CONDUCTOR	COPPER CONDUCTOR
Sq.mm	K.Amp.	K.Amp.
25	2.350	3.580
35	3.290	5.010
50	4.700	7.150
70	6.580	10.010
95	8.930	13.590
120	11.280	17.160
150	14.100	21.450
185	17.390	26.460
240	22.560	34.320
300	28.200	42.900
400	37.600	57.200
500	47.000	71.500
630	59.220	90.090
800	75.200	114.300
1000	94.000	143.000

AC RESISTANCE TO CIRCULAR / COMPACTED CONDUCTORS FOR INSULATED CABLES CONFORMING

TABLE - 15

Nominal Area	Number of wires		Max A C resistance at 90°C (Copper)	AC resistance at 90°C (Aluminium)
	Circular Conductor	Compacted Conductors		
Sq mm	mm	mm	(ohm/km)	(ohm/km)
25	7	7	0.927	1.5400
35	7	7	0.669	1.1100
50	19	7	0.494	0.8220
70	19	19	0.343	0.5680
95	19	19	0.247	0.4110
120	19	19	0.197	0.3250
150	19	19	0.161	0.2650
185	37	37	0.130	0.2110
240	37	37	0.0966	0.1620
300	37	37	0.0769	0.1300
400	59	59	0.0602	0.1020
500	59	59	0.0468	0.0804
630	59	59	0.0369	0.0639
800	59	59	0.0285	0.0518
1000	91	91	0.0227	0.0432



CALCULATED VALUE OF REACTANCE FOR THREE CORE CABLES

TABLE - 16

Nominal area	Reactance (ohms/km) (at 50Hz)					
(Sq mm)	3.3 KV	3.8/6.6 KV	6.35/11 KV	11/11 KV	12.7/22 KV	19/33 KV
25	0.098	0.120	0.125	0.140	-	-
35	0.094	0.114	0.119	0.134	0.137	-
50	0.086	0.110	0.114	0.128	0.131	0.146
70	0.084	0.101	0.105	0.118	0.121	0.138
95	0.081	0.097	0.101	0.112	0.115	0.128
120	0.078	0.094	0.098	0.108	0.111	0.124
150	0.076	0.092	0.095	0.105	0.108	0.120
185	0.075	0.088	0.091	0.101	0.103	0.115
240	0.073	0.086	0.088	0.097	0.099	0.110
300	0.072	0.085	0.086	0.094	0.096	0.106
400	0.071	0.084	0.083	0.091	0.093	0.102

**CALCULATED VALUE OF REACTANCE FOR THREE SINGLE CORE CABLES
(CABLES IN TREFOIL TOUCHING)**

TABLE - 17

Nominal area	3.8/6.6 KV		6.35/11 KV		11/11 KV		12.7/22 KV		19/33 KV	
(Sq mm)	Un Arm	Arm.	Un Arm	Arm.	Un Arm	Arm.	Un Arm	Arm.	Un Arm	Arm.
25	0.139	0.149	0.146	0.164	0.154	0.164	-	-	-	-
35	0.132	0.142	0.137	0.156	0.146	0.156	0.149	0.158	-	-
50	0.125	0.133	0.128	0.147	0.138	0.147	0.140	0.149	0.153	0.161
70	0.117	0.127	0.121	0.139	0.130	0.139	0.133	0.14	0.144	0.152
95	0.111	0.121	0.115	0.133	0.124	0.132	0.126	0.134	0.137	0.145
120	0.106	0.116	0.111	0.127	0.119	0.126	0.121	0.13	0.131	0.140
150	0.104	0.113	0.108	0.124	0.115	0.124	0.117	0.126	0.128	0.135
185	0.101	0.109	0.105	0.12	0.112	0.120	0.114	0.122	0.123	0.130
240	0.0977	0.105	0.101	0.117	0.108	0.116	0.11	0.118	0.119	0.126
300	0.0955	0.104	0.0976	0.113	0.104	0.112	0.106	0.113	0.115	0.122
400	0.094	0.102	0.0952	0.11	0.102	0.109	0.103	0.11	0.111	0.117
500	0.0928	0.0998	0.0931	0.107	0.0983	0.105	0.1	0.107	0.108	0.113
630	0.0899	0.0964	0.0901	0.104	0.0956	0.102	0.0969	0.103	0.104	0.111
800	0.0881	0.0938	0.0876	0.0998	0.0917	0.0971	0.0934	0.0997	0.0995	0.105
1000	0.0854	0.0918	0.0857	0.0983	0.0899	0.0959	0.0911	0.097	0.0967	0.102



CAPACITANCE VALUE OF XLPE INSULATED CABLES (AT 50 HZ)

TABLE - 18

Nominal area	Capacitance (mfd/km)					
(Sq mm)	3.3 KV	3.8/6.6 KV	6.35/11 KV	11/11 KV	12.7/22 KV	19/33 KV
25	0.260	0.237	0.198	0.149	-	-
35	0.293	0.264	0.219	0.163	0.154	-
50	0.330	0.293	0.242	0.178	0.168	0.132
70	0.382	0.336	0.275	0.201	0.189	0.146
95	0.438	0.381	0.310	0.224	0.210	0.162
120	0.484	0.418	0.339	0.243	0.228	0.174
150	0.530	0.454	0.368	0.262	0.246	0.186
185	0.592	0.504	0.407	0.288	0.269	0.203
240	0.666	0.563	0.453	0.319	0.297	0.222
300	0.741	0.586	0.500	0.350	0.326	0.242
400	0.837	0.605	0.560	0.389	0.362	0.267
500	0.864	0.622	0.60	0.40	0.374	0.27
630	0.882	0.680	0.66	0.44	0.410	0.29
800	0.946	0.764	0.74	0.51	0.460	0.34
1000	0.992	0.830	0.830	0.58	0.520	0.37

RATING FACTOR FOR VARIATION IN GROUND AND DUCT TEMPERATURE FOR

TABLE- 19

Temperature °C	15	20	25	30	35	40	45	50	55
Rating Factor (Maximum conductor temperature 90°C)	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.78

RATING FACTOR FOR VARIATION IN AMBIENT AIR TEMPERATURE FOR XLPE CABLES

TABLE- 20

Temperature °C	25	30	35	40	45	50	55	60
Rating Factor (Maximum conductor temperature 90°C)	1.16	1.11	1.06	1.00	0.94	0.88	0.81	0.74



RATING FACTOR FOR DEPTH OF LAYING (CABLES LAID DIRECT IN THE GROUND)

TABLE - 21

Depth of Laying Cm	UP TO 11 KV XLPE Cables	22433 KV Cables
90	1.00	-
105	0.99	1.00
120	0.97	0.99
150	0.95	0.97
180	0.94	0.96
200	0.93	0.94
250	0.91	0.93
300	0.90	0.92
or more		

GROUP RATING FACTORS FOR CIRCUITS OF THREE SINGLE - CORE CABLES, IN TREFOIL LAID 'DIRECT IN THE GROUND

TABLE - 22

No. of Circuits	Spacing between Trefoil Group Centres (Cm)				
	Touching	20	40	60	80
2	0.76	0.83	0.87	0.90	0.92
3	0.64	0.72	0.79	0.83	0.86
4	0.58	0.67	0.75	0.80	0.84
5	0.53	0.63	0.71	0.77	0.81
6	0.50	0.60	0.69	0.76	0.80
7	0.47	0.58	0.67	0.74	0.79
8	0.45	0.56	0.66	0.73	-
9	0.43	0.55	0.65	0.73	-
10	0.42	0.54	0.64	-	-
11	0.41	0.53	0.64	-	-
12	0.40	0.52	0.63	-	-

RATING FACTORS FOR CABLES LAID ON RACKS IN AIR WITH CABLE TOUCHING, TRAYS ARE IN TIERS SPACED BY 30cm AND CLEARANCE BETWEEN THE WALL AND CABLE IS 25cm

TABLE - 23

No. of Racks	Number of Cables per Rack				
	1	2	3	6	9
1	1.00	0.84	0.80	0.75	0.73
2	1.00	0.80	0.76	0.71	0.69
3	1.00	0.78	0.74	0.70	0.68
6	1.00	0.76	0.72	0.68	0.66

RATING FACTORS FOR THREE SINGLE CORE CABLES IN TREFOIL ON RACKS IN AIR (WITH SPACING BETWEEN CABLES EQUAL TO TWICE THE CABLE DIAMETER)

TABLE - 24

No. of Racks	Number of Cables per Rack		
	1	2	3
1	1.00	0.98	0.96
2	1.00	0.95	0.93
3	1.00	0.94	0.92
6	1.00	0.93	0.90

GROUP RATING FACTORS FOR MULTICORE CABLES IN GROUND HORIZONTAL FORMATION

TABLE - 25

Number of Cables in group	Spacing			
	Touching	15 cm	30 cm	45 cm
2	0.78	0.81	0.85	0.88
3	0.68	0.71	0.76	0.79
4	0.61	0.65	0.71	0.75
5	0.56	0.60	0.67	0.72
6	0.53	0.57	0.64	0.69
7	0.50	0.55	0.62	0.67
8	0.48	0.53	0.60	0.66
9	0.46	0.51	0.59	0.65
10	0.45	0.50	0.58	0.64

RATING FACTORS FOR MULTICORE CABLES LAID ON RACKS IN AIR (WITH CABLE SPACING BETWEEN CABLES EQUAL TO DIAMETER OF CABLE)

TABLE - 26

Number of racks	Number of cables per rack				
	1	2	3	6	9
1	1.00	0.98	0.96	0.93	0.92
2	1.00	0.95	0.93	0.90	0.89
3	1.00	0.94	0.92	0.89	0.88
6	1.00	0.93	0.90	0.87	0.86



RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE SINGLE - CORE CABLES AND THREE CORE XLPE CABLES LAID DIRECT IN THE GROUND

TABLE - 27

Nominal size of conductor	Three single core cables Thermal Resistivity of Soil in °C CM/W						Three core cables Thermal Resistivity of Soil in °C CM/W						
	Sq. mm	100	120	150	200	250	300	100	120	150	200	250	300
25	35	1.17	1.09	1.00	0.88	0.80	0.74	1.16	1.08	1.00	0.90	0.82	0.75
		1.18	1.10	1.00	0.88	0.80	0.74	1.16	1.08	1.00	0.90	0.81	0.75
50	70	1.19	1.10	1.00	0.88	0.80	0.73	1.16	1.08	1.00	0.88	0.81	0.75
	70	1.19	1.10	1.00	0.88	0.80	0.73	1.16	1.09	1.00	0.88	0.81	0.75
	95	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
120	150	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
	150	1.19	1.10	1.00	0.88	0.79	0.73	1.16	1.09	1.00	0.88	0.81	0.75
	185	1.19	1.10	1.00	0.88	0.79	0.72	1.16	1.09	1.00	0.88	0.81	0.75
240	300	1.20	1.11	1.00	0.88	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
	300	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
	400	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.75
500	630	1.20	1.11	1.00	0.87	0.79	0.72	1.17	1.09	1.00	0.88	0.81	0.74
		1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-
800	1000	1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-
		1.21	1.11	1.00	0.87	0.78	0.72	-	-	-	-	-	-

Estimated Voltage Drops in XLPE Cables (Aluminium Conductor) (Voltage drop unit: Volts/Km/Amps)

TABLE - 28

Cores	Cable Sqmm.														
	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000
Single Core	3.08	2.23	1.65	1.15	0.83	0.66	0.55	0.44	0.35	0.30	0.24	0.23	0.21	0.20	0.18
Multi Core	2.67	1.94	1.44	1.00	0.70	0.56	0.48	0.40	0.30	0.26	0.22	0.20	0.18	----	----

* Above voltage drops (volts/km/amps) to be multiplied with rated current and length of cable in K.M. to calculate total voltage drop in particular length and size of Cables.

GROUP RATING FACTORS FOR THREE - CORE CABLES IN HORIZONTAL FORMATION, LAID DIRECT IN THE GROUND

TABLE - 29

No. of Cables	Spacing of Cables (Centre to Centre)				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2	0.80	0.84	0.87	0.90	0.91
3	0.68	0.74	0.79	0.83	0.86
4	0.62	0.69	0.75	0.80	0.83
5	0.58	0.65	0.72	0.77	0.80
6	0.55	0.62	0.69	0.75	0.78
7	0.52	0.59	0.67	0.73	0.77
8	0.50	0.57	0.66	0.72	0.75
9	0.48	0.55	0.65	0.71	0.75
10	0.46	0.54	0.64	0.70	0.74
11	0.45	0.53	0.63	0.70	0.74
12	0.44	0.52	0.62	0.69	0.73

GROUP RATING FACTORS FOR THREE - CORE CABLES IN TIER FORMATION, LAID DIRECT IN THE GROUND

TABLE - 30

No. of Cables	No. of Tiers	Spacing of Cables (Centre to Centre)				
		Touching	15 Cm	30 Cm	45 Cm	60 Cm
2	1	0.88	0.84	0.87	0.90	0.91
3	1	0.68	0.74	0.79	0.83	0.86
4	2	0.60	0.66	0.73	0.77	0.79
5	2	0.55	0.61	0.68	0.71	0.73
6	2	0.51	0.57	0.63	0.67	0.69
7	3	0.48	0.54	0.59	0.63	0.64
8	3	0.46	0.51	0.56	0.60	0.61
9	3	0.44	0.48	0.53	0.57	0.58
10	4	0.42	0.47	0.52	0.55	0.56
11	4	0.41	0.46	0.50	0.54	0.55
12	4	0.40	0.45	0.49	0.53	0.54



BENDING RADIUS:

While Installing 'GLOSTER' Cables, the following minimum bending radius should be observed such that the cables, and especially the insulation, are not damaged. Wherever possible, larger bending radii should be used.

RECOMMENDED MINIMUM BENDING RADII

(15 X D) For Single Core Cables up to 11 KV

(20 X D) For Single Core Cables

(15 X D) For Multi Core Cables

Where 'D' is the overall diameter of Cables.

TESTING INSULATION RESISTANCE MEASUREMENT OF CABLE

The voltage rating of I R Tester (Megger) should be chosen as following table:

VOLTAGE GRADE OF CABLES	RATING OF IR TESTER (MEGGER)	VOLTAGE GRADE OF CABLE	RATING OF IR TESTER (MEGGER)
3.3 KV	1000 V	22 KV	2500 V
6.6 KV	1000 V	33 KV	2500 V

TESTING DURING LAYING:

All new cables shall be megger-tested before jointing. After jointing is completed all cables shall be megger-tested.

JOINTING OF CABLE:

The emphasis should be laid on quality and selection of proper cable accessories, proper jointing techniques and skill and workmanship of the working personnel. The quality of joint should be such that it does not add any resistance to the circuit. The materials and techniques employed should give adequate mechanical and electrical protection to the joints

under all service conditions. The joint should further be resistant to corrosion and other chemical effects. Termination and jointing of power and control cables shall be done by means of compression methods using solder less tinned copper/Aluminum terminal lugs.

HIGH VOLTAGE TEST:

Cables after jointing and terminations are subjected to dc high voltage test. The recommended test voltage are given in I.S. 1255 - 1983.

The cable cores must be discharge after completion of dc high voltage test.

PACKING, HANDLING AND STORAGE

PACKING

Cables are generally received wound on wooden drums, both the ends of the cable being easily accessible for inspection and testing. However short length may be transported in coils without drums with prior intimation to customer.

In case of paper-insulated lead-sheathed cables, both the ends of cables should be protected from moisture by means of plumbed lead caps. In case of PVC and XLPE cables sealed plastic caps or heat shrinkable caps should be used. The cable shall be wound on drums and packed.

The cable drums shall carry the following information either stenciled or contained in a label attached to it.

- Reference of Indian standard,
- Manufacture's name or trade-mark;
- Type of cable and voltage grade;
- Number of cores;
- Nominal cross sectional area of conductor;
- Cable code;
- Length of cable on the drum;
- Number of length on the drum (if more than one);
- Direction of rotation of drum (by arrow);
- Gross mass;



- Country of manufacture
- Year of manufacture
- The cable drums or label may also be marked with ISI Standard mark.

HANDLING

On receipt of cable drums visual inspection of drums should be made ensuring drum packing is original. When unloading the cables, certain precautions should be taken to ensure the safety of the cables:-

- a) 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 of cable drums. When lifting drums with the crane, it is recommended that the lagging should be kept in place to prevent the flanges from crushing on to the cable. If the crane is not available, a ramp should be prepared with approximate inclination of 1:3 or 1:4. 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 of the cable drum.
- b) Cable should not be dragged along the earth surface.
- c) The arrows painted on the flange of the drum indicate the direction in which the drum should be rolled. The cable will unwind and become loose if the drum is rolled in the opposite direction. Improper handling or uncoiling of cable from reels or coils often results in the “springing” of armour of the cable and kinking of the cables both of which are very difficult to be corrected. It reduces effective cable life considerably. To avoid this, the following steps are to be followed:
 - i) If the cable is supplied on a reel, it should be mounted on a shaft and cable paid off from the reel while it rotates. Suitable brakes should be applied on the flanges of the reel.
 - ii) If the cable is supplied in large coils these should be mounted on a turn table with suitable brakes and cable paid off while the turn table rotates.
 - iii) Small coils of cables can be made to roll along the ground for uncoiling.
 - iv) Cable should neither be pulled straight from the coil while the coil rests on the ground nor be taken off turning from reel while it is lying on its flange on the ground.
 - v) Also never allow the reel to rotate at high speed during pay off.

STORAGE

The site chosen for storage of cables should be well drained. Cable should be stored in a dry and covered place to prevent exposure to climatic conditions and wear and tear of wooden drums and it should preferably be 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.

However cable drum can be stored in uncovered area, but the area should be free from corrosive agents such as chemicals and fumes etc. Also the lagging should be kept in place to avoid cable surface from direct sunrays. The cables stored in hot condition at higher temperature may cause oxidation of outer sheath jacket, whenever a cable length is cut, it should be recapped to avoid ingress of water in the cable.

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. During storage the drum should be rolled to an angle of 90° once every 3 months, This will avoid collapsing of barrel of drum due to weight pressure continuously in one direction for longer period. In no case, should the drum be stored “on the flat” that is, with flange horizontal.

If it is necessary to rewind a cable on to another drum, the barrel of the drum should have a diameter not less than that of the original drum.

LAYING

The selection of the route should first be decided keeping in view the intermediate and ultimate use of the cable as an intermediate part of the transmission and distribution system.

For transporting the cable drum to site, it is necessary to check the road condition, whether it has loose soil, is marshy, water logged etc.

If possible, cables should be laid along the footpath rather than the carriageway. Plans for future building projects should be considered. The route should be away from parallel running gas, water pipes and telephone cables. Also suitable locations for cable joints and end termination should be selected as required.

On receipt of the drum at site, the plank should be removed and the cable is examined for exterior damage, if any. To avoid damage to the protective covering and the insulation the cable must not be pulled across hard and sharp objects.

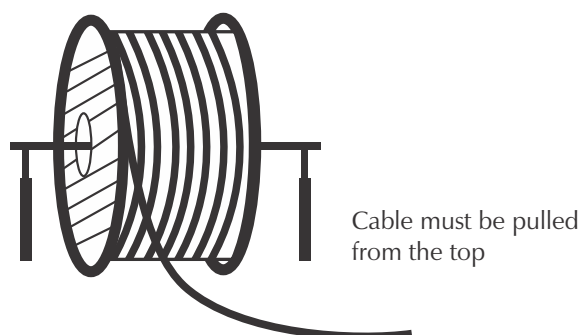


For laying of cables special cares to be taken to prevent sharp bending, kinking, twisting. Cable should be unwound from drum by proper mounting the cable drum on a cable wheel making sure the spindle is strong enough to carry the weight without bending and that it is lying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating.

This is incorrect way of pulling the cable & will cause kinks & twist in cable. Shall be avoided at all.

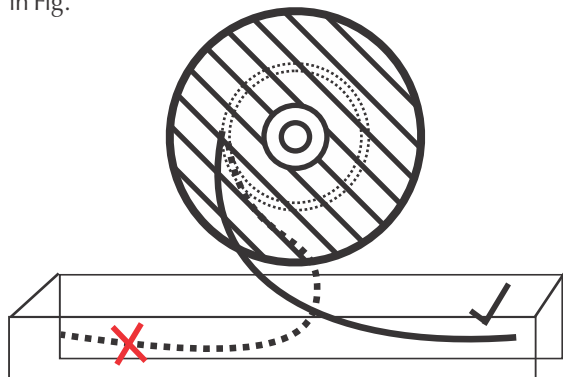


Provision should be made to break the drum to avoid further rolling & buckling of cable during sudden stop. A simple wooden plank can serve this purpose



Cable must not be pulled across hard & sharp object to avoid the damage to the covering & insulation.

Cable must be laid in ducts or trenches as showing in Fig.



However, following salient points are to be considered during laying procedure of cables laid in racks and in build-in trenches.

- 1 For laying of cables, power cables are to be placed at the bottom most layer and control cables at top most layer.
- 2 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 spacing 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 galvanized mild steel saddles. The saddles shall not be placed at intervals more than 1500 mm. for horizontal and 1200 mm. for vertical runs.

- 3 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.
- 4 a) If the cable 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
- 5 If there is a possibility of mechanical damage, cable should be protected by means of mild steel covers placed on racks.

6 Method of Installation:

- Three Core Cables: Installed independently
- Single Core Cables: Three cables in a trefoil touching each other

- 7 Maximum safe pulling force (when pulled by pulling eye)

Aluminum conductor cables: 3.0 kg/mm²

Copper conductor cables: 5.0 kg/mm²

Proper method of pulling of cable should be used. Refer I.S. 1255-1983, code of practice for installation and maintenance of power cables.



LT AERIAL BUNCHED CABLES

With the growing need for long term economy, safety and reliability overhead conductors are now being replaced by Aerial Bunched Cables both in LT & HT distribution network with limited space for clearance.

APPLICATIONS

Aerial Bunched Cables are specially suitable for the following types of installation conditions:

Where space is limited like those in densely populated area or dense forests.

- Where existing overhead distribution feeders capacity has to be up graded without raising the system voltage with limited budget.
- Temporary installations or for those regions where building plan have not been fully approved.

ADVANTAGES:

- Safety system because phase conductors are insulated, no risk or danger of accidental touching live conductors.
- Accidental short circuit eliminated.

• Supply interruption minimized thus the life of transformers increased.

• Reduction in pole height, elimination of insulators and associated hardware lowering total cost of system.

• It can be fixed to poles, walls or trees thus easy and economical to install.

• Multiple circuits of power & telephone cable can be strung in the same set of poles or any other supports.

LT AERIAL BUNCHED CABLES.

The LT Aerial Bunched Cables consist of insulated phase conductors (with additional street lighting conductor, if provided) are twisted around the bare/insulated aluminum alloy messenger conductor, which takes all the mechanical stress and also serves as the earth-cum-neutral conductor.

The phase conductors and street lighting conductor are insulated with black weather resistant polyethylene or cross-linked polyethylene.

LT AERIAL BUNCHED CABLES AS PER IS 14255-1995

Size and Requirement of Phase, Street Lighting and Messenger Conductors.									
Phase Conductor (Aluminium)			Street Lighting Conductor			Messenger Conductors.			
			(Aluminium)			(Aluminium)			
Nominal Area	Maximum conductor D.C. resistance at 20deg.C	Nominal thickness of insulation XLPE / PE	Nominal Area	Maximum conductor D.C. resistance at 20deg.C	Nominal thickness of insulation XLPE / PE	Nominal Area	Maximum conductor D.C. resistance at 20deg.C	Maximum breaking load	AC Current rating in Air at 40 deg.C
Sq.mm	Ohm / Km	mm	Sq.mm	Ohm / Km	mm	Sq.mm	Ohm / Km	'kN	Amps
16	1.91	1.2	16	1.91	1.2	25	1.38	7	64
25	1.2	1.2	16	1.91	1.2	25	1.38	7	84
35	0.868	1.2	16	1.91	1.2	25	1.35	7	105
50	0.641	1.5	16	1.91	1.2	35	0.986	9.5	130
70	0.443	1.5	16	1.91	1.2	50	0.689	14	152
95	0.32	1.5	16	1.91	1.2	70	0.942	19.7	185

**Your home is SAFE
When you use Gloster Wires...**

**GLOSTER
DOMESTIC
WIRES**



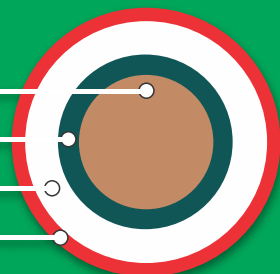
Designed with Triple Extrusion Technology

HR-FRLSH + FRLSH + FRLSH

[Heat Resistant + Flame Retardant + Low Smoke + Low Halogen]



Copper Conductor
HR-FRLSH PVC Insulation
FRLSH PVC Insulation
FRLSH PVC Coloured Skin



Safety is not EXPENSIVE - it is PRICELESS !



Single Core Unsheathed Industrial Flexible Cable

Designed with Triple Extrusion Technology

HR-FRLSH + FRLSH + FRLSH

[Heat Resistant + Flame Retardant + Low Smoke + Low Halogen]

THE PRODUCT FEATURE

'GLOSTER' has launched Domestic wires manufactured with the latest state-of-the-art Triple Extrusion technology wherein three layers of insulation are excellently bonded to provide our customers / end users with one cable suited for most of the applications and maximum value for their money.

DESIGN AND CONSTRUCTION

CONDUCTOR: 'GLOSTER' is manufacturing, as a standard product, wires with special design of conductor from bright electrolytic grade copper with higher than 99.97 purity, resulting in lower conductor resistance, better conductivity, protection against voltage fluctuations & non eccentric cable with perfectly circular conductor facilitating perfect stripping and crimping during installation

INSULATION: GLOSTER Domestic wires are insulated with Triple Layer HR-FRLSH + FRLSH + FRLSH (Heat Resistance + Flame Retardant + Low Smoke + Low Halogen), a superior grade PVC Compound that is specially formulated and manufactured in-house with rigorous testing at every stage of manufacturing.

1st. layer of HR-FRLSH Insulation: Specially formulated HR-FRLSH is provided over the conductor which enables the insulation to work at higher temperature.

2nd layer of FRLSH Insulation: A thick layer of specially formulated thick FRLSH insulation is provided over the HR-FRLSH insulation to restrict the spread of flames and to ensure near total absence of smoke as well as toxic and corrosive fumes.

3rd layer of FRLSH Skin: A layer of specially formulated colour FRLSH master batch is provided to ensure clear colour identification and complete safety.

Automatic self-centering is ensured with the intelligent microprocessor controlled equipment enabling to maintain the conductor perfectly in the centre of insulation providing exact and equal protection from all sides of conductor thereby preventing likely insulation failure due to uneven thickness and eccentricity of FRLSH PVC insulation.

PRINTING: The wires are printed with brand name, size in sq.mm, voltage grade and ISI marketing.

CONSISTENT QUALITY: Supporting the unique design, our wires & cables are manufactured from the purest of Copper and HR-FRLSH PVC Compounds with rigorous testing at every stage of manufacturing. FRLSH characteristics like Oxygen Index, Temperature Index, Smoke Density, % Halogen, Flammability etc., are maintained as per applicable BIS/ASTM/IEC and International Standards.

COLOUR CODING

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

The conductor constructions are indicative only and will be such that all requirements of strand diameter and conductor resistance are complied as per IS 8130.

GLOSTER reserves the right to change above Technical particulars without any prior information.

GLOSTER will not be liable for any damage arising out of incorrect application or interpretation.



THE GLOSTER ADVANTAGE

CONDUCTOR

- Higher than 99.97 % pure bright Electrolytic grade Copper.
- No joints in Bunched Conductor – hence no hot spots / no localized heating / no consequent insulation deterioration.
- Class 5 design – highly flexible – easier handling (like drawing through conduits) – terminations stress free.
- Perfectly centric & round conductor – uniform insulation thickness – no thick / thin walls.

INSULATION

- Specially formulated in-house HR-FRLSH Insulation in 1st layer– makes our wires run cooler – overloading / fire risks avoided.
- IS 694:2010 specifies continuous operating temperature not exceeding 70° C – our wires can handle temperatures way beyond 70° C continuous and 105° C peak due to our special HR-FRLSH Layer 1st layer.
- Specially formulated in-house thick FRLSH insulation in 2nd layer - restricts spread of flames, creation of dangerous smoke, toxic & corrosive gases – eliminates panic, asphyxiation, possible loss of life, destruction of expensive electronic goods.
- Our wires are leakage free due to very high insulation resistance property in the 2nd Layer.
- There is no mixing of insulation with colour pigment in the 3rd Layer-hence insulation dielectric remains intact and strong.
- Our 3rd Layer is abrasion resistant due to our specially formulated MATT colour finish of FRLSH compound.
- Perfect stripping / crimping - due to our perfectly round conductor and uniform insulation thickness ensures no strands get cut while stripping – hence no consequent hot spots / insulation deterioration.
- Ruthless and Rigorous testing at every stage of manufacturing.
- FRLSH characteristics like oxygen index, temperature index, smoke density, Halogens %, flammability, etc are strictly maintained as per applicable BIS and ASTM / IEC National and international standards.
- State-of-the-art Triple Extrusion Technology - ensures excellent bonding between all three layers.



IS 694

TRIPLE LAYER FRLSH PVC INSULATED (HR-FRLSH+FRLSH+FRLSH) SINGLE CORE UNSHEATHED INDUSTRIAL FLEXIBLE CABLE WITH BRIGHT ANNEALED COPPER CONDUCTOR CONFORMING TO IS-694:2010 WITH LATEST AMENDMENTS FOR VOLTAGE GRADE 1100V (Supplied in 90 Mtrs. Length in attractive carton)

TABLE - 1

Nominal area of Conductor	Number / Nominal Dia of Wire	Thickness of Insulation (Nom)	Approx. Overall Diameter	Current carrying capacity 2 Cables, Single Phase #		Resistance (Max) at 20°C
				In conduit	Unenclosed	
Sq.mm	mm	mm	mm	Amps	Amp	Ohms/Km
0.05	16/0.20	0.6	2.2	4	5	39.00
0.75	24/0.20	0.6	2.3	6	7	26.00
1.00	32/0.20	0.6	2.6	11	12	19.50
1.50	30/0.25	0.6	2.8	13	16	13.30
2.50	50/0.25	0.7	3.5	18	22	7.98
4.00	56/0.30	0.8	4.2	24	29	4.95
6.00	84/0.30	0.8	4.8	31	37	3.30

- Standard colours: Black, Red, Blue, Yellow and Green (for earthing)
- Other colours can be provided on request subject to minimum order quantity.
- 180 and 270 meters supplied with plastic wrapped/plastic packed.

As per IS 3961 (Part V) - 1968

BIS Licence No: CM/L 0004410544



FIRE Safety ON
FIRE Hazards GONE

Triple Extrusion

ZHFR

ZERO HALOGEN FLAME RETARDANT

HR-ZHFR + ZHFR + ZHFR

CONSTRUCTION

Conductor : Higher than 99.97 % pure bright Electrolytic grade Copper.

Class 5 design – highly flexible – easier handling (like drawing through conduits) – terminations stress free.

Insulation : 1st Layer of specially formulated HR-ZHFR Insulation provided over the conductor enables working at higher temperatures.

2nd Layer of specially formulated thick ZHFR insulation provided over the HR-ZHFR insulation, restricts the spread of flames and also ensures total absence of smoke as well as toxic and corrosive fumes.

3rd Layer of specially formulated color skin ZHFR is provided to ensure clear color identification.

SPECIAL FEATURES

- ⊙ Ruthless and rigorous testing at every stage of manufacturing.
- ⊙ Characteristics like Oxygen Index, Temperature Index, Smoke Density, Halogens Free, Flammability, etc are maintained well above the specified value as per applicable BIS and ASTM / IEC National and International Standards.
- ⊙ State-of-the-art Triple Extrusion Technology ensures excellent bonding between all three layers.

IS 694 : 2010



TRIPLE LAYER (HR-ZHFR+ZHFR+ZHFR) SINGLE CORE UNSHEATHED INDUSTRIAL FLEXIBLE CABLE WITH

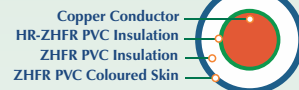
BRIGHT ANNEALED COPPER CONDUCTOR FOR VOLTAGE GRADE 1100V CONFORMING TO IS-694 : 1990 # As per IS 3961 (Part V) - 1968

Nominal area of Conductor	Number / Nominal Dia of Wire	Thickness of Insulation (Nom)	Approx. Overall Diameter	Current carrying capacity 2 Cables, Single Phase #		Resistance (Max) at 20°C
				In conduit	Unenclosed	
Sq.mm	mm	mm	mm	Amps	Amps	Ohms/Km
0.75	24/0.20	0.6	2.3	6	7	26.00
1.00	32/0.20	0.7	2.8	11	12	19.50
1.50	30/0.25	0.7	3.1	13	16	13.30
2.50	50/0.25	0.8	3.7	18	22	7.98
4.00	56/0.30	0.8	4.2	24	29	4.95
6.00	84/0.30	0.8	4.8	31	37	3.30

Standard packing in 90 Mtrs. Project lengths of 180/270 also can be supplied

Standard Colours: Black, Red, Blue, Yellow and Green (for earthing).

SPECIAL PROPERTIES



Particulars	FRLSH	ZHFR
Thermal Stability	80	100
Oxygen Index	32%	34%
Smoke Density	55%	10%
Halogen Acid Gas Emission	16%	<1.0%
Volume Resistivity	1x10 ¹⁴ ohm/cm	3x10 ¹⁴ ohm/cm
Temperature Index	250	300
Visibility	40	80
Safe Working Temperature	70	90



SINGLE/MULTI CORE FR PVC INSULATED INDUSTRIAL FLEXIBLE CABLES

CONDUCTOR: Manufactured from bright electrolytic grade of higher than 99.97% pure copper drawn in multiple strands which offer low resistance with low electricity consumption and protection against wide voltage fluctuation. Perfect stripping & crimping during installation is made possible with uniform layup of conductor strands by the most advanced in-house conductor drawing, bunching and stranding facilities.

INSULATION: GLOSTER industrial cable wires are insulated with superior grade FR PVC Compound that is specially formulated and manufactured in-house. The wires are Flame Retardant and meet the Flammability Test as per IS 694 : 2010. It has high insulation resistance and dielectric strength which prevents leakage of electric current, thus ensuring complete safety from electric shocks and short circuits. Its flame retardant properties minimize the spread of fire thus providing additional safety.

Automatic self-centering is ensured with the intelligent microprocessor controlled equipment enabling to maintain the conductor perfectly in the centre of FR PVC insulation providing exact and equal protection from all sides of conductor preventing short circuit occurrences due to uneven thickness and eccentricity of FR PVC insulation.

PRINTING: The wires are printed with brand name, size in sq.mm voltage grade and ISI marking.

CONSISTENT QUALITY: Supporting the unique design, our wires & cables are manufactured from the purest of Copper and FR PVC Compounds with rigorous testing at every stage of manufacturing. FR/ FRLS characteristics like Oxygen Index, Temperature Index, Smoke Density, % Halogen, Flammability etc., are maintained as per applicable ASTM/IEC International Standards.



**FR PVC INSULATED SINGLE CORE / MULTICORE INDUSTRIAL FLEXIBLE CABLES
CONFORMING TO IS-694:2010 WITH LATEST AMENDMENTS FOR VOLTAGE GRADE 1100V
(Supplied in 100 Mtrs. Length in Coils / In Drums Above 500 Mtrs.)**

TABLE - 2

Conductor	Area Sq.mm		0.5	0.75	1	1.5	2.5	4	6	10	16	25	35	50
	No & Size of Wire (Nom.) @ 20°C	No./mm	16 / 0.2	24 / 0.2	32 / 0.2	30 / 0.25	50 / 0.25	56 / 0.3	84 / 0.3	80 / 0.4	126 / 0.4	196 / 0.4	276 / 0.4	396 / 0.4
	Resistance (max) @ 20°C	Ohms/Km	39.00	26.00	19.50	13.30	7.98	4.95	3.30	1.91	1.21	0.780	0.554	0.386
	Current Rating DC or AC	Amps	4	7	12	15	20	27	35	46	62	80	102	138
Insulation	Thickness (Nom.)		0.6	0.6	0.6	0.6	0.7	0.8	0.8	1.0	1.0	1.2	1.2	1.4
Single Core Unsheathed	Overall Diameter (approx)	mm	2.20	2.40	2.60	2.80	3.50	4.20	4.80	6.20	7.50	9.20	10.30	12.40
Single Core Sheathed	Sheath Thickness (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	Overall Diameter (approx)	mm	4.0	4.3	4.4	4.7	5.5	6.3						
Twin Flat Sheathed	Overall Width (Approx)	mm	6.2	6.7	7.0	7.5	9.1	10.55						
	Overall Height (Approx)	mm	4.0	4.3	4.4	4.7	5.6	6.3						
2 Core	Sheath Thickness (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	Overall Diameter (approx)	mm	6.2	6.7	7.0	7.5	9.1	10.55						
3 Core	Sheath Thickness (Nom.)	mm	0.9	0.9	0.9	0.9	1.0	1.0						
	Overall Diameter (approx)	mm	6.5	7.1	7.4	8.0	9.6	11.20						
4 Core	Sheath Thickness (Nom.)	mm	0.9	0.9	0.9	1.0	1.0	1.0						
	Overall Diameter (approx)	mm	7.1	7.7	8.0	8.9	10.6	12.3						
5 Core	Sheath Thickness (Nom.)	mm	0.9	0.9	1.0	1.0	1.0	1.1						
	Overall Diameter (approx)	mm	7.7	8.4	9.0	9.7	11.6	13.7						





IS 694

FR PVC INSULATED SINGLE CORE INDUSTRIAL FLEXIBLE CABLES (UNSHEATHED)
CONFORMING TO IS 694:2010 WITH LATEST AMENDMENTS FOR VOLTAGE GRADE 1100 VOLTS
 (Supplied in 100 Mtrs. Length in Coils / In Drums Above 500 Mtrs.)

TABLE - 3

Area Sq.mm			70	95	120	150	185	240
	No. & Size of Wire	No/mm	360/.5	475/.5	608/.5	750/.5	925/.5	1221/.5
Conductor	Max Res. @ 20°C	Ohms/Km	0.272	0.206	0.161	0.129	0.106	0.0801
	Current DC / AC	Amps	214	260	305	355	415	500
Insulation	Thickness (Nom.)	mm	1.4	1.6	1.6	1.8	2	2.2
	O D (Approx)	mm	14.40	16.15	18.10	20.00	22.60	25.50

FR PVC INSULATED MULTICORE INDUSTRIAL FLEXIBLE CABLES (6 CORES TO 24 CORES)
CONFORMING/GENERALLY CONFORMING TO IS 694:2010 WITH LATEST AMENDMENTS FOR VOLTAGE GRADE 1100 VOLTS
 (Supplied in 100 Mtrs. Length in Coils / In Drums Above 500 Mtrs.)

TABLE - 4

Core	Area (sqmm)	0.5	0.75	1	1.5	2.5	4
6	Sheath Thickness (Nom.) mm	0.9	1.0	1.0	1.0	1.1	1.2
	Overall Diameter (Approx) mm	8.4	9.3	9.75	10.5	12.9	15.2
7	Sheath Thickness (Nom.) mm	0.9	1.0	1.0	1.0	1.1	1.2
	Overall Diameter (Approx) mm	8.4	9.3	9.75	10.5	12.9	15.2
8	Sheath Thickness (Nom.) mm	1.0	1.0	1.0	1.1	1.2	1.2
	Overall Diameter (Approx) mm	9.3	10.1	10.5	11.4	14.2	16.5
10	Sheath Thickness (Nom.) mm	1.0	1.1	1.1	1.1	1.3	1.4
	Overall Diameter (Approx) mm	10.8	11.9	12.5	13.5	16.8	19.8
12	Sheath Thickness (Nom.) mm	1.0	1.1	1.1	1.1	1.3	1.4
	Overall Diameter (Approx) mm	11.1	12.3	12.9	14.0	17.3	20.5
14	Sheath Thickness (Nom.) mm	1.1	1.1	1.1	1.2	1.3	1.4
	Overall Diameter (Approx) mm	11.9	12.9	13.5	14.9	18.2	21.6
16	Sheath Thickness (Nom.) mm	1.1	1.2	1.2	1.2	1.4	1.5
	Overall Diameter (Approx) mm	12.7	14.1	14.5	16.0	19.8	23.5
19	Sheath Thickness (Nom.) mm	1.1	1.2	1.3	1.3	1.4	1.6
	Overall Diameter (Approx) mm	13.2	14.6	15.5	16.8	20.5	24.6
24	Sheath Thickness (Nom.) mm	1.2	1.3	1.4	1.4	1.5	1.7
	Overall Diameter (Approx) mm	15.5	17.2	18.3	19.85	24.3	28.9

FR PVC INSULATED THREE & FOUR CORE INDUSTRIAL FLEXIBLE CABLES
CONFORMING/GENERALLY CONFORMING TO IS 694:2010 WITH LATEST AMENDMENTS FOR VOLTAGE GRADE 1100 VOLTS
 (Supplied in 100 Mtrs. Length in Coils / In Drums Above 500 Mtrs.)

TABLE - 5

	Area (Sqmm)		6	10	16	25	35	50	70	95	120
Conductor	No. & Size of Wire	No./ mm	84/0.3	80/0.4	126/0.4	196/0.4	276/0.4	396/0.4	360/0.5	475/0.5	608/0.5
	Max Res @ 20°C	Ohms/Km	3.300	1.910	1.210	0.780	0.554	0.386	0.272	0.206	0.161
Insulation	Current	Amps	31	42	57	72	91	120	165	200	225
	Thickness	mm	0.8	1.0	1.0	1.2	1.2	1.4	1.4	1.6	1.6
3 Core	Sheath Thickness (Nom.)	mm	1.2	1.4	1.4	1.5	1.6	2.0	2.2	2.4	2.5
	Outer Diameter (Approx)	mm	12.90	16.20	19.10	23.00	25.40	30.70	35.40	39.30	44.00
4 Core	Sheath Thickness (Nom.)	mm	1.2	1.4	1.4	1.6	1.7	2.0	2.2	2.4	2.5
	Outer Diameter (Approx)	mm	14.10	17.80	21.10	25.50	28.20	33.90	39.20	43.95	48.70

3 CORE FLAT CABLES

APPLICATION

Connecting Cable to Submersible Motors, Pumps and Industrial Machines

SPECIAL FEATURES

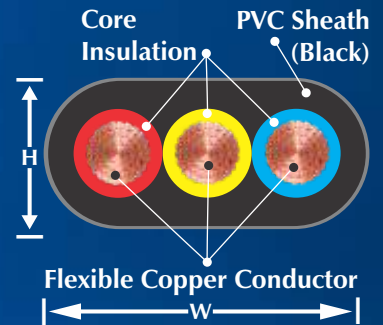
- High Conductivity Bright Annealed, Bunched Flexible, more than 99.97% Pure Electrolytic grade Copper Conductor as per IS 8130:1984
- High Grade, Special Flexible PVC Insulation
- Cores Insulated with Red, Yellow and Blue Colour
- Special PVC Sheath to withstand Abrasion, Prevent Water Ingress and with high degree of Flexibility
- Insulation and Sheath PVC Compound specially formulated and manufactured In-House
- Substantial reduction in Power Consumption
- Excellent Withstand Capacity to High Voltage Fluctuations
- Operating Temperature : (-) 15°C To (+) 70°C
- Minimum Bending Radius : 6 X Cable OD
- Flame Propagation : as per IEC 60332-1
- Cables are supplied with Sequential meter marking, Name of the company, Size, Voltage Grade, IS-694 and CML Number.

STRUCTURE AND SPECIFICATIONS

- Conductor Material : More than 99.97 Pure Bright Electrolytic Grade Copper Conductor
- Conductor Class : As per IS 8130:1984 / IEC 60228
- Conductor Resistance : As per IS 8130:1984 / IEC 60228
- Core Insulation : PVC
- Core Identification : Red, Yellow and Blue Colour
- Laying : Cores Laid Parallel
- Outer Sheath : PVC
- Rated Voltage : 0.6/1.1 KV
- Test Voltage : 3 KV
- Insulation Resistance : > 10 MΩ/Km

"GLOSTER" Three core flat cables with bunched copper conductor, PVC insulated & PVC sheathed for Submersible Pump Motors with voltage grade up to 1100 volts conforming to IS-694:1990

Conductor		Insulation	Sheath	Overall Dimensions		Conductor Resistance @ 20° C (Max) ohms/km	Current Carrying Capacity @ 40° C Amps
Cross Section Area (Sqmm)	No. Of Wires/ Wire Dia (mm)	Nominal Thickness (mm)	Nominal Thickness (mm)	Appx. Width (mm)	Appx. Height (mm)		
1.5	30/0.25	0.60	0.90	10.30	4.70	12.10	14
2.5	50/0.25	0.70	1.00	12.60	5.60	7.41	19
4.0	56/0.30	0.80	1.00	14.80	6.30	4.95	26



"GLOSTER" Three core flat cables with bunched copper conductor, PVC insulated & PVC sheathed for Submersible Pump Motors with voltage grade up to 1100 volts generally conforming to IS-694:1990

Conductor		Insulation	Sheath	Overall Dimensions		Conductor Resistance @ 20° C (Max) ohms/km	Current Carrying Capacity @ 40° C Amps
Cross Section Area (Sqmm)	No. Of Wires/ Wire Dia (mm)	Nominal Thickness (mm)	Nominal Thickness (mm)	Appx Width (mm)	Appx Height (mm)		
6.0	84/0.30	0.80	1.10	16.80	7.10	3.30	31
10.0	80/0.40	1.00	1.20	21.10	8.70	1.91	42
16.0	126/0.40	1.00	1.30	24.80	10.20	1.21	57
25.0	196/0.40	1.20	1.50	30.90	12.40	0.78	72
35.0	276/0.40	1.20	1.60	34.10	13.60	0.554	91



SELECTION GUIDE FOR 3 CORE FLAT SUBMERSIBLE CABLES

1) HP vs Current : The full load current for Submersible Pump Motors, 3 Phase, 50 Cycles, 415-425 Volts

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

2) Derating Factors : Multiply the current carrying capacity of the cable by factors given below for various Ambient Temperatures

Ambient Temperature °C	30	35	40	45	50
Rating Factor	1.09	1.04	1.00	0.95	0.77

INSTRUMENTATION CABLES

As per BS-5308:Part-1 & Part-2, BS EN-50288/7 and also as per IEC-60189:Part-1, 2 & 3



APPLICATIONS

Instrumentation Cables are designed for total interference free data transfer and are ideal as signal and control cables in measuring, process control and security systems.

Instrumentation process in any industry including, building and construction, communication and telecom, water treatment, oil, gas and petrochemical, automation and process control industries.

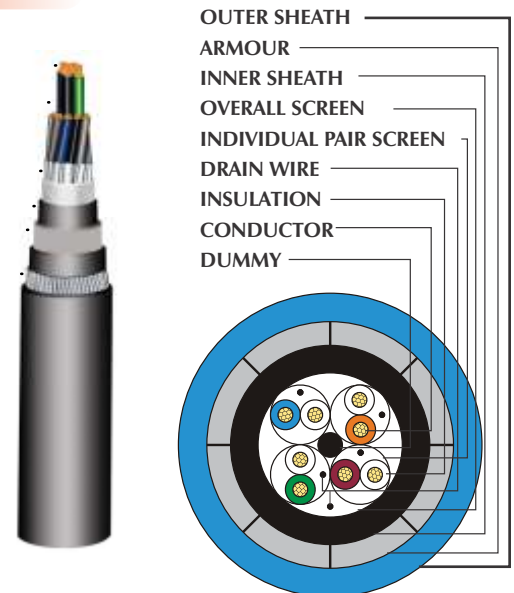
Instrumentation process is critical for controlling various parameters during the process. The signals can be of analogue, data or voice type and from a variety of transducers such as pressure, proximity or microphone. Microprocessor based control devices demand very low noise levels and attenuation of signals in the cable.

Gloster instrumentation cables are designed to form part of an intrinsically safe system and they are generally designed for indoor use in dry and humid conditions [unarmoured versions] and where mechanical protection is desired, the armoured versions are used.

Gloster Cables Limited offers a wide range of instrumentation cables, screened with aluminium mylar tape or copper wire braid, or both, ensuring very low levels of stored energy in the cables, which can be used under hazardous conditions.

Gloster Advantages

- Gloster Cable shields have very low transfer impedance
- Gloster has designed effective shielding to reject / minimize
 - ESI - Electrostatic Interferences
 - ESD- Electrostatic Discharge
 - EMI – Electromagnetic Inductive Noises
- Shielding methods used
 - Aluminium Mylar Taping
 - Copper Braid / Taping
 - Combination of Foil + Braid
- Gloster can design cables for improved flame and fire resistance to pass the following standards as below
 - IEC 60332-1 (Single Cable)
 - IEC 60332-3 (Bunched Cable)
 - IEC 60331-21 (Circuit integrity in a fire situation)
- Gloster Cables can produce cables with very Low Smoke / Low Halogens / Low Corrosive & Toxic Gases Smoke Emission
 - IEC 61034 / ASTM D 2863 Corrosiveness of Combined Gases IEC 60754-1&2.



Products Offered (Standard)

BS 5308 Part-1 Type-1

CU/PE/OS/PVC
CU/PE/IS/OS/PVC

BS 5308 Part-1 Type-2

CU/PE/OS/SWA or SFA/PVC
CU/PE/IS/OS/PVC/SWA or SFA/PVC

BS 5308 Part-2 Type-1

CU/PVC/OS/PVC
CU/PVC/IS/OS/PVC

BS 5308 Part-2 Type-2

CU/PVC/OS/PVC/SWA or SFA/PVC
CU/PVC/IS/OS/PVC/SWA or SFA/PVC

Overall Shielded Pair Unarmoured Cables

Overall Shielded Pair Armoured Cables

Overall Shielded Triad Unarmoured Cables

Overall Shielded Triad Armoured Cables

Individual Shielded Pair & Overall Shielded Pair Unarmoured Cables

Individual Shielded Pair & Overall Shielded Pair Armoured Cables

Individual Shielded Triad & Overall Shielded Triad Unarmoured Cables

Individual Shielded Triad & Overall Shielded Triad Armoured Cables

Multi Core Armoured Cables

Multi Core Unarmoured Cables

CONSTRUCTION

(As per BS-5308:Part-1 & 2, BS EN-50288/7 and also as per IEC-60189:Part-1,2 & 3 and also as per customer specification)		
PARAMETERS	STANDARD CONSTRUCTION	OPTIONAL OFFERING ON REQUEST
Conductor	Higher than 99.97% pure electrolytic grade annealed bare copper conductor.	Tinned Copper/Nickel Plated Copper/Silver Plated Copper
Conductor Sizes	0.50 Sqmm To 2.50 Sqmm.	Special sizes on request.
Conductor Class	Class-5 as per IS-8130, IEC-60228, DIN VDE 0295	Class-1 (Solid wire), Class 2 (7 Strand Wire)
Conductor Resistance @ 20°C	0.5mm ² : <39Ω/km, 0.75mm ² : <26Ω/km, 1.0mm ² : <19.5Ω/km, 1.5mm ² : < 13.3 Ω/km, 2.5mm ² : <7.98Ω/km	Special sizes on request.
Core Insulation	Specially In-house formulated general purpose PVC 70 °C	Heat Resistant PVC 85 / 90 / 105 °C and also with Special Fire Resistant Insulation. PE/ XLPE / HFFR compounds
Core Identification	Pairs / Triads / Quads colour coded and / or number printed as per BS5308 Part-2	As per customer request.
Laying	Pairs/Triads/Quads stranded to layers	
Individual Shielding	Aluminium Mylar Tape screened with Tinned Copper Drain Wire	Copper Tape/Bare or Tinned Copper Wire Braid – or combination of both Aluminium Mylar Tape + Copper Wired Braid for optimum EMC protection
Cabling	Required Pairs/Triads will be assembled together by reverse layer	
Overall Shielding	Aluminium Mylar Tape screened with Tinned Copper Drain Wire	Copper Tape / Bare or Tinned Copper Wire Braid or combination of both Aluminium Mylar Tape + Copper Wired Braid for Optimum EMC protection
Inner Sheath (For Type-2)	Specially In-House Formulated General Purpose PVC Inner Sheath Compound	FR / FRLS / FRLSH PVC Compounds And LSOH / LSZH / HFFR Compounds
Armouring (For Type-2)	Galvanised Round Steel Wire / Strip	Steel Wire Braid
Outer Sheath	Specially In-house formulated general purpose PVC compound	FR / FRLS / FRLSH PVC Compounds And LSOH / LSZH / HFFR Compounds. Additional options of Oil Resistant / Water Resistant/ Hydrocarbon Resistant / UV Protection / Suitable for Direct Burial / Anti Termite / Anti Rodent / Fungus Proof are also available
Rip Cord		For easy sheath removal
Sheathing Colour	Black or Blue for intrinsically safe circuits	
Rated Voltage	300 V / 500 V	1100 V
Test Voltage	Core To Core / Screen = 1000 V RMS for 1 Minute	
Insulation Resistance	> 100 MΩ/Km [with PVC], >5000 MΩ/Km [PE/XLPE]	
Mutual Capacitance	As per BS 5308 : Part-1 and Part-2	
L/R Ratio	0.5mm ² : Max 25 μH/Ω, 0.75mm ² : Max 25 μH/Ω, 1.0mm ² : Max 25 μH/Ω, 1.5mm ² : Max 40 μH/Ω, 2.5mm ² : Max 60 μH/Ω	

Gloster Cables Limited is equipped to manufacture and supply instrumentation cables as per customer's specifications.

Photovoltiac (Solar) Cables

Photovoltiac (Solar) cables are designed for connecting photovoltaic system components inside and outside of buildings and equipment with high mechanical requirements and extreme weather conditions.

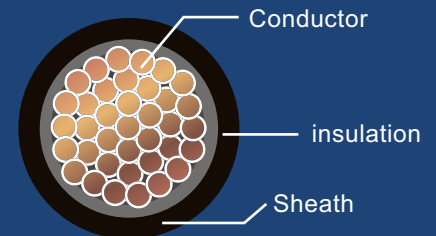
Standards : Based on 2Pfg 1169/08.2007 (PV1-F)

Construction

Conductor : Multi Stranded tinned copper conductor as per IS 8130:84, IEC 60228 Class 5

Insulation : Special cross linked, halogen free, flame retardant compound

Sheath : Special cross linked halogen free and flame retardant compound, Black / Red colour
(or as per customer requirements)



FEATURES

Electrical

- Rated Voltage U0/U : 0.6/1 kV AC; 0.9/1.5 kVDC
- Maximum Permitted Voltage on no load : 1.8 kVDC / 0.7/1.2KV AC
- Operating Voltage : 1000V DC
- Insulation Resistance : >1000 MΩ-km
- Spark Test : 6000 V AC
- Voltage Withstand : 6500 V AC for 5min

Mechanical

- Minimum Bending Radius : 5×OD (Fixed), 15×OD (Flexing occasionally)
- Dynamic Penetration : According to 2 Pfg1169/08.2007 Annex-F
- Notch Propagation : According to 2 Pfg1169/08.2007 Annex-G
- Tensile Strength and Elongation of Insulation & Jacket According to EN60811
- Shrinkage as per EN 60811-1-3
- Anticipated life : Appx. 25 years

Fire

- Flame redardant – as per IEC 60332-1-2
- Low smoke emission
- Halogen free [acid gas emission less than 0.5%]

Thermal

- UV Resistant
- Operating Temperature : (-) 15°C to (+) 90°C
(lower operating temperatures on request)
- Maximum Temperature at Conductor : 90°C (20000h)
- Short Circuit Temperature : 200°C/5 sec
- Thermal Endurance Test : According to EN60216-2
(temperature index +120° C)
- High Temperature Pressure Test : According to EN60811-3-1
- Damp-Heat Resistance : According to EN60068-2-78
with 85% humidity

Chemical

- Resistant to :
 - ⊗ Mineral oils & most chemicals – as per EN 60811-2-1
 - ⊗ Ozone – as per EN 50396 pt 8.1.3, B
 - ⊗ Weather- as per HD 605/AI / DIN 53367
 - ⊗ Acids & Alkalies – as per EN 60811-2-1
- High Abrasion Resistant

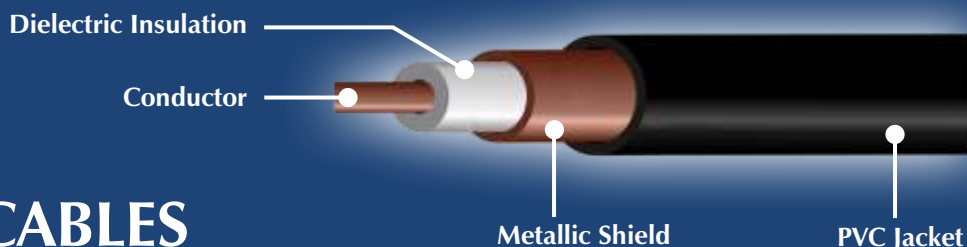
Options Offered



- (1) Single core copper DC Solar cables upto 240 sqmm, both for positive & negative, with UV & Ozone protection, insulated & sheathed with cross linked LSZH compounds, conforming to TUV specification no 2 Pfg.1169/08.2007. These cables are generally used for connecting PV module to PV module & PV Module to Array Junction box.
- (2) Single core copper DC solar cables upto 240 sqmm, both for positive & negative, with HR 105°C PVC insulation and UV protected HR 105°C PVC sheath, conforming to IS694 & IS 1554 -1 guidelines. These cables are also generally used as connecting cable for Array Junction to Main Junction Box, Main Junction Box to Inverter, as well as between PV Module to PV module & PV Module to Array Junction Box.
- (3) Single core copper DC solar cable upto 240 sqmm, both for positive & negative, with XLPE insulation and UV stabilized PVC ST2 sheath, conforming to IS 7098 – 1 guidelines. These cables are generally used as connecting cable for Array Junction to Main Junction Box, Main Junction Box to Inverter, Inverter to Transformer Primary, Transformer Secondary to RMU / Switchyard, RMU to Switchyard, and as well as between PV Module to PV module & PV Module to Array Junction Box.

RG-6

CO-AXIAL CABLES



‘GLOSTER’ Co-Axial Cables, suitable for Cable TV / VSAT networks, are manufactured with superior features to enable customers to get high quality in picture and sound.

Cables are available with both Solid Copper Conductor (SBC) and Copper Clad Steel Conductor (CCS).

Solid Copper Conductor (SBC) is manufactured with more than 99.97% pure copper to ensure better signal transmission. Copper Clad Steel Conductor (CCS) is manufactured with central conductor of copper clad steel with high mechanical strength to support stretch free longer span. It also carries signal without any loss of quality due to the principle of skin effect.

Both these cables are made with stringent parameters and are fully tested with computerized network analyzer.

Construction Parameters

SBC

CCS

Conductor	Solid Bare Copper	Copper Clad Steel
Dielectric	Nitrogen Gas Injected Foam PE	Nitrogen Gas Injected Foam PE
Nominal Diameter	1.02 mm	1.02 mm
Shield -1	Bonded Aluminium Tape	Bonded Aluminium Tape
Shield -2	Aluminium Alloy Braid	Aluminium Alloy Braid
Coverage %	80	80
Flooding Compound	Jelly	Jelly
Jacket	PVC	PVC
Special Properties	UV and Abrasion Resistance	UV and Abrasion Resistance
Nominal Diameter	6.60 mm	6.60 mm
Bending Radius	60	60

Electrical Parameters

SBC

CCS

Nominal Capacitance (PF/mtr)	53	53
Nominal Impedance (Ohm)	75	75
Nominal Velocity Ratio (%)	85	85

Attenuation @20°C

SBC

CCS

Frequency MHz	(db/100m) Max.	(db/100m) Max.
55 MHz	5.20	5.20
211 MHz	9.50	9.50
400 MHz	13.30	13.30
600 MHz	16.45	16.45
750 MHz	18.35	18.35
865 MHz	19.95	19.95
1000 MHz	21.45	21.45

“Ethnic”



Gloster Range Of Modular Circuit Protection Devices

DB (Distribution Board)

Suitable for flush & surface mounting,

Used for safe & optimum distribution of power

ISO 9001:2008
Certified Company



Technical Specification



- Number of Modules : 4W-16W
- IP Category : IP 30 & IP 43
For Single & Double Door
- Material : CRCA sheet steel
- Color : RAL 9003, Matt finish



Compliance and Advantages

- Conforms to IS : 8623
- Wide range-all applications
- Removable gland plates with knock outs
-ease of wiring
- 100A Tin insulated copper bus bar
- Cement spill protection cover-maintaining aesthetics of cover
- Plastic corners for protection against damage
- Neutral link with protection cover
- Box insertion marking-level for inserting in wall & plastering
- Cable ties, blanking plates & circuit identifier labels
- Straightway can be used at site :
As complete DB has phase bus bar, neutral bar, earth bar, cement spill protection and interconnecting wires as standard accessories

Ordering Reference

SPN (IP-30), SINGLE DOOR, HORIZONTAL SINGLE PHASE CONSUMER UNIT
I/C : 2 POLE (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S

SI. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	SPN	4*	4 M	GLHSC04NE
2	SPN	4	6 M	GLHSC04N
3	SPN	6	8 M	GLHSC06N
4	SPN	8	10 M	GLHSC08N
5	SPN	10	12 M	GLHSC10N
6	SPN	12	14 M	GLHSC12N
7	SPN	14	16 M	GLHSC14N
8	SPN	16	18 M	GLHSC16N

D. B. CODE: GLHSC04N : GL="GLOSTER", H= HARMONY, S= SINGLE POLE,
C = SINGLE DOOR, O/G= 04,06,08,10, 12,14,16 = NO. OF WAYS, N=NEUTRAL, E=4M ONLY

TPN (IP-30), SINGLE DOOR, HORIZONTAL THREE PHASE CONSUMER UNIT
I/C : 4 POLE (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S

S. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	TPN	4+	4 + 12	GLHTC04NE
2	TPN	4	8 + 12	GLHTC04N
3	TPN	6	8 + 18	GLHTC06N
4	TPN	8	8 + 24	GLHTC08N
5	TPN	12	8 + 36	GLHTC12N
6	TPN	16	8 + 48	GLHTC16N

D. B. CODE: GLHTC04N : GL="GLOSTER", H= HARMONY, T= TRIPLE POLE
C = SINGLE DOOR, O/G=04,06,08, 12,16= NO OF WAYS, N=NEUTRAL, E=INCOMER : 4M

SPN (IP-43), DOUBLE DOOR, HORIZONTAL SINGLE PHASE CONSUMER UNIT
I/C : 2 POLE (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S

S. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	SPN	4+	4 M	GLHSD04NE
2	SPN	4	6 M	GLHSD04N
3	SPN	6	8 M	GLHSD06N
4	SPN	8	10 M	GLHSD08N
5	SPN	10	12 M	GLHSD10N
6	SPN	12	14 M	GLHSD12N
7	SPN	14	16 M	GLHSD14N
8	SPN	16	18 M	GLHSD16N

D. B. CODE: GLHSD04N : GL="GLOSTER", H= HARMONY, S= SINGLE POLE , D = DOUBLE DOOR,
O/G=04,06,08,10, 12,14,16= NO OF WAYS, N=NEUTRAL, E=4M ONLY

TPN (IP-43), DOUBLE DOOR, HORIZONTAL THREE PHASE CONSUMER UNIT
I/C : 4 POLE (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S

S. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	TPN	4+	4 + 12	GLHTD04NE
2	TPN	4	8 + 12	GLHTD04N
3	TPN	6	8 + 18	GLHTD06N
4	TPN	8	8 + 24	GLHTD08N
5	TPN	12	8 + 36	GLHTD12N
6	TPN	16	8 + 48	GLHTD16N

D. B. CODE: GLHTD04N : GL="GLOSTER", H= HARMONY, T= TRIPLE POLE , D = DOUBLE DOOR,
O/G=04,06,08, 12,16= NO OF WAYS, N=NEUTRAL E=INCOMER:4P

TPN "63 A" (IP-30), SINGLE DOOR, PHASE SELECTOR DISTRIBUTION BOARDS (*)
I/C : 4 P (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S (63 A)

S. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	TPN	4	8+12	GLHTCS04N
2	TPN	6	8+18	GLHTCS06N
3	TPN	8	8+24	GLHTCS08N
4	TPN	12	8+36	GLHTCS12N

D. B. CODE: GLHTPCC04N : GL="GLOSTER", H= HARMONY, T= TRIPLE POLE , C = SINGLE
DOOR,S=SELECTOR, O/G=04,06,08, 12= NO OF WAYS / PHASE, N=NEUTRAL

TPN "63 A" (IP-43), DOUBLE DOOR, PHASE SELECTOR DISTRIBUTION BOARDS (*)
I/C : 4 POLE (MCB/ISOLATOR/RCCB); OG: 1 POLE MCB'S

S. NO.	POLES	NO. OF WAYS (O/G)	NO. OF MODULES	ITEM CODE
1	TPN	4	8+12	GLHTDS04N
2	TPN	6	8+18	GLHTDS06N
3	TPN	8	8+24	GLHTDS08N
4	TPN	12	8+36	GLHTDS12N

D. B. CODE: GLHTPCC04N : GL="GLOSTER", H= HARMONY, T= TRIPLE POLE , D=DOUBLE DOOR,
S=SELECTOR, O/G=04,06,08, 12= NO OF WAYS / PHASE, N=NEUTRAL

“Ethnic”



Gloster Range Of Modular Circuit Protection Devices

MCB (Miniature Circuit Breaker)

MCB is an important safety device for electrical installation. It has dual role of protecting your life, valuable property against overload & short circuit faults.

ISO 9001:2008
Certified Company



Technical Specification

- | | | | |
|------------------------------|--------------------------------------|------------------------|-------------|
| ○ Tripping Characteristics : | B (3In-5In), C(5-10In), D(10In-20In) | ○ Energy Limiting: | : Class - 3 |
| ○ Breaking Capacity | : 10KA (240/415V AC), IS/IEC:60898 | ○ Degree of Protection | : IP - 20 |
| ○ Operating Temp. | : (-) 5 to (+)55 Degree C | ○ Terminal Capacity | : 35 Sqmm. |
| | | ○ Tropicallization | : T2 |



Compliance and Advantages

- | | |
|---|---|
| ○ Conforms to IS/IEC 60898-1 : 2002 | ○ Provides label holder for circuit identity & flag indicator for true contact position, in addition to visible markings on dolly of MCB |
| ○ Available in B, C & D curve in Single Pole, Double Pole, Triple Pole and Four Pole, from 6A to 63A | ○ Load line terminals interchangeable - either side is suitable for Incoming supply or load & vice versa, affording flexibility in electrical installation. |
| ○ Breaking Capacity - 10KA for total range | ○ Low watt loss, far less than values laid down as per IS/IEC, hence cool running of electrical circuits. |
| ○ Current limiting mechanism : significant reduction of let through energy i.e. longer life for associated cables & appliance in use. | |
| ○ Two stage DIN rail adopter giving dual mounting flexibility. | |

ORDERING REFERENCE

SINGLE POLE MCB (SP)

Current Rating (In)	Modules	Catalogue No.			Standard Packing
		B-Curve	C-Curve	D-Curve	
6 A	1	GB106N	GC106N	GD106N	1/12
10 A	1	GB110N	GC110N	GD110N	1/12
16 A	1	GB116N	GC116N	GD116N	1/12
20 A	1	GB120N	GC120N	GD120N	1/12
25 A	1	GB125N	GC125N	GD125N	1/12
32 A	1	GB132N	GC132N	GD132N	1/12
40 A	1	GB140N	GC140N	GD140N	1/12
50 A	1	GB150N	GC150N	GD150N	1/12
63 A	1	GB163N	GC163N	GD163N	1/12

DOUBLE POLE MCB (DP)

Current Rating (In)	Modules	Catalogue No.			Standard Packing
		B-Curve	C-Curve	D-Curve	
6 A	2	GB206N	GC206N	GD206N	1/6
10 A	2	GB210N	GC210N	GD210N	1/6
16 A	2	GB216N	GC216N	GD216N	1/6
20 A	2	GB220N	GC220N	GD220N	1/6
25 A	2	GB225N	GC225N	GD225N	1/6
32 A	2	GB232N	GC232N	GD232N	1/6
40 A	2	GB240N	GC240N	GD240N	1/6
50 A	2	GB250N	GC250N	GD250N	1/6
63 A	2	GB263N	GC263N	GD263N	1/6

TRIPLE POLE MCB (TP)

Current Rating (In)	Modules	Catalogue No.			Standard Packing
		B-Curve	C-Curve	D-Curve	
6 A	3	GB306N	GC306N	GD306N	1/4
10 A	3	GB310N	GC310N	GD310N	1/4
16 A	3	GB316N	GC316N	GD316N	1/4
20 A	3	GB320N	GC320N	GD320N	1/4
25 A	3	GB325N	GC325N	GD325N	1/4
32 A	3	GB332N	GC332N	GD332N	1/4
40 A	3	GB340N	GC340N	GD340N	1/4
50 A	3	GB350N	GC350N	GD350N	1/4
63 A	3	GB363N	GC363N	GD363N	1/4

FOUR POLE MCB (FP)

Current Rating (In)	Modules	Catalogue No.			Standard Packing
		B-Curve	C-Curve	D-Curve	
6 A	4	GB406N	GC406N	GD406N	1/3
10 A	4	GB410N	GC410N	GD410N	1/3
16 A	4	GB416N	GC416N	GD416N	1/3
20 A	4	GB420N	GC420N	GD420N	1/3
25 A	4	GB425N	GC425N	GD425N	1/3
32 A	4	GB432N	GC432N	GD432N	1/3
40 A	4	GB440N	GC440N	GD440N	1/3
50 A	4	GB450N	GC450N	GD450N	1/3
63 A	4	GB463N	GC463N	GD463N	1/3

ISOLATORS : Double/Triple/Four Pole

Current Rating (In)	Double Pole		Triple Pole		Four Pole	
	Catalogue No.	Packing	Catalogue No.	Packing	Catalogue No.	Packing
32A	GI2325	1/6	GI3325	1/4	GI4325	1/3
40A	GI2405	1/6	GI3405	1/4	GI4405	1/3
50A	GI2505	1/6	GI3505	1/4	GI4505	1/3
63A	GI2635	1/6	GI3635	1/4	GI4635	1/3

CHANGE OVER SWITCH : I-0-II

Current Rating (In)	Double Pole		Four Pole	
	Catalogue No.	Packing	Catalogue No.	Packing
25A	GLCOP25	1/6	GLCOFP25	1/3
32A	GLCOP32	1/6	GLCOFP32	1/3
40A	GLCOP40	1/6	GLCOFP40	1/3
50A	GLCOP50	1/6	GLCOFP50	1/3
63A	GLCOP63	1/6	GLCOFP63	1/3

Please check price and delivery terms for following :-

1) 0.5A to 5A MCB in Single Pole, "B" curve MCB in SPN/DP/TP/FPN/FP, "D" curve MCB in SPN/TPN, 50A & 63A MCB, ISOLATOR in DP/TP/FP 32A & 50A, Change Over Switch in DP/FP 32A & 50A

2) Clip-on accessories : Aux/Alarm Contact (230 V AC 0.5 Module), Shunt Release (230-415 V AC)/110-130 V DC and under voltage/over voltage release -240 V AC > 280 V AC (1 Module)

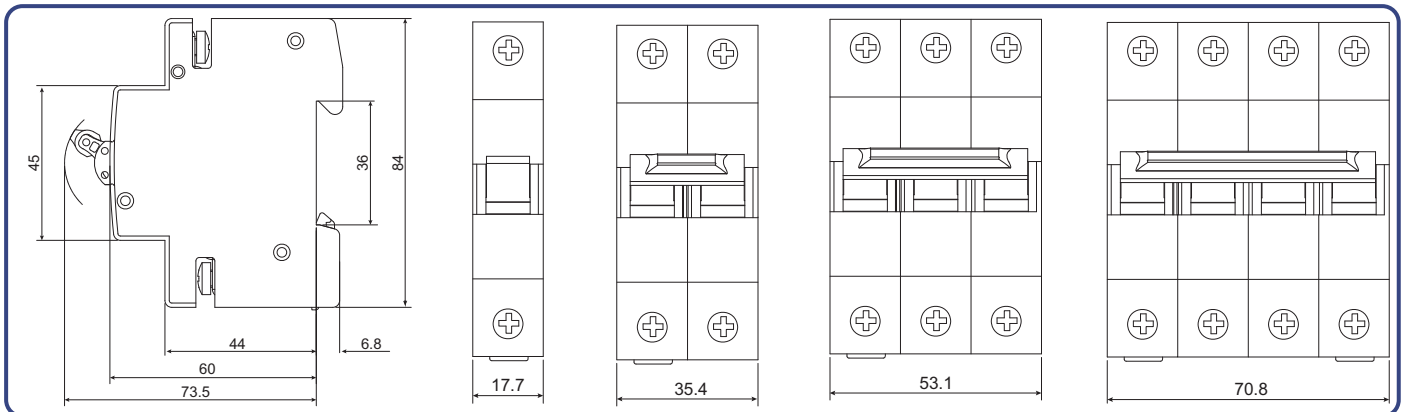
Dimensions (mm)

Single Pole

Double Pole

Triple Pole

Four Pole



Company's policy is of continuous development and improvement. Product supplied may slightly vary from illustrations given

“Ethnic”



Gloster Range Of Modular Circuit Protection Devices

RCCB (Residual Current Circuit Breaker)

Provides protection against electrical shocks and earth leakage, by sensing the leakage current in case of direct and indirect contact to live parts, tripping the circuit, in the event of leakage current exceeding the rated sensitivity.

ISO 9001:2008
Certified Company



DNV Certification B.V., The Netherlands

Technical Specification



- Ratings I_n : 16A, 25A, 32A, 40A & 63A (2P & 4P)
- Sensitivity $I_{\Delta n}$: 30ma, 100ma & 300ma (Trip Class: AC)
- Tripping Leakage Current Range : $0.5 I_n$ — $1 I_n$
- Rated conditional short circuit current I_{nc} : 10KA
- Minimum operating voltage for Test Button : 85% U_e
- 2P / 4P Range : Certified for BIS mark.



Compliance and Advantages

- Conforms to IS:12640-1/IEC:61008
- Automatic disconnecting the circuit, on sensing earth leakage current higher than rated sensitivity.
- High Short Circuit withstand capacity.
- Positive Contact indicator on Front face.
- Clip-on range of accessories.
- Finger proof terminals with safety shutters.
- Earth fault flag Indicator on front face.
- Protection against electric shock : 30 - 300 ma.
- Protection against nuisance tripping due to transients.
- Bi-connect terminals with pull-up design up to 35 sqmm (Rigid)

Ordering Reference*

DOUBLE POLE

Sensitivity	Rating	Modules	Catalogue No.	Std. Packing
30 ma	25A	2	GD225Y	1/6
	40A	2	GD240Y	1/6
	63A	2	GD263Y	1/6
100 ma	25A	2	GE225Y	1/6
	40A	2	GE240Y	1/6
	63A	2	GE263Y	1/6
300 ma	25A	2	GF225Y	1/6
	40A	2	GF240Y	1/6
	63A	2	GF263Y	1/6

FOUR POLE

Sensitivity	Rating	Modules	Catalogue No.	Std. Packing
30 ma	25A	4	GD425Y	1/3
	40A	4	GD440Y	1/3
	63A	4	GD463Y	1/3
100 ma	25A	4	GE425Y	1/3
	40A	4	GE440Y	1/3
	63A	4	GE463Y	1/3
300 ma	25A	4	GF425Y	1/3
	40A	4	GF440Y	1/3
	63A	4	GF463Y	1/3

* 16A and 32 A in Double Pole and Four Pole also available in 30ma, 100ma and 300ma.

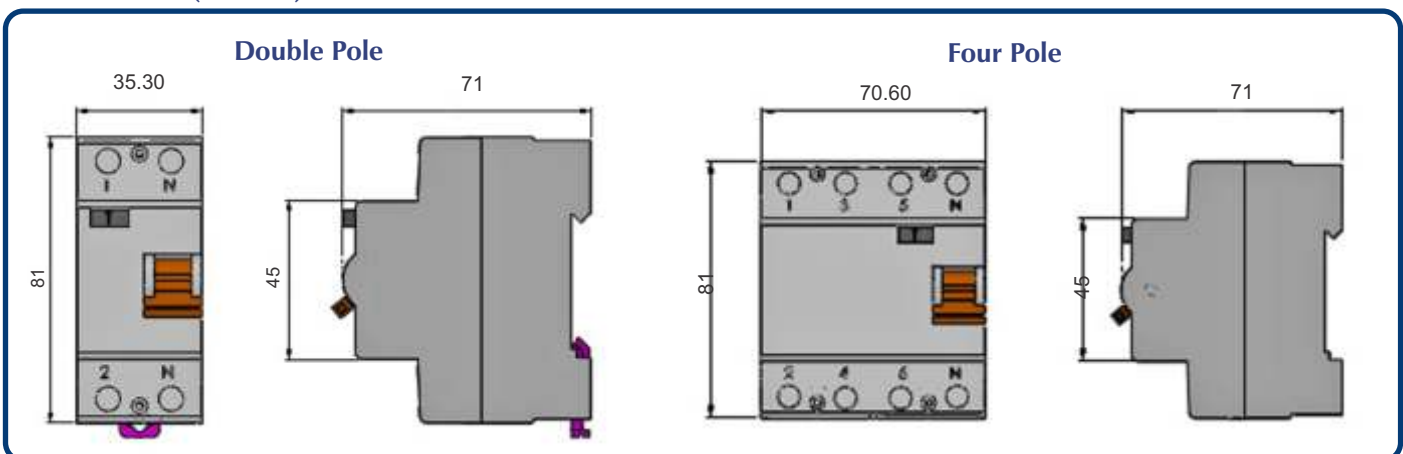
Please check price and delivery terms for following accessories :-

“Clip-on Accessories” GLOSTER RCCB

Description	Catalogue No.
Auxiliary+Alarm Switch (2NO+2NC), 6A-230V AC	GN001 **
Shunt Trip - 230 - 415 V AC/110 - 130 V DC, 1 Module	GN203
Under Voltage/Over Voltage Release - 240 V AC, >280 V AC, 1 Module	GN204/GN205

** For Connecting Shunt Trip, Under Voltage/Over Voltage Release, use of interface auxiliary GN001 is essential.

Dimensions (In mm)



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