THE POWER IS WITHIN

Company Profile And Technical Brochures

MILESTONES

1995 — Incorporation of "GLOSTER"

1998 — ISO Certification

1998 — In-House PVC Compounding Plant

1999 — Introduction of XLPE as Insulation medium

2002 — Establishment of a dedicated conductor manufacturing facility

2004 — Introduction of HT Sioplas Facility

2005 — Massive capacity expansion with State-of-the-art Production/Testing facility and opening of UNIT-2

2010 — Introduction of Flexible/Domestic Cables with FR PVC

2012 — Massive capacity expansion in Domestic/Flexible Cables with HR-FRLSH+FRLSH+FRLSH

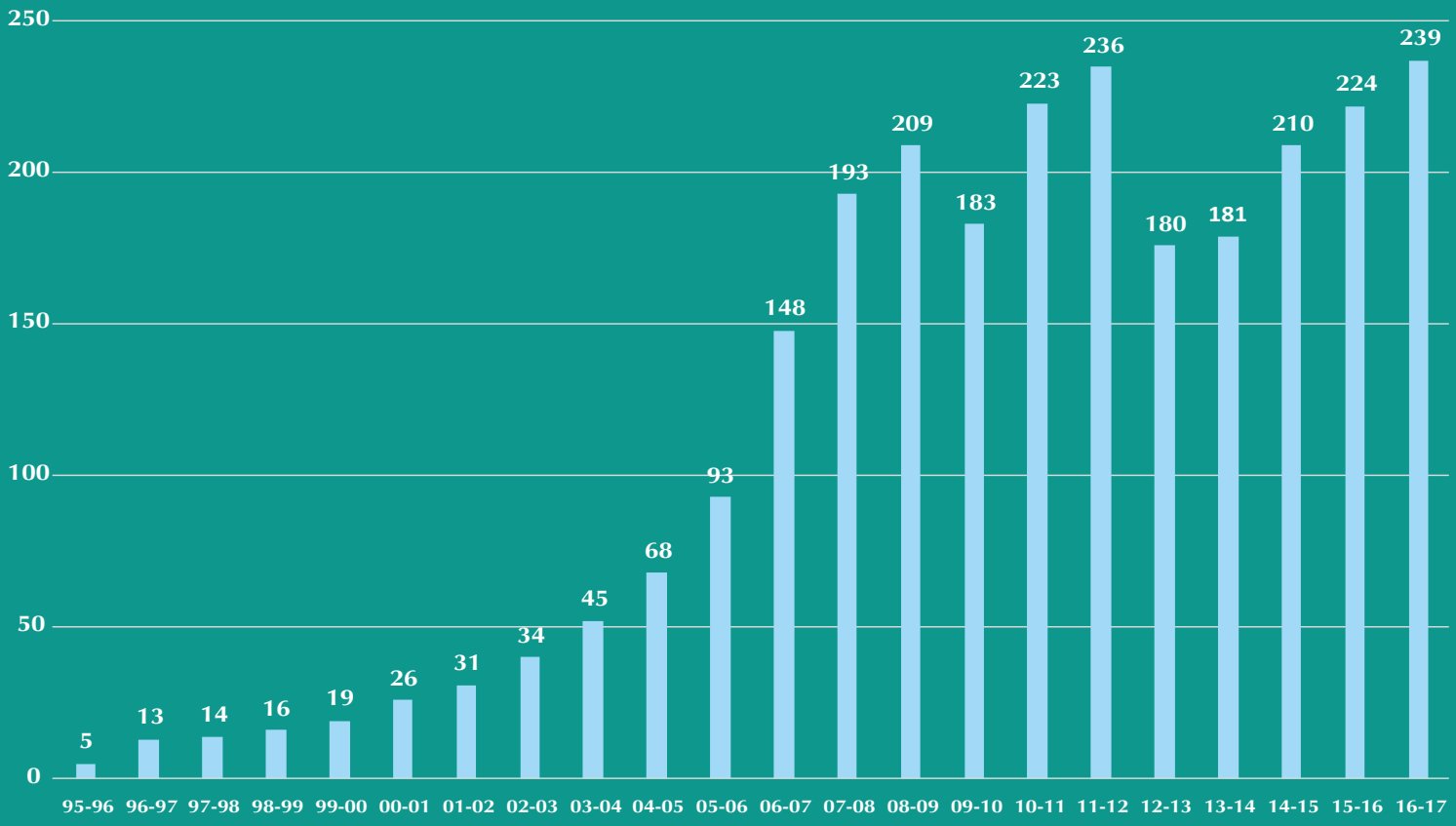
2013 — Introduction of Flat Submersible And Instrumentation Cables

2015 — Introduction Of Triple Layer ZHFR Domestic Cables

2016 — Introduction Of Elastomeric, Co-axial Cables And Special Cables

2017 — Introduction Of Solar Cables

GROWTH CHART



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 44, 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. In its efforts to manufacture an outstanding product, a state-of-the-art infrastructure equipped with sophisticated machinery and testing equipment has been created at its manufacturing units. A vigilant and ruthless internal quality control cell ensures that every Cable is tested to conform to the highest standards in the state-of-the-art In-House Laboratory.

Far outperforming the rest of the industry with a scorching CAGR of almost 20%, the ISO 9001:2008 company, has chalked out an ambitious growth plan aimed at catapulating it into a ` 300 crore company by FY 2017-18.

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.
- 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 (Caterpiller 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 PAN India presence through Regional Offices, Branches, Sales Representatives and Dealers.

AN ISO 9001:2008 CERTIFIED COMPANY

DNV Certification B.V., The Netherlands

PRODUCT RANGE

LOW VOLTAGE XLPE CABLES

Voltage Grade: 1.1 KV

Aluminium Power Cables:

Single Core upto 1000mm^2

Multi Core upto 630 mm^2

Copper Control Cables:

1.5 mm2, 2.5 mm2: upto 61 Core

Copper Power Cables:

Single Core upto 1000mm^2

Multi Core upto 630 mm^2

(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 & HIGH VOLTAGE HT XLPE CABLES

Medium Voltage Cables:

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

Single Core upto 1000 mm^2

Three Core upto 400 mm^2

High Voltage Cables:

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

Single Core upto 1000 mm^2

Three Core upto 400 mm^2

Airport lighting cables

Copper conductor cables

Cables with special technical specification

AERIAL BUNCHED CABLES PE/XLPE (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.

PRODUCT RANGE

DOMESTIC CABLES : TRIPLE LAYER ZHFR

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

Single Core and Multi Core
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 / FR / FRLSH etc.

FLAT SUBMERSIBLE CABLES

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

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

Option-1: Annealed Bare Copper Conductor, UV-XLPE Insulated and UV-PVC Sheath
Option-2: Annealed Bare Copper Conductor, Cross Linked Polyethylene Low Smoke Zero Halogen Insulated and Sheathed
Option-3: Annealed Tinned Copper Conductor, Cross Linked Polyethylene Low Smoke Zero Halogen Insulated and Sheathed
Option-4: Annealed Tinned Copper Conductor, Cross Linked Polyethylene Low Smoke Zero Halogen Insulated and Sheathed

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).

PRODUCT RANGE

ELASTOMERIC CABLES

RTD CABLES

CAT-6 CABLES

FIRE ALARM CABLES

THERMOCOUPLE CABLES

LOAD CELL CABLES

FIRE SURVIVAL CABLES

HEAT RESISTANT CABLES

MANUFACTURING STANDARDS

Cables are manufactured as per following IS specifications (with latest amendments):

IS-1554 (Part-I)	:	1.1 KV grade Low Voltage PVC Cables
IS-7098 (Part-I)	:	1.1 KV grade Low Voltage XLPE Cables
IS-7098 (Part-II)	:	3.3 KV To 33 KV High Voltage HT Cables
IS: 14255-1995	:	LT Aerial Bunched Cables
IS-694 (2010)	:	Domestic and Industrial Flexible Cables
BS-5308 Part-I	:	PE/XLPE Instrumentation Cables
BS-5308 Part-II	:	PVC Instrumentation Cables
BS-EN-50288-7	:	PVC/PE/XLPE Instrumentation Cables
IEC 60502 Part-I	:	LT Power and Control Cables

PRODUCT CERTIFICATION

Relevant BIS Standards

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 MANUFACTURING UNIT (Sqmtrs)

Area (Sqmtrs)	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%)	NATIONAL ALUMINMIUM CO LTD	VEDANTA ALUMINIUM WIRE	
COPPER ROD/WIRE (99.9% Purity)	Sterlite Industries India Limited	Birla Copper	Imported From Vietnam
DOP/ STABILIZERS AND CATALYSTS	KLJ Plastizers Ltd.	Makwell Plastisizers Pvt. Ltd.	
ARMOURING WIRE/STRIP	Tata Steel Limited	Usha Martin Industries Limited	
PVC RESIN	Finolex Industries	Reliance Industries Limited	
COPPER TAPE (HT Cables)	Amex Resources	Neosym	
LT XLPE/HT XLPE INSULATING COMPOUND	Kalpena Industries Limited	KLJ Plastizers	DOW Chemiclas (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)		

GLOSTER

MAJOR CUSTOMERS

MAJOR CUSTOMERS

AUTOMOBILE

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

CEMENT

Ambuja Cement • Arsmeta Cement Plant, Chattisgarh • Binani Cements Limited • Chettinad Cement Corporation Limited • Dalmia Cement • Digvijay Cement • Hirimi Cement Works • J.K. Lakshmi Cement Limited • Maharaja Shree Umaid Mills Ltd., • My Home Cement • Nuvovo Cement • Orient Cement • Penna Cements • Rashmi Cement • Shree Cements Limited • Sonadih Cement Plant • Sourashtra Cement Ltd. • The Associated Cement Companies Ltd. • The India Cements Ltd. • Vasavdatta Cement

CHEMICALS & FERTILISERS

Alkalies & Chemicals Ltd., Baroda • Ashoka Distillers & Chemicals Pvt. Ltd., Delhi • Asian Paints Gujarat • EID Parry India Ltd., TN • EMPEE Sugars & Chemical Ltd., AP • FACT Limited, Kerala • Godavari Fertilisers & Chemicals Ltd., Karnataka • Gujarat Heavy Chemicals Ltd., Veraval • Gujarat Narmda Fertilisers, Bharuch • Gujarat Paguthan Energy Corp., Gujarat • Gujarat State Fertilisers Ltd., Vadodara • Hemani Organics & Chemicals Pvt. Ltd., Ankaleshwar • Hind Lever Chemicals Ltd., WB • Hindustan Antibiotics Ltd., Pune IFFCO , Kandla • Indian Petrochemicals • Indo Rama Petrochemicals • Madras Fertilisers Ltd, Chennai • Meghalaya Carbide & Chemicals P. Ltd. • Nirma Ltd., Gujarat • Rashtriya Chemicals & Fertilisers ltd., Thane • Saurashtra Chemicals • Shree Rayalseema Alkalies • Tata Chemicals Ltd., Gujarat • Uranium Corporation Of India Ltd., Raipur

COAL & MINERAL

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

DAIRY

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

DEFENCE & RESEARCH CENTRE

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

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

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

MAJOR CUSTOMERS

EPC CONTRACTOR

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

INFORMATION TECHNOLOGY

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

IRON AND STEEL

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

LIGHTING

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

PAPER

Andhra Pradesh Paper Mills Ltd., AP • Ballarpur Industries ltd., AP • J.K.Coporation Limited • J.K.Paper Limited • Ramdas Paper Board • Shes Sayee Paper & Boards Ltd., Eorde • Tamilnadu Papers & Newsprint Ltd., TN • The Mysore Paper Mills Ltd., Karnataka • The Sirpur Paper Mills Ltd., AP • West Coast Paper Mills Limited

PETROLEUM & REFINERIES

Bharath Petroleum Corporation, AP • Chiripaul Petrochemical Ltd., Gujarat • Cochin Refineries Ltd., Kerala • Gail (India) Ltd., Bharuch • HPCL, Mumbai • HPCL, Vizag • IOCL, AP • IOCL, Gujarat Refinery Ltd., Gujarat • IPCL, Bharuch • Kochi Refinery Ltd., Kochi • Manglore Refineries & Petrochemical • Mumbai Refineries Ltd., Mumbai • Numaligarh Reifinery Ltd., Assam • ONGC, Ankleshwar • ONGC, TN • South Asian Petrochemicals Ltd., WB

MAJOR CUSTOMERS

PHARMACEUTICAL

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

POWER AND ENERGY

Adani Energy Limited • Ahmedabad Electricity Co. Ltd. • Amrit Bio Energy • AP Power Generation Corp. Ltd. • BSES Rajdhani Power Ltd. • BSES Yamuna Power Ltd. • CESC Ltd. • Chattisgarh State Electricity Co. Ltd. • Gujarat Electric Company • Gujarat Paguthan Energy Corp. • Jaiprakash Industries Ltd. • Jaipur Vidyut Vitaran Nigam Limited • Karnataka Power Transmission Corp. • Kerala State Electricity Board • Maharshi Solar Technology Pvt. Ltd. • National Hydroelctric Power • Nuclear Power Corporation of India • Uttaranchal Power Corp. Ltd. • WESETCL-WBSEDCL

SERVICE (HOTEL/EDUCATION/PORT/HOSPITAL)

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

SUGAR & FOOD

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

TEXTILE AND JUTE

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

UTILITIES

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

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) • Maharastra 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 (BVIS) • Crompton Greaves Ltd • Engineering Projects India Ltd (EPI) • 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

CERTIFICATES, APPROVALS AND TEST REPORTS

CENTRAL POWER RESEARCH INSTITUTE

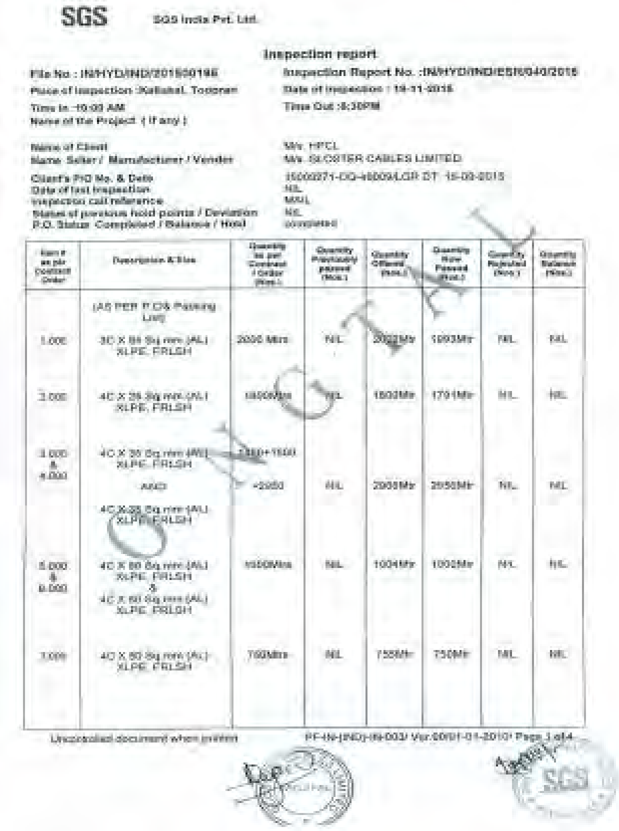
CPRI

TEST REPORT

Test Report Number	[illegible] Dated: 21.12.2015
Name & Address of the Customer	M/s. Gloster Cables Ltd., [illegible] Floor, Above Mody Motors, [illegible] Road, Secunderabad- 500003.
Name & Address of the Manufacturer	M/s. Gloster Cables Ltd., [illegible] NH 44, Kallakal(V), Toopran (M), Medak District, Telangana- 502336
Particulars of sample tested	3 X 300 mm² Al Conductor, XLPE insulated, Galvanised Steel Formed Wire Armoured, PVC Sheathed 18/33 kV Cable
Condition of the sample on receipt	New
Type	A2XFY
Designation	Conductor Material: Aluminium; No. of cores: Three; Size: 300 mm²; Insulation: XLPE; Armour: Galvanised Steel Formed Wire; Outer sheath: PVC (Black); Voltage Rating: 18/33 kV; Embossing: GLOSTER XLPE 18/33 KV(E) 300 SQMM ELECTRIC CABLE ST2 2015 IS 7098 PART II
Serial Number	Nil
Number of Samples tested	One
Date(s) of Test(s)	16.12.2015
CPRI Sample Code No(s)	[illegible]
Particulars of test conducted	Partial Discharge Test
Test in accordance with Standard /Specification	As per IS 7098 Part II- 2011, Amd 1 - 2015
Sampling plan	Not Applicable
Customer's requirement	Nil
Deviation if any	Nil
Name of the witnessing person	
Customer's representatives	None
Other than customer's representatives	None
Test subcontracted with address of the laboratory	Nil
Documents constituting this report	(In words)
Number of sheets	Three
Number of oscillograms	Nil
Number of graphs	Nil
Number of photos	Nil
Number of test circuit diagrams	Nil
Number of drawings	Nil

TEST ENGINEER

JOINT DIRECTOR



SGS — SGS India Pvt. Ltd.

Inspection report

File No : IN/HYD/IND/201500196 — Inspection Report No. : IN/HYD/IND/ESR/040/2015

Place of inspection : Kallakal, Toopran — Date of inspection : 18-11-2015

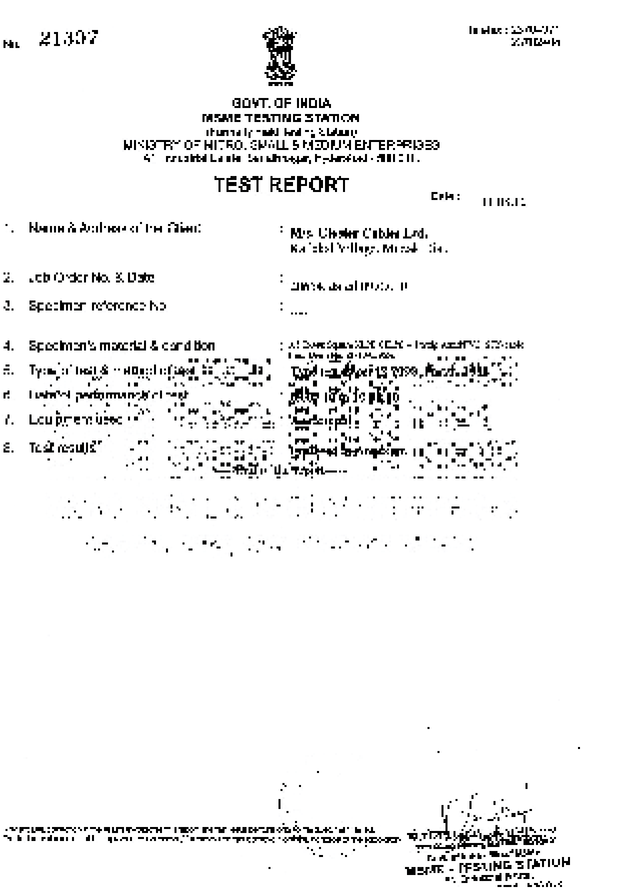
Time In : 10:00 AM — Time Out : 6:30PM

Name of the Project (if any)

Name of Client	M/s. HPCL
Name Seller / Manufacturer / Vendor	M/s. GLOSTER CABLES LIMITED
Client's P/O No. & Date	[illegible] DT 15-09-2015
Date of last inspection	NIL
Inspection call reference	MAIL
Status of previous hold points / Deviation	NIL
P.O. Status Completed / Balance / Hold	completed

Item # as per Contract Order	Description & Size	Quantity as per Contract / Order (Nos.)	Quantity Previously passed (Nos.)	Quantity Offered (Nos.)	Quantity Now Passed (Nos.)	Quantity Rejected (Nos.)	Quantity Balance (Nos.)
	(AS PER P.O & Packing List)						
1.000	3C X 95 Sq mm (AL) XLPE, FRLSH	2000 Mtrs	NIL	2002Mtr	1093Mtr	NIL	NIL
2.000	4C X 25 Sq mm (AL) XLPE, FRLSH	1800Mtrs	NIL	1803Mtr	1791Mtr	NIL	NIL
3.000 & 4.000	4C X 35 Sq mm (AL) XLPE, FRLSH AND 4C X 35 Sq mm (AL) XLPE FRLSH	[illegible]+1500 =2050	NIL	2055Mtr	2050Mtr	NIL	NIL
5.000 & 6.000	4C X 50 Sq mm (AL) XLPE, FRLSH & 4C X 50 Sq mm (AL) XLPE, FRLSH	1000Mtrs	NIL	1004Mtr	1002Mtr	NIL	NIL
7.000	4C X 50 Sq mm (AL) XLPE, FRLSH	750Mtrs	NIL	755Mtr	750Mtr	NIL	NIL

Uncontrolled document when printed — PF-IN-(IND)-IN-003/ Ver.00/01-01-2010/ Page 1 of 4



No. 21397

GOVT. OF INDIA

MSME TESTING STATION

MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES

TEST REPORT

1. Name & Address of the Client : M/s. Gloster Cables Ltd., Kallakal Village, Medak Dist.
2. Job Order No. & Date :
3. Specimen reference No :
4. Specimen's material & condition :
5. Type of test & method of test :
6. Date of performance of test :
7. Equipment used :
8. Test results :

MSME - TESTING STATION

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number	CPRI/RTL/CC/2013T196 — Dated: February 10, 2014
Name and Address of the Customer	The Project Engineer, Technical Audit Cell, M/s. New Okhla Industrial Development Authority, Sector – 6, Noida. [illegible] dated 20.12.2013
Name and Address of the Manufacturer	M/s. Gloster Cables Ltd., [illegible] NH 44, Kallakal (Vill.), Toopran, Medak, AP.
Particulars of Sample Tested	6.35/11 kV, 3C x 240 sq.mm XLPE cable (A2XWaY)
Conductor	Aluminium
Size	240 sq.mm
Insulation	XLPE
No. of cores	Three
Armour	GI strips
Inner sheath	Thermoplastic tape
Outer sheath	PVC, Type ST2
Drum Number	31-13-0572 & 0572
	The Cable was embossed as "GLOSTER XLPE 6.35/11 KV (E) 240 SQMM ELECTRIC CABLE 2013 ST2 IS: 7098 PART II"
Condition of sample on receipt	Good
Type	Nil
Designation	Nil
Serial Number	TRC - 994
Number of Samples tested	One only
Date(s) of test(s)	17.01.2014 to 07.02.2014
CPRI Sample Code Number	CPRI/RTL/CC/2013/[illegible]
Particulars of tests conducted	Type test
Test in accordance with Standard/ Specification	As per clause 16.1 IS: 7098 (Part II) 1985 with latest amendments
Sampling Plan	Not Applicable
Customer's requirement	Nil
Deviation, if any	Nil
Name of the witnessing persons	
Customer's representative	Nil
Other than Customer's representative	Nil
Test subcontracted with address of the laboratory	None
Document constituting this report (in words)	
Number of sheets	Ten
Number of oscillograms	Twelve
Number of graphs	Nil
Number of photos	Nil
Number of test circuit diagrams	Nil
Number of drawings	Nil

(Vipul Sharma) Test Engineer

CENTRAL POWER RESEARCH INSTITUTE

GLOSTER

CERTIFICATES, APPROVALS AND TEST REPORTS

NATIONAL TEST HOUSE (SR)

TEST CERTIFICATE

345174

Test Certificate No.	Date of Issue	Code No.	Page	No. of Pages
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Issued to & address: [illegible]

Customer's Ref. No: [illegible]

Description of Test Item: [illegible]

Identification of Test Item: [illegible]

Date of Receipt of Sample: [illegible]

Method used for test/Specification: [illegible]

Remark: [illegible]

Tested by

Checked by & Approved by

भारत सरकार Government of India

राष्ट्रीय परीक्षण शाला (द.क्षे.)

NATIONAL TEST HOUSE (SR)

TEST CERTIFICATE

Test Certificate No.	Date of Issue	Code No.	Page	No. of Pages
[illegible]	[illegible]	[illegible]	1	2

Issued To: GLOSTER CABLES LIMITED

Address: [illegible]

Customer's Ref. No: NIL

Register No & Date: [illegible]

Description of Test Item: Single core FR/LSH PVC insulated, unsheathed cable with stranded copper conductor

Identification of Test Item: 1C X2.5SQ MM

Product Specification (if any): IS: 694 - 1990, reaffirmed 2005 [illegible]

Date of Receipt of the Test Item: [illegible]

Date(s) of Performance of Tests: From: [illegible] To: [illegible]

Method(s) used for Test: IS: 694 - 1990, reaffirmed 2005 [illegible]

Sampling Procedure where relevant: Not Applicable

Tested By | Checked By | Approved By

GOVERNMENT OF TAMIL NADU

PUBLIC WORKS DEPARTMENT

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 5-3-372, RP Road Secunderabad-500003.
References	BIS License Number 8098679, 6353869, 6536475 & 6487791
Standards/ Specifications	IS 1554 (Part 1):1988, IS 7098 (Part 1):1988, IS 7098 (Part 2):1985 and IS 694:1990
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 Tamilnadu in advance.

ASSESSMENT COMMITTEE 17.12.2012 PWD - GOVERNMENT OF TAMILNADU

Member Secretary, Assessment Committee &
Superintending Engineer, PWD,
Planning and Designs Circle (Buildings),
Chepauk, Chennai – 600 005.

भारतीय विमानपत्तन प्राधिकरण

Airports Authority of India

No.AAM/ENGG/[illegible]

Date: [illegible]

COMPLETION CERTIFICATE

Name & Address of the issuing office	Deputy General Manager Engg.(E) Airport Maintenance Electrical Circle, Chennai Airport, Chennai - 600027
Details of work executed by	M/s. Gloster Cables Ltd., Secunderabad-[illegible]
Name of Work	Providing perimeter lighting in operational area at Chennai Airport. SH: Supply of LT XLPE Cables
Agreement No.	[illegible]
Date of Commencement of work	01.02.2007
Stipulated date of Completion	09.05.2007
Actual date of Completion	24.03.2007
Details of compensation Levied for delay if any	NIL
Tendered Amount	Rs. 1,02,28,000
Gross Amount of completed Work	Rs. [illegible]
Amount of work paid on reduced rates	NIL

Chennai International Airport, Chennai - 600 027

CERTIFICATES, APPROVALS AND TEST REPORTS

TUV SUD South Asia Pvt. Ltd., INDIA

INSPECTION VISIT REPORT

No: TUV/HYD/GCL/KS/JULY/15/01

Date: 11.07.2015

(A) Reference Documents:- [illegible]

(B) Detail of Inspection Activity:- [illegible]

PO/SDO Sl No	Item Description	PO/SDO Qty (in mtrs)	Drum No	Now Offered Qty (in mtrs)	Accepted Qty (in mtrs)	Balance Qty (in mtrs)
[illegible]	3.5C x 300 Sq.mm A2XFY	785/400	21-14-010002	384	385	[illegible]
[illegible]	[illegible]	[illegible]	21-15-01434	575	511	[illegible]
			21-15-01436	514	514	[illegible]
			21-15-01438	480	450	[illegible]
			21-15-01439	460	460	[illegible]
			21-15-01442	520	518	[illegible]
			21-15-01446	596	550	[illegible]
[illegible]	3.5C x 50 Sq mm A2XFY	325/325	22-15-03850	330	325	[illegible]
[illegible]	3.5C x 35 Sq mm A2XFY	300/300	22-15-04277	285	285	[illegible]
[illegible]	12C x 2.5 Sq mm YFY(STD)	480/480	12-15-03807	473	480	[illegible]

Inspection was carried out with reference to PO, Approved QAP, Datasheet, IS: 1554 Part-1 & details as below: [illegible]

Page 2 of 3

Bureau Veritas (India) Private Limited

FIELD INSPECTION REPORT

BVI REF: IND.D.4.10.0405

Page 1 of 1

No: LITL/GCL/FIR/003

Date: 15/10/2015

Project: [illegible] Koradi Thermal Power Plant, Koradi

Supply intended for: M/s MAHAGENCO, Koradi TPS EXP Project

Inspection ordered by: M/s Lanco Infratech Ltd

Supplier: M/s Lanco Infratech Ltd

Issuer RC: BV-HYDERABAD

Drawing No: LITL-011-ELV-320-S-71560

Manufacturer: M/s Gloster Cables Ltd.

Order No: 5000001437 Dt 28.04.2015

Placed with: M/s TCL

Supply: LT XLPE Aluminium Power Cable

Executive RC: BV-Delhi

QAP No.: LITL-011-QAV-321-E-8601 Rev 03 Dt 14.12.2015

A) Measuring Instruments Used [illegible]

Instrument Description (Type, Title, Make)	Id / Serial No	Scale / Range	Certificate No	Calibration Due Date	Calibration Lab details
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Quantity offered	Quantity accepted	Quantity rejected
As per attached packing list	As per attached packing list	Nil

B) Details of Inspection Carried out: Inspection Date 07.10.2015

Attendees:

Mr M.S.R Krishnamraju – M/s Bureau Veritas India Pvt Ltd.

Mr [illegible] – M/s Gloster Cables Ltd

[illegible]

1. Witnessed water absorption test and found satisfactory
2. Reviewed in process inspection reports and found in order

Observations: [illegible]

Conclusion: [illegible]

Name: MSR Krishnamraju

EASTERN POWER DISTRIBUTION COMPANY OF A.P. LIMITED
CORPORATE OFFICE :: VISAKHAPATNAM

From
The Chief General Manager,
Purchase & Material Management,
A.P.E.P.D.C.L., Corporate Office,
T.P.T. Colony, Near Gurudwara,
Seethammadhara,
Visakhapatnam-530 013.

To
M/s Gloster Cables Ltd.,
183/184 (5-370 to 372/A),
IInd Floor, Above Mody Motors,
Rashtrapathi Road,
Secunderabad
500 003

Lr.No.CGM/P&MM/EPDCL/VSP/VR/P2/F.Cl/D.No. 2373 /14, Dt: 17-06/2014.

Sirs,

Sub: EPDCL, VSP - Registration of your firm as approved vendor for supply of "Cables" - Regarding

Ref: 1) Vendor Application No.EVR1316/2013
2) Inspection Report of Assistant Divisional Engineer / Operation / Gajuwaka on dt.14.05.14

-o-o-o-

Referring to the above, you are registered as an approved vendor for supply of "Cables" with registration No **CGM/ P&MM / VR/CI/ No. 1281 / 2014-15.**

The registration is subject to the following conditions:

1) APEPDCL reserves the right to cancel your registration at any time without assigning any reason.
2) It is noted that you are a Manufacturer of the above material.
3) This registration, however, would not be held good for the global tenders to be floated under IDA/IBRD/USAID loan.
4) This registration will be valid upto 31-05-2016.
5) For considering renewal of vendor registration, you have to remit renewal fee of Rs.500/- in the shape of DD drawn in favour of Pay Officer, APEPDCL, Visakhapatnam from any Nationalized bank along with your application before 6 months of the expiry of validity period i.e. on or before 30-11-2015 along with the details of orders executed to APEPDCL.

You have to enclose a copy of reference of this letter to the tenders to be submitted to APEPDCL.

Yours faithfully,

CHIEF GENERAL MANAGER(P&MM)
A.P.E.P.D.C.L. :: VISAKHAPATNAM.

Copy to the Chief General Manager/P&MM/SPDCL, NPDCL, CPDCL.
Copy to the Chief General Manager/Expenditure/EPDCL/Visakhapatnam
Copy to the Chief General Manager/Projects/EPDCL/Visakhapatnam
Copy to the Superintending Engineer/Operation/Srikakulam, Vizianagaram, Visakhapatnam, Rajamundry, Eluru.

RITES LIMITED
SOUTHERN REGION

RITES THE INFRASTRUCTURE PEOPLE

निरीक्षण प्रमाण - पत्र INSPECTION CERTIFICATE

Book No	Set No	Certificate No.	Date	Offered Inst. No. / Passed I & FINAL
7596	045	NWR/S16110268/ESM	20.01.2016	Passed I & FINAL

Contractor: [illegible]

Manufacturer: M/s. Gloster Cables Limited, [illegible]

Place of Inspection: M/s. Gloster Cables Limited, [illegible]

Contract Reference: [illegible] Date 03.11.2015, 23.11.2015

Paying Officer: Sr. DFM/BKN

Consignee: SSE/ELECTRIC/HANUMANGARH

Purchasing Authority: Sr. DMM/NWR/GKH, North Western Railway, Bikaner, Rajasthan

Item No. 1	Description of Stores 2	Quantity on Order 3	Cumulative Qty offered previously 4	Quantity Previously Passed 5	Quantity now Offered 6	Quantity now Passed 7	Quantity now Rejected 8	Quantity Still Due 9
1	[illegible] armoured 1.1 kV [illegible] PVC [illegible] aluminium conductor [illegible]	1000 mtrs	NIL	NIL	1009 mtrs	1001 mtrs	Nil	Nil

Quantity passed One thousand and one mtrs only
Drum No. 31-15-0994 - 505 mtrs
& 31-15-0995 - 504 mtrs
8 mtrs consumed during testing.

No. of items Checked: ONE

Date of Call: 19.01.2016

Date(s) of Inspection: 19.01.2016 & 20.01.2016

[illegible]

CERTIFICATES, APPROVALS AND TEST REPORTS

HINDUSTAN AERONAUTICS LTD.

AIRCRAFT MANUFACTURING DIVN. NASIK

Ref: NK/ 2515 (0468) / VR / MP-03/2013

TO,
GLOSTER CABLE LIMITED
SECUNDERABAD
ANDHRA PRADESH

SUB: REGISTRATION OF FIRM AS APPROVED VENDOR

Dear Sir,

d) Category of item for which registered:

- 1.1kv 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.

Please acknowledge receipt.

CORPORATE OFFICE: 15/1, CUBBON ROAD, P.B.NO. 5150, BANGALORE 560 001

मेकॉन लिमिटेड (भारत सरकार का संस्थान)

MECON LIMITED (A GOVERNMENT OF INDIA ENTERPRISE)

GLOSTER CABLES LIMITED
II ND FLOOR, ABOVE MODI MOTORS
RASHTRAPATHI ROAD
SECUNDERABAD 500003 TELANGANA

Sub : Renewal of Vendor Registration with MECON (Vendor code: V-4936)

Dear Sirs,

1. CABLE - HT POWER CABLE (Upto 11 KV) -MANUFACTURER
2. CABLE - LT CONTROL CABLE -MANUFACTURER
3. CABLE - LT POWER CABLE -MANUFACTURER

Thanking you

For MECON LIMITED

(S PAUL)
Dy. GM I/c. (CVDC)

Valid till 05-MAR-19

RESEARCH DESIGNS & STANDARDS ORGANIZATION
Manaknagar, 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 addresses

Office Addresses	Works Addresses
5/3/372, R.P. Road, Secunderabad.-500003	Survey No.310/E, N.H.7, Kallakal Village, Toopran Mandal, Distt. Medak-502336, A.P

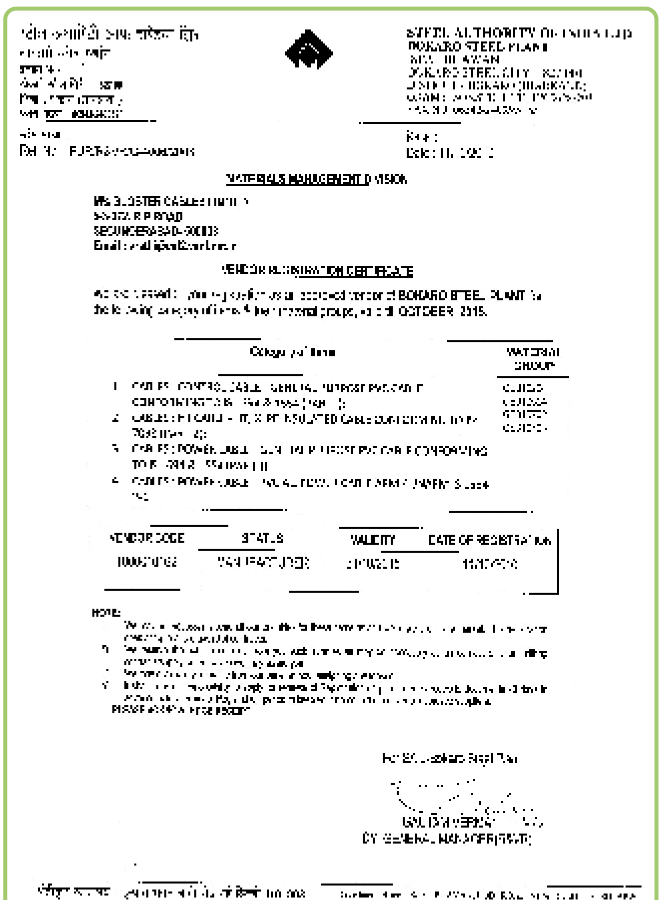
is approved as a supplier for the following items:

S.No.	Item Description	Drawing / Specification	Status of Approval (Part-I / Part-II)
1	PVC Insulated Armoured, Unscreened Underground Power Cable	IRS:S-63/2007 (Amd.3) & IS:1554 (Part-1)	Part-II(TWO)

Certificate Details:

Certificate 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-2016

(G. Govil)
Director QA/S&T
For Director General/QA/S&T



STEEL AUTHORITY OF INDIA LTD
BOKARO STEEL PLANT

MATERIALS MANAGEMENT DIVISION

M/s GLOSTER CABLES LIMITED
R P ROAD
SECUNDERABAD-500003

VENDOR REGISTRATION CERTIFICATE

BOKARO STEEL PLANT ... OCTOBER 2015.

VENDOR CODE	STATUS	VALIDITY	DATE OF REGISTRATION
[illegible]	MANUFACTURER	[illegible]	[illegible]

NOTE:

DY. GENERAL MANAGER(MATL)

CERTIFICATES, APPROVALS AND TEST REPORTS

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LIMITED
(A Government of West Bengal Enterprise)
CIN: U40101WB2007SGC113474; Website: www.wbsetcl.in
***Registered Office:** Vidyut Bhawan, Block-DJ, Sector-II, Bidhannagar, Kolkata -700091*
Office of the Chief Engineer (Procurement), Vidyut Bhawan (10th Floor), Block-'B'.
Phone No.033-2359-1936; Fax No.033-2359-1894, E-mail: procurement.hq@wbsetcl.in

Memo no. CEP/ WBSETCL/Cable/Gloster /16-17/ [illegible] Dated 30.12.2016.

To,
M/s Gloster Cables Limited
5-3-372A, 2nd Floor, R P Road, Secunderabad - 500 003
Tel : +91 40 2753 4985/86, 2753 8814, Fax : + 91 40 2753 8819
Email : marketing@glostercable.com

Sub: Completion Certificate i.r.o. Purchase Order no. **CEP/ WBSETCL/Cable/Gloster/15-16/128 Dated 03.03.2016** for manufacture, testing, supply and delivery of 68 Kms. of 1.1KV, 2.5 Sq.mm., 4 Core; 16 Kms. of 1.1KV, 2.5 Sq.mm., 8 Core ; 20 Kms. of 1.1KV, 2.5 Sq.mm., 12 Core ; 33 Kms. of 1.1KV, 2.5 Sq.mm., 16 Core ; 16 Kms. of 1.1KV, 2.5 Sq.mm., 19 Core & 7 Kms. of 1.1KV, 4 Sq.mm., 4 Core Copper, PVC, control cable as per Technical Specification.

Ref: Your request Letter for issuance of completion certificate vide Letter No. NIL dated 26.12.2016

Dear Sir,

With reference to the above, this is to certify that **M/s Gloster Cables Limited** have successfully delivered the total ordered quantity against the noted Purchase Order and payment has been made thereof.

Yours faithfully,

(P.S. De)
Chief Engineer (Procurement),
WBSETCL

WEST BENGAL STATE ELECTRICITY TRANSMISSION COMPANY LIMITED
(A Government of West Bengal Enterprise)
CIN: U40101WB2007SGC113474; Website: www.wbsetcl.in
***Registered Office:** Vidyut Bhawan, Block-DJ, Sector-II, Bidhannagar, Kolkata -700091*
Office of the Chief Engineer (Procurement), Vidyut Bhawan (10th Floor), Block-'B'.
Phone No.033-2359-1936; Fax No.033-2359-1894, E-mail: procurement.hq@wbsetcl.in

Memo. No. CEP/ WBSETCL/**PSDF**/Limited/Gloster/ Cable/16-17/ [illegible] Dated 30.12.2016.

To,
M/s Gloster Cables Limited
5-3-372A, 2nd Floor, R P Road, Secunderabad - 500 003
Tel : +91 40 2753 4985/86, 2753 8814, Fax : +91 40 2753 8819
Email : marketing@glostercable.com

Sub: Completion Certificate i.r.o. Purchase Order no. **Memo. No. CEP/ WBSETCL/PSDF/Limited/Gloster/ Cable/15-16/87 dated 29.09.2015** for manufacture, testing, supply and delivery of 9.5 Kms. of 1.1KV, 2.5 Sq.mm., 4 Core; 105.5 Kms. of 1.1KV, 4 Sq.mm., 4 Core; 23.5 Kms. of 1.1KV, 2.5 Sq.mm., 12 Core & 9.5 Kms. of 1.1KV, 2.5 Sq.mm., 16 Core Copper, PVC, control cable as per Technical Specification **under PSDF Scheme.**

Ref: Your request Letter for issuance of completion certificate vide Letter No. NIL dated 26.12.2016

Dear Sir,

With reference to the above, this is to certify that **M/s Gloster Cables Limited** have successfully delivered the total ordered quantity against the noted Purchase Order and payment has been made thereof.

Yours faithfully,

(P.S. De)
Chief Engineer (Procurement),
WBSETCL

फैक्स: 91-522-2450482 टेलीफोन : 0522-2465718 ईमेल : dqast@rdso.railnet.gov.in dqastrdso@gmail.com	सत्यमेव जयते	भारत सरकार– रेल मंत्रालय अनुसंधान अभिकल्प और मानक संगठन लखनऊ – 226011

No. RDSO/2010/QS/Cable/1397 Vol I Dated. 02.12.2016

Director/QA/S&T/RDSO,
Ground Floor,
DRM Office Building,
Bangalore-56002

By SPEED POST/FAX

Sub: Quality Audit of firm M/s. Gloster Cables Limited, for the periodic review for the item PVC insulated armoured U/G U/S Power Cable as per spec no. IRS S: 63/2014 and IS 1554 (part I)
Ref: Dir/QA/S&T/SBC letter no. DI/SBC/Gloster Cables dt. 04.10.2016

With reference to above, the due date for conducting next quality audit of the firm M/s. Gloster Cables Limited with work address at Survey No. 310/E, N.H. 44 Kallakal Village, Toopran Mandal, Dist. Medak- 502336, TELANGANA 08454- 250511/12 , Fax No. 08454- 250510 & E- Mail praveen@glostercable.com for the subject item is 25.09.2021.

A copy of quality audit report is to be communicated to the vendor as per cl. no. 4.8 of QO-D-7.1-13 Ver. 6.0.

This has the approval of competent authority.

DA: Nil

Neelabh Mahesh
(Director/QA/S&T)
For Director/General/QA/S&T

Copy to:

M/s. Gloster Cables Limited : 5/3/372, R.P.Road Secunderabad-500003 — For information & necessary action please

---

Government of Maharashtra
Office of the Chief Engineer (Elec.),
P.W.D. Deptt., Govt. of Maharashtra,
Bandhkam Bhavan, 3rd floor,
Marzban Road, Fort,
Mumbai- 400 001.

Website : www.mahapwd.com Email :- cinmumbaice@mahapwd.com	Telephone : (022) 22015415/16/17 Fax : (022) 22016908
No.CE/ Elec./ Desk-3-5/HD04/ 370 /2016.	Date :- [illegible] SEP 2016

To,
M/s Gloster Cables Ltd.,
183/184, (5-3-370 to 372-A), 2nd Floor, Above Mody Motors, R P Road, Secunderabad 500 003

Sub : Approval to use material on works carried out by Government of Maharashtra.

Ref : 1) M/s Gloster Cables Ltd., 183/184, (5-3-370 to 372-A), 2nd Floor, Above Mody Motors, R P Road, Secunderabad 500 003 Office Letter No. GCL/HYD/REG/2015-16/D.NO./0001 Date - 23.11.2015.
2) This Office Letter No. C.E.(Elec.)/3-5/105/2016 Date 20.04.2016
3) This Office Factory Visit Report Date 21.06.2016 .
4) Test Report of MSME TESTING STATION, Hyderabad - 500 018 Report No.48252 Date - 29.07.2016

Sir,

The subject proposal submitted by you was examined by this office and now the undersigned is pleased to accord approval to the following materials for using it on works carried out by Government of Maharashtra W.E.F. the date of issue of this letter.

Name of material : "Cables"
Place of manufacture : Survey No.310/E NH-7, Kallakal (Village), Toopran (Mandal), Medak (District), 502 336.
Brand Name : "GLOSTER"
Technical Specifications of the Materials :

Sr.No.	Name of Product	Validity
1	Crosslinked polyethylene insulated, thermoplastic sheathed cables part 1 for working voltage upto and including 1100 V.	Up to 31st August 2019

Manufactured as per ISI No. : IS : 7098 (PART-1) 1988
Whether having ISI No : Yes
License No. : CML NO : 6353669 Validity : Subject to Valid as per the BIS Licence Only.
Whether covered by House hold Electrical : N.A.
Manufacturing Certificate No. : N.A
Validity : N.A.
Authority to issue M.C. : N.A.

The above approval given subject to the performance of the material during this period remains satisfactory. In case of unsatisfactory performance; the approval accorded shall be with drawn forthwith.

Yours faithfully,

(S.A.Patil)
Chief Engineer (Elect.)
P.W.Deptt., MUMBAI-1.

Copy forwarded to Superintending Engineer, Regional Elec. Circle, Pune/ Nagpur for favor of information.
Copy forwarded to Executive Engineer, Elec. Dn., P.W.D. South Mumbai/ North Mumbai / Central Mumbai / Agriculture Const. Divn. -5 / Pune / Thane / Kolhapur /Nashik/Aurangabad / Osmanabad / Amravati / Nagpur for information.

CERTIFICATES, APPROVALS AND TEST REPORTS

Tele: 07324-271454(O)

Married Accn Project
C/O Stn HQ Mhow
(M.P.) - 453441

PMMAP/PH-II/MHOW/PKG-13(R&C)

22 Feb 2016

M/s Kalyan Toll Infrastructure Ltd
VIDYA DEEP, Manoramaganj
Indore-452001(MP)

CA NO : DGMAP/PHASE-II/MHOW/PKG 13 (R&C) OF 2015-16 : COMPLETION OF BALANCE WORKS FOR CONSTRUCTION OF RESIDENTIAL ACCN AT MHOW

Dear Sir(s)

1. Reference your letter No KTIL/IND/216/157/2016 dated 10 Feb 2016.

2. The following samples/makes of materials are hereby approved for incorporation in the above subject work:

Ser No	Description of materials	Make / Sources of materials
(a)	1.1 KV Grade LT XLPE Cables :- (i) 3.5 core 50 sqmm (ii) 4 core 16 sqmm (iii) 4.00 core 10 sqmm	M/s Gloster Cables Ltd (Brand-Gloster)
(b)	1.1 KV grade LT PVC cable :- (i) 4 core 16 sqmm	M/s Gloster Cables Ltd (Brand-Gloster)
(b)	PVC insulated copper wires Domestic :- (i) 1 core 1.5 sqmm (ii) 1 core 2.50 sqmm (iii) 1 core 4.00 sqmm (iv) 1 core 6.00 sqmm (v) 2 core 2.5 sqmm (vi) 3 core 2.5 sqmm	M/s Gloster Cables Ltd (Brand-Gloster)

3. Ensure that the product confirms to relevant IS code and CA specifications as approved is purchased from authorised source. Also at any point of time if the material supplied is found to be of inferior quality or not confirming to CA specification, the same is liable to be rejected.

4. Please produce Manufacturer Test Certificate & original voucher for verification along with the consignment.

Yours faithfully,

(Rajeev Saini)
Lt Col
Project Manager

Copy to :-		
M/s Holistics BS JV The Corenthum Tower-A, Terrace, A-41, Sec-62, Noida-201307	-	For information with reference to your letter DEPMC/MAP-II/Mhow/R&C/01/258 dated 20 Feb 2016. Please ensure that the materials incorporated in the work shall be in strict conformity with the relevant IS, CA particular specification and the sample approved.
M/s Gloster Cables Ltd (Brand-Gloster) 5-3-372A, 2nd Floor, R P Road, Secunderabad-500003	-	You are requested to ensure your product is as per the relevant IS codes and CA specifications are supplied at all times and ensure continuous unhindered supply.

जवाहरलाल नेहरू पोर्ट ट्रस्ट
JAWAHARLAL NEHRU PORT TRUST

JNPT

[illegible]

Website : www.jnport.gov.in E-mail : info@jnport.gov.in

संदर्भ संख्या : [illegible]/2016/ 854 दिनांक : 29/06/2016

प्रति,
मै. Gloster Cables Ltd
183/184 (5-3-370 To 72A),2nd Floor Above Mody Motors,
Rashtrapathi Road,
Secunderabad-500003,Telangana

विषय : विक्रेता पंजीकरण ।

मुख्य कोड संख्या	000
विवरण	Cables (All Types)

महोदय,

[illegible]

1.	पंजीकरण संख्या [illegible]	883A
2.	[illegible] (विवरण)	Cables (All Types)
3.	पंजीकरण की श्रेणी	A
4.	पंजीकरण की वैधता	30/06/2021 तक

[illegible]

[illegible] www.jnport.gov.in [illegible]

धन्यवाद,

भवदीय,

[illegible]

मुंबई कार्यालय : 1107, रहेजा सेंटर, 214, [illegible], नरीमन पॉइंट, मुंबई - 400 021. [illegible] : 91-22-6616 5800 फैक्स : 91-22-6743 1116.
MUMBAI OFFICE : 1107, RAHEJA CENTRE, 214, FPJ MARG, NARIMAN POINT, MUMBAI - 400 021. TEL : 91-22-6616 5800 FAX : 91-22-6743 1116.
[illegible]

[illegible]
SOUTHERN POWER DISTRIBUTION COMPANY OF A.P. LIMITED
TIRUPATI

From
The Chief General Manager
P&MM, APSPDCL
[illegible]
Kesavayana Gunta,
TIRUPATI
[illegible]

To
M/s Gloster Cables Ltd.
[illegible]
[illegible] Above Mody Motors, R.P.Road,
[illegible]

Lr.No.CGM/P&MM/SPDCL/VR/C[illegible]

Sir,

Sub: [illegible] - Registration [illegible] vendor for supply of [illegible] LT Power & Control Cables [illegible] (Manufacturer) - [illegible] - Reg.

Ref: 1) Lr.No.CGM/P&MM/EPDCL/[illegible]
2) [illegible]

* * *

[illegible] LT Power & Control Cables [illegible]

The registration is subject to the following conditions:

[illegible]

Yours faithfully,

CHIEF GENERAL MANAGER/P&MM
APSPDCL :: TIRUPATI

[illegible]

File No.EPCOR-08002(19)/159/2016-PURCHASE-2-COR

EASTERN POWER DISTRIBUTION COMPANY OF A.P. LIMITED

CORPORATE OFFICE :: VISAKHAPATNAM

Phone: 0891-2582300 Phone :

From
The Chief General Manager,
Purchase & Material Management,
A.P.E.P.D.C.L., Corporate Office,
T.P.T. Colony, Near Gurudwara,
Seethammadhara,
Visakhapatnam-530 013.

To
M/s Gloster Cables Ltd.,
183/184, 5-3-370-372A.,
2nd Floor, Above Mody Motors,
R.P.Road, Secunderabad - 500 003

Lr.No.CGM/P&MM/EPDCL/VSP/VR/P2/E/CI/D.No. 4982/16, Dt. 30.09/2016.

Sirs,

Sub: EPDCL, VSP - Registration of your firm as approved vendor for supply of centralized material "Cables" - Regarding

Ref: 1) Vendor Application 2545/2016
2) Inspection Report of Sri.O.Simhadri,CGM/P&MM/EPDCL on 10.09.16

****

Referring to the above, you are registered as an approved vendor for supply of centralized material "Cables" with registration No **CGM / P&MM / VR / CI / No 1464/2016-2017.**

The registration is subject to the following conditions:

1) APEPDCL reserves the right to cancel your registration at any time without assigning any reason.
2) It is noted that you are a manufacturer for the above materials.
3) This registration, however, would not hold good for the global tenders to be floated under IDA/IBRD/USAID loan.
4) This registration will be valid upto **30-09-2018.**
5) For considering renewal of vendor registration, you have to remit renewal fee of Rs.500/- in the shape of DD drawn in favour of Pay Officer, APEPDCL, Visakhapatnam from any Nationalized bank along with your application before 6 months of the expiry of validity period i.e. on or before **31-03-2018** along with the details of orders executed in APEPDCL.

You have to enclose a copy of reference of this letter to the tenders to be submitted to APEPDCL.

Yours faithfully,
\#Approved#
CHIEF GENERAL MANAGER(P&MM)
A.P.E.P.D.C.L. : : VISAKHAPATNAM.

Copy to the Chief General Manager/P&MM/APSPDCL, TSNPDCL, TSSPDCL.

CERTIFICATES, APPROVALS AND TEST REPORTS

कार्यालय अधीक्षण अभियंता
विद्युत यांत्रिक मंडल लोक निर्माण विभाग
रायपुर (छ.ग.)

आदेश क्रमांक /कार्य/16–17 रायपुर, दिनांक 31/3/2017

विद्युत सामग्री अनुमोदन आदेश

छत्तीसगढ़ के शासकीय भवनों में विद्युत कार्यों हेतु लोक निर्माण विभाग में प्रचलित विद्युत एस.ओ.आर. जो कि दिनांक 01.07.2015 से प्रभावशील है, के आधार पर विशिष्ट पुस्तिका के आधार पर M/s. Gloster Cables Limited Survey No.310/E, (Unit-I) Kallakal Village Toopran Mandal Medak District Telangana & M/s. Gloster Cables Limited Survey No.293 (Unit-II) NH7 Kallakal Village- 502336 Toopran Mandal Medak District Andhra Pradesh. द्वारा उत्पादित विद्युत सामग्री जिन पर "GLOSTER" व्यवसायिक चिन्ह अंकित हो ऐसे Wire & Cables में को संलग्न उत्पादन अनुमोदन विवरण तालिका के अनुसार एतद् द्वारा अनुमोदन किया जाता है।

यह अनुमोदन निम्न शर्तों के अधीन मान्य होगा।

1. विद्युत सामग्री की क्वालिटी आकार अथवा अन्य कोई शिकायत सिद्ध होती है अनुमोदन निरस्त किया जा सकता है।
2. यह अनुमोदन जारी होने के दिनांक से 1 वर्ष तक या उत्पादों की आई.एस.आई. प्रमाण पत्रों की वैधता तिथि जो कि पहले हो तक मान्य होगा। इसके नवीनीकरण के लिए वैधता के एक माह के पूर्व आवेदन करना होगा।
3. समय–समय पर प्राइस लिस्ट/कैटलाग/ड्राईंग आदि जब भी परिवर्तित होते है। इस कार्यालय को उपलब्ध कराना होगा।
4. बगैर कारण दर्शाए यह अनुमोदन निरस्त करने हेतु विभाग के पास अधिकार सुरक्षित होगे।
5. यह अनुमोदन भारतीय मानक ब्यूरो द्वारा जारी प्रत्येक विद्युत सामग्री का लाईसेंस नवीनीकरण होने पर ही मान्य होगा। नवीनीकरण के प्रत्येक प्रमाण पत्र की प्रति इस कार्यालय को उपलब्ध कराई जावें। अनुमोदित प्रत्येक सामग्री पर आई.एस.आई. चिन्ह अंकित होना चाहिए।

सहपत्र–उत्पाद अनुमोदन विवरण तालिका।

अधीक्षण अभियंता
वि./यां. मंडल, लो.नि.वि.
रायपुर (छ.ग.)

पृ. क्रमांक 573 /कार्य/16–17 रायपुर, दिनांक 31/3/2017

प्रतिलिपि–

1. M/s. Gloster Cables Limited Survey No.310/E, (Unit-I) Kallakal Village Toopran Mandal Medak District Telangana & M/s. Gloster Cables Limited Survey No.293 (Unit-II) NH7 Kallakal Village- 502336 Toopran Mandal Medak District Andhra Pradesh
2. कार्यपालन अभियंता, लो.नि.वि. (वि/या.) संभाग रायपुर/दुर्ग/जगदलपुर की ओर सूचनार्थ एवं आप अपने अधीनस्थ समस्त उपसंभागीय कार्यालय को सूचित करें।

उपरोक्त अनुमोदित विद्युत सामग्री में किसी भी प्रकार के त्रुटि पाये जाने पर इस कार्यालय को सूचित करें।

सहपत्र–उत्पाद अनुमोदन विवरण तालिका।

अधीक्षण अभियंता
वि./यां. मंडल, लो.नि.वि.
रायपुर (छ.ग.)

कार्यालय अधीक्षण अभियंता
विद्युत यांत्रिक मंडल लोक निर्माण विभाग
रायपुर (छ.ग.)

उत्पाद अनुमोदन विवरण तालिका

आदेश क्रमांक 573/कार्य/16–17 रायपुर, दिनांक 31/3/2017

क्र. क्र.	निर्माता का नाम तथा पता	व्यवसायिक चिन्ह	अनुमोदित मद की संक्षिप्त विशिष्टता	आई.एस.ओ.कोड	आई.एस.ओ. द्वारा प्रदत्त लाईसेंस क्र.	टिप्पणी
1	2	3	4	5	6	7
1.	M/sGloster Cables Limited Survey No.310/E, (Unit-I) Kallakal Village Toopran Mandal Medak District Telangana & M/s. Gloster Cables Limited Survey No.293 (Unit-II) NH7 Kallakal Village- 502336 Toopran Mandal Medak District Andhra Pradesh	'GLOSTER'	(1)- PVC Insulated cables for working voltages upto and including 1100 V (2)- PVC Insulated (Heavy duty) Eletric cables for working voltages upto and including 1100 V (3)-Cross linked polyethylene insulated Thermoplastic Sheathed cables: (part-I) for working voltages up to and including 1100V (4)- Crosslinked polyethylene insulated PVC sheathed cables for working Voltage from 3.3 KV upto & including 33 KV	IS 694:1990 IS 1554 (part-I):1988 IS 7098 (part-I):1988 IS 7098 (part-2):1988	4410544 4410748 6003089 6038435	यह अनुमोदन जारी होने के दिनांक से 1 वर्ष तक या उत्पादों की आई एस. आई. प्रमाण पत्रों की वैधता तिथि जो कि पहले हो तक मान्य होगा।

अधीक्षण अभियंता
वि./यां. मंडल, लो.नि.वि.
रायपुर (छ.ग.)

RAIPUR DEVELOPMENT AUTHORITY
Bhakt Matakarma Commercial Complex,
New Rajendra Nagar, Raipur (C.G.) - 492006
Email : ceordarys@gmail.com Website : www.rdaraipur.com
Phone : (0771) 2536188, 2536788, 2535188, 2227165, Fax : 2534688

Ref No **Ref. No. :-** 4247 **Raipur, Dated :** ...../14
Raipr. Dated 16-11-2016

To
M/s Gloster Cable Ltd.
II Floor, Above Mody Motors
RP Road
Secunderabad
Telangana.

Sub:- Vendor registration approval for M/s Gloster Cable Ltd. supply LT and HT Cables including Switch Gears for upcoming projects of RDA

Ref: - Your Letter GCL/KOL/15-16 dated August 25, 2016

We have examined the credentials /reports submitted to us vide above cited reference regarding the approval of your firm M/s Gloster Cable Ltd. as potential vendor for supply of Electrical Products at RDA's List of Approved Make of Electrical Items.

We are pleased to inform that based on documents submitted to us, M/s Gloster Cable Ltd., will be considered as approved vendor for upcoming projects for the following products which are listed in the table below.

1.	PVC Insulated Cables for Housing wiring 650/1100V, LT & HT Cables **XLPE.**
2.	Switch Gears like MCB, RB, and RCCB.

However the enlistment of the above products shall be without commitment to send enquiries /place orders on behalf of RDA or its appointed consultants. The enlistment is also subjected to the following conditions

a) Conformance of the products with the specifications, SOR etc of the relevant tender documents in which the products are listed.
b) Submission of relevant valid test certificates provided by NABL accredited Lab conforming to relevant IS Standards, IS license (in case of IS approved/listed products) etc to RDA Engineer in Charge of the projects in which the products are approved.
c) Continuance of the enlistment shall depend on satisfactory performance of the products and the performance shall be reviewed periodically based on the feedback from the RDA's Engineer in Charge
d) The enlistments of the above tabulated products are on the condition of maintaining of quality intact by M/s. Gloster Cable Ltd.
e) The authority shall monitor and review the performance of the listed products during execution at the site. In case if any change is found (negative feedback or deterioration in the quality) in any of the listed product(s) specifications then the product(s) shall be reviewed again for approval.

(Chief Engineer)

RAIPUR DEVELOPMENT AUTHORITY
Bhakt Matakarma Commercial Complex,
New Rajendra Nagar, Raipur (C.G.) - 492006
Email : ceordarys@gmail.com Website : www.rdaraipur.com
Phone : (0771) 2536188, 2536788, 2535188, 2227165, Fax : 2534688

Ref. No. : ..... Raipr. Dated : .....

f) The Authority wholly reserves the rights to revoke /suspend the enlistment on the basis of review at any time.

g) Subject to the product is approved by the CSPDCL.

This is for your information and records.

Chief Engineer
(Raipur Development Authority)
Raipur (CG.)

4248
End. No

Raipur Dated: 16-11-2016

Copy To:-

1. **Chief Executive Officer,** Raipur Development Authority – For information please.
2. **Superintending Engineer,** Raipur Development Authority
3. **Executive Engineer 1 / 2,** Raipur Development Authority
4. **Team Leader, PSC Raipur.**

Chief Engineer
(Raipur Development Authority)
Raipur (CG.)

CERTIFICATES, APPROVALS AND TEST REPORTS

STEEL AUTHORITY OF INDIA
IISCO STEEL PLANT BURNPUR
(CIN : L27109DL1973GOI006454)

TO
GLOSTER CABLES LIMITED
183/184, (5-3-370 TO 372-A), 2ND FLOOR, ABOVE MODY MOTORS, R.P. ROAD
SECUNDERABAD
500003

Date:- 07-Nov-2017

ENLISTMENT RENEWAL CERTIFICATE

Ref: Req Serial Number REQ/RERG/2692 Dated: 04/10/2016

We are pleased to renew registration of GLOSTER CABLES LIMITED as an approved vendor of ISP-SAIL for the following item(s):

Sl.No.	Category code	Category of Items	Remarks
1	183	PVC POWER CABLE [LARGE MFRS.]	
2	695	HT XLPE CABLES	
3	710	LT XLPE CONTROL CABLES	

Regn No.	Supplier Code	Area Code	Valid upto	Vendor Type
RERG/2692	R861	SAIL-ISP	26/07/2022	MANUFACTURER

NOTE: i) This certificate is issued in lieu of any other previous certificate issued from ISP-SAIL in this regard. .
ii) We may not necessarily send all our enquiries for these categories of items as and when we are in the market. This registration does not guarantee award of contacts.
iii) We reserve the right to demand from you such sureties as may be necessary as an earnest of your fulfilling contracts / supply orders which we may award you.
iv) We may eliminate your name from our panel without assigning any reason.
v) It shall be your responsibility to apply for renewal of Registration on payment of stipulated renewal fee and production of requisite documents 90 days in advance before expiry of Registration period to keep your name in the register of approved suppliers.

for Head of Materials Management

KIRAN KUMAR
Dy. Manager
SAIL-ISP, BURNPUR

भारत सरकार
अंतरिक्ष विभाग
प्रधान सीएमडी का कार्यालय, इसरो मुख्यालय
एलपीएससी परिसर, 80 फीट रोड
एचएएल 2-स्टेज एचपीओ
बेंगलूरु – 560 008, कर्नाटक, भारत
फैक्स : 080-25203763 / 25262466
दूरभाष : 080-

इसरो isro

Government of India
Department of Space
Office of the Head CMD, ISRO HQ
LPSC Campus, 80 Feet Road
HAL II Stage HPO
Bangalore - 560 008, INDIA
Fax : 080 - 2520 3763 / 25262466
Telephone: 080-

No. CMG/ISRO-HQ/E/EOI/CABLES/2017-18/465

December 12, 2017

To:

M/s. Gloster Cables Ltd,
183/184, R.P. Road, 2nd Floor,
Secunderabad 500 003.
Ph : 040-27534985/86,
Fax : 040-27538819
email : info@glostercable.com
Web : www.glostercable.com

Sub - **Enlistment of HT & LT Cable Manufacturers – Reg.**

Ref - **1. EOI No. CMD/ISRO-HQ/E/EOI/01/15-16 Dt. 12/06/2015**
2. EOI. Corrigendum I Dt. 30/07/2015

This is with reference to the Expressions of Interest received from you in response to notification(s) cited above. Based on the verification of credentials submitted vide your Expression of Interest as stipulated and inspection at your manufacturing unit by the Department, your firm has been enlisted as an **approved "HT & LT" Cables Manufacturer** with effect from 01-10-2017.

This is for your kind information and records.

Group Director, CMG, ISRO HQ

भारतीय अन्तरिक्ष अनुसंधान संगठन **Indian Space Research Organisation**

Gujarat Water Supply & Sewerage Board

(A Government of Gujarat undertaking)
Jalseva Bhavan, Chh Road,Sector 10-A, Gandhinagar - 382 010
Phones: 079 – 23251348, 23251089 (D), Fax : 079 23225979

M. H. Patel
C. E. (Mech)

No. CE(Mech.)/Mat/ Vendor/C-302/ 4412

Date : 30/3/2017

To,
M/s. Gloster Cables Ltd,
183/ 284(5-3-370 to 72 A),
II ND Floor, Above MODY Motors,R P Road,
Secundrabad-500003
Telangana.

Contact No.: 08454-25011 & 250512
Email: Praveen@glostercable.com,www.glostercable.com

Subject : Selection of vendor for supply of various Electro – Mechanical and Instrumentation & Control Equipment.

Ref. : 1 Your request for registration of your firm in approved vendor list of GWSSB.
2 BM – 262 /08 Dated: 16 – 03 – 2017

Sir,

Referring to request for registration of your firm on approved vendor list of GWSSB, I am pleased to inform you that after due consideration and shop survey of your firm / works, you are considered eligible for supply of item(s) manufactured @ the works location mentioned in the Appendix – A attach here with.

You are considered as approved vendor for participating in the bidding process of GWSSB / GWIL / WASMO and also for turnkey / EPC projects of GWSSB for supply of item(s) to / for GWSSB / GWIL / WASMO.

The registration is only for supply of the items to GWSSB / GWIL / WASMO and not for propagating your product(s) by publication in the news paper or advertising in any form.

The validity of registration will be up to **dtd. 31 -03 -2020**, which can be extended by competent authority of GWSSB. However, you shall have to apply for fresh shop survey in case of shifting of works location mentioned in Appendix – A.

All subsequent changes in the works location / constitution / working / accreditation / certification of the firm should be communicated to this office immediately.

In all correspondence particularly in case of bidding(s) / quotation(s) / offer(s) to / for GWSSB/ GWIL / WASMO, you should have to attach the copy of this letter.

Appendix - A

Name of Firm: GLOSTER CABLES LTD .

Approval is Valid up to 31- 03- 2020

Registered Office	Works Location	Contact: praveen@glostercable.com
183/ 184(5-3-370 to 72 A), II ND Floor, Above MODY Motors, R P Road Secundrabad-500003, Telangana.	310E & 282, N H 44, Kallakal Vill, Toopran Mandal, Dist Medak-502336, Telangana.	

Particulars Of Approval
Cable

(1) IS 694 Voltage up to 1.1 KV,Industrial Flexible Cable
(I) Round cables,Single Core up to 300 Sq.mm, Multi core up to 300 Sq.mm
(II) Flat cables Three Core up to 35 Sq.mm
(2) IS 1554 Part -1 PVC Insulated Voltage up to 1.1 KV Armoured / Unarmoured
(I) Single Core up to 300 Sq.mm, Multi core up to 400 Sq.mm
(3) IS 7098:Part I - XLPE Insulated Voltage up to 1.1 KV Armoured / Unarmoured
(I) Single core up to 1000 Sq.mm and Multicore up to 630 Sq.mm
(4) IS 7098:Part II - XLPE Insulated Voltage from 3.3 KV to 33 KV, Armoured / Unarmoured
(I) Single core up to 1000 Sq.mm ,Three core up to 400 Sq.mm
(5) Instrumentation Cable As per BIS 5308,Part-I & Part-II, Size up to 2.5 Sq mm, No of Cores up to 37 Nos.

Note:

The approval has been given on the basis of shop survey carried out at the manufacturing works location mentioned above. Any change in works location / constitution /working /accreditation/certification should be communicated to this office immediately.

At the time of bidding / drawing approval the vendor / manufacarer / bidders shall have to submit satisfactory performance certificates of the client with performance test reports duly witnessed by TPI / client which shall cover the size / parameters intended for purchase / work to be executed.

Vendor shall have to comply the specification, code and other requirement of the particular tender.

All testing and measuring instruments shall be calibrated at NABL accredited agency. Vendors are requested to provide the valid calibration certificate accordingly at the time inspection.

(M. H. Patel)
Chief Engineer (Mechanical)
GWSSB, Gandhinagar

CERTIFICATES, APPROVALS AND TEST REPORTS

भारतीय मानक ब्यूरो
ಭಾರತೀಯ ಪ್ರಮಾಣಮುಲ ಬ್ಯೂರೋ
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs,Food and Public Distribution)

By Regd Post

Our Ref: MDH/2364/L-6353669 19.10.2016

M/s Gloster Cables Ltd
310/E, NH7
Kallakal Village
Toopran Mandal 502334
Medak District

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CM/L-6353669 held by you for Crosslinked polythenelene insulated PVC sheathed cables: Part 1 for working voltages upto and including 1100V as per IS 07098(Part 1):1988.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **Two Years** from **01.10.2016 to 30.09.2018.**

The Endorsement **No.11 dated 07.10.2016** regarding renewal of licence and Receipt No.6340124 dated 19.09.2016 for Rs.202323.00 are enclosed.

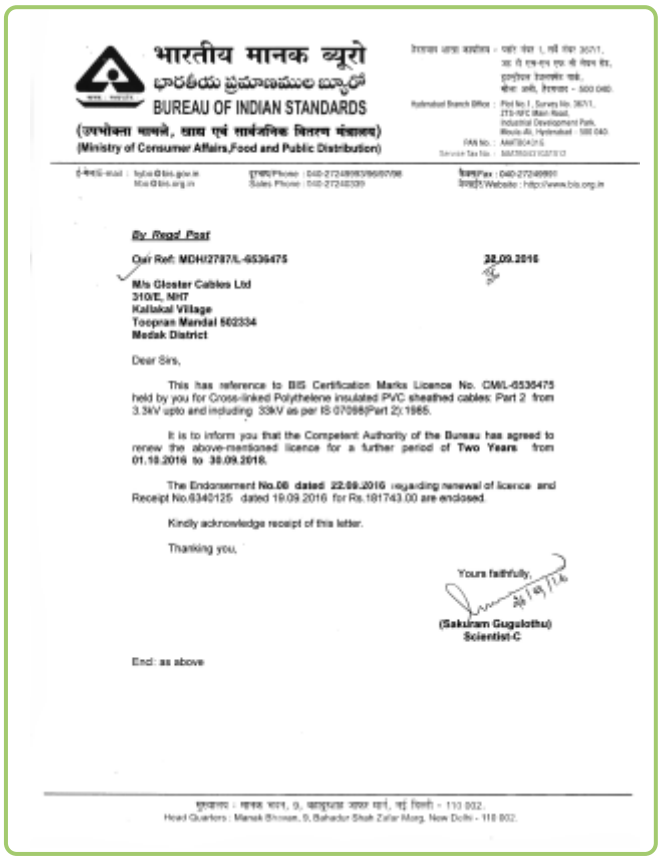
Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(Sakuram Gugulothu)
Scientist-C

Encl: as above



भारतीय मानक ब्यूरो
ಭಾರತೀಯ ಪ್ರಮಾಣಮುಲ ಬ್ಯೂರೋ
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs,Food and Public Distribution)

By Regd Post

Our Ref: MDH/2787/L-6535475 28.09.2016

M/s Gloster Cables Ltd
310/E, NH7
Kallakal Village
Toopran Mandal 502334
Medak District

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CM/L-6535475 held by you for Cross-linked Polythelene insulated PVC sheathed cables: Part 2 from 3.3kV upto and including 33kV as per IS 07098(Part 2):1988.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **Two Years** from **01.10.2016 to 30.09.2018.**

The Endorsement **No.06 dated 22.09.2016** regarding renewal of licence and Receipt No.6340125 dated 19.09.2016 for Rs.181743.00 are enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(Sakuram Gugulothu)
Scientist-C

Encl: as above

भारतीय मानक ब्यूरो
ಭಾರತೀಯ ಪ್ರಮಾಣಮುಲ ಬ್ಯೂರೋ
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs,Food and Public Distribution)

By Regd Post

Our Ref: MDH/4546/L-4410845 01.03.2017

M/s Gloster Cables Ltd (Unit II)
Sy.No.293, N.H. 7
Kallakal Village
Toopran Mandal 502335
Medak District.

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CM/L-4410845 held by you for Crosslinked polythenelene insulated PVC sheathed cables: Part 1 for working voltages upto and including 1100V as per IS 07098(Part 1):1988.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **One Year** from **01.03.2017 to 28.02.2018.**

The Endorsement **No.06 dated 01.03.2017** and Receipt No.6340[illegible] for 01.01.2017 for Rs.389431.00 are enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(Sakuram Gugulothu)
Scientist-C

Encl: as above

भारतीय मानक ब्यूरो
ಭಾರತೀಯ ಪ್ರಮಾಣಮುಲ ಬ್ಯೂರೋ
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs,Food and Public Distribution)

By Regd. Post

Our Ref: MDH/1451/L-6388879 25.09.2017

M/s Gloster Cables Ltd
310/E, NH7
Kallakal Village
Toopran Mandal 502334
Medak District.

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CM/L-6388879 held by you for PVC Insulated (Heavy Duty) Electric Cables: Part I for working voltages upto and including 1100V as per IS 01554(Part 1):1988.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of One Year from **01.10.2017 to 30.09.2018.**

The Endorsement **No.10 dated 25.09.2017** is enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(S Savitha)
Scientist-C

Encl: as above

CERTIFICATES, APPROVALS AND TEST REPORTS

भारतीय मानक ब्यूरो
భారతీయ ప్రమాణముల బ్యూరో
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs, Food and Public Distribution)

By Regd. Post

Our Ref: MDH/4548/L-4410746 — 03.03.2017

M/s Gloster Cables Ltd (Unit II)
Sy.No.293, NH 7
Kallakal Village
Toopran Mandal 502336
Medak District.

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CML-4410746 held by you for PVC Insulated (Heavy Duty) Electric Cables: Part I for working voltages upto and including 1100V as per IS 1554(Part 1):1988.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **One Year** from **01.03.2017 to 28.02.2018.**

The Endorsement **No.05 dated 02.03.2017 and** Receipt No.834094) dt. 03.01.2017 for Rs.81128.00 are enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(S Savitha)
Scientist-C

Encl: as above

मुख्यालय : मानक भवन, 9, बहादुर शाह ज़फ़र मार्ग, नई दिल्ली - 110 002
Head Quarters : Manak Bhavan, 9, Bahadur Shah Zafar Marg, New Delhi - 110 002

भारतीय मानक ब्यूरो
భారతీయ ప్రమాణముల బ్యూరో
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs, Food and Public Distribution)

By Regd. Post

Our Ref: MDH/2877/L-6487791 — 09.10.2017

M/s Gloster Cables Ltd
Sy.No.310/E, NH7
Kallakal Village
Toopran Mandal 502334
Medak District.

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CML-6487791 held by you for PVC Insulated Cables for working voltages upto and including 1100V as per IS 00694:2010.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **One Year** from **01.10.2017 to 30.09.2018.**

The Endorsement **No.10 dated 09.10.2017** is enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(Sakaram Gugulothu)
Scientist-C

Encl: as above

मुख्यालय : मानक भवन, 9, बहादुर शाह ज़फ़र मार्ग, नई दिल्ली - 110 002
Head Quarters : Manak Bhavan, 9, Bahadur Shah Zafar Marg, New Delhi - 110 002

भारतीय मानक ब्यूरो
భారతీయ ప్రమాణముల బ్యూరో
BUREAU OF INDIAN STANDARDS
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय)
(Ministry of Consumer Affairs, Food and Public Distribution)

By Regd. Post

Our Ref: MDH/4544/L-4410544 — 01.03.2017

M/s Gloster Cables Ltd (Unit II)
Sy.No.293, NH 7
Kallakal Village
Toopran Mandal 502336
Medak District.

Dear Sirs,

This has reference to BIS Certification Marks Licence No. CML-4410544 held by you for PVC Insulated Cables for working voltages upto and including 1100V as per IS 00694:2010.

It is to inform you that the Competent Authority of the Bureau has agreed to renew the above-mentioned licence for a further period of **One Year** from **01.03.2017 to 28.02.2018.**

The Endorsement **No.07 dt.14.03.2016 and 08 dt.01.03.2017 and** Receipt No.8340933 dt. 03.01.2017 for Rs.106056.00 are enclosed.

Kindly acknowledge receipt of this letter.

Thanking you,

Yours faithfully,

(Sakaram Gugulothu)
Scientist-C

Encl: as above

मुख्यालय : मानक भवन, 9, बहादुर शाह ज़फ़र मार्ग, नई दिल्ली - 110 002
Head Quarters : Manak Bhavan, 9, Bahadur Shah Zafar Marg, New Delhi - 110 002

केन्द्रीय विद्युत अनुसंधान संस्थान
CENTRAL POWER RESEARCH INSTITUTE
(A Govt of India Society under Min. of Power)
Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India
Website : http://www.cpri.in

BY SPEED POST — E-mail: nagesh@cpri.in

CABLES & DIAGNOSTIC DIVISION
CABLES LAB

CDD/CAB/2016-17 — Date: 26.09.2016

M/s. Gloster Cables Ltd.,
Survey No. 310/E, and 293, NH 44,
Kallakal (Vil), Toopran (Mn),
Medak (Distt.), Andhra Pradesh – 502 336

Ref: Your letter No. GCL/BNG/3/CPRI dated 18.07.2016
Sub: Type Test on 1 X 1.5 sq.mm 1.1 kV FRLSH Cable

With reference to the above, type test on 1 X 1.5 sq.mm 1.1 kV FRLSH Cable as per BS 6231 - 2006 has been completed and our Test report No. CDD-0061 dated 26.09.2016 is enclosed.

In order to prevent tampering of test report, CPRI has introduced hologram on the first page of the test report with effect from 01.10.2007.

Any discrepancy in these test reports may be brought to notice within forty five days from the date of issue of test reports. Please acknowledge the receipt of the test report.

Thanking you

Yours faithfully

(Dr.B.Nageshwar Rao)
Additional Director

CERTIFICATES, APPROVALS AND TEST REPORTS

केन्द्रीय विद्युत अनुसंधान संस्थान

CENTRAL POWER RESEARCH INSTITUTE

BY SPEED POST E-mail: [illegible]

CABLES & DIAGNOSTIC DIVISION
CABLES LAB

CDD/CAB/2016-17 Date: [illegible]

M/s. Gloster Cables Ltd.,
Survey No. 310/E, and 293, NH 44,
Kallakal (Vil), Toopran (Mn)
Medak (Distt.), Telangana – 502 336

Ref: Your letter dated [illegible]
Sub: Type Test on 1 X 4.0 sq mm 1.1 kV FRLSH PVC Cable

With reference to the above, type test on 1 X 4.0 sq.mm 1.1 kV FRLSH PVC Cable as per IS 694 / 2010 (up to amendment No.3) has been completed and our Test report No. CDD-0093 dated 20.10.2016 is enclosed.

In order to prevent tampering of test report, CPRI has introduced hologram on the first page of the test report with effect from 01.10.2007.

Any discrepancy in these test reports may be brought to notice within forty five days from the date of issue of test reports. Please acknowledge the receipt of the test report.

Thanking you,

Yours faithfully

(KP Meena)
Joint Director

AMIT TEST AND CALIBRATION CENTRE

(BIS/NABL ACCREDITED LABORATORY)

19/168, Sarai Rohilla, Old Rohtak Road, Near Shastri Nagar Metro & Usha Mata Mandir, Delhi - 110035,
Tel. 011-23643995, Fax : 011-23643992 (M) 9871727340, 9582782444, Email: amittestco@gmail.com; info@atccc.in

TEST REPORT

Test Certificate No. : ATCC2016072303
Issue To: Gloster Cables Limited
Survey No. 310/E, NH44, Kallakal (Vill.),
Toopran (Mn), Medak (Dt), 502336

Issue Date: 23.07.2016
Job Order No.: ATCC16070211
Test to be Conducted: BS EN 50363 (Pt-7) 2005 & IS:694 : 2010
Date of Test: 05.07.2016 to 23.07.2016
Date of Sample Received: 02.07.2016
Party Ref No.: Dated: 01.07.2016

Quantity of Sample : 15 Meters + 5 Meters (Approx.)
Sample Description : 1C x 2.5 sq.mm, (50/0.25 mm) Annealed bare flexible Copper Conductor, Class 5, ZHFR Thermoplastic Insulated unsheathed Cable, 1100 Volts.
5 Meters annealed bare copper wire dia 0.25mm for annealing test before stranding.

Sl.No.	Test Conducted, Specification as per BS EN 50363 (Pt-7) 2005 & IS: 694 : 2010 With Amendments No. 1,2 & 3	Specified value	Test Results	Cross Referred To & Test Method of	Conformity
1	Conductor Construction	2.5 Sq mm Class 1/ Class 2 & Class 5	2.5 Sq.mm. Class 5	IS 8130	yes
2	Annealing Test	13.5	22.4	.....	yes
3	Insulation				
3.1	Material	HFI-TP	HFI-TP	.....	yes
3.2	Application	The insulation shall be applied by an extrusion	Extrusion	Visual examination and Manual Test	yes
3.3	Thickness	(Nom.) 0.7mm (Min.) 0.53mm	0.78/0.69	IS 694	yes
3.4	Corrosive and acid gas	< 0.5 %	0.14	IEC 60754-1	yes
4	Core Identification				
4.1	Colour	The cores of all cables shall be identified by colour. Each core shall be identified by its colour as indicated Table 3 to Table 5. Other colours may be used by agreement with the manufacturer in this case the requirements in 12.2 do not apply	Red	Visual examination	yes
4.2	Assembly and core colour sequence	Visual examination	N.A.	Visual examination	...
5	Mechanical properties before Ageing (For Insulation)				
5.1	Tensile strength, (N/mm^2)	7.5 (Min.)	14.85	IS 10810 (Pt-7)	yes
5.2	Elongation at break, (%)	150 (Min.)	205	IS 10810 (Pt-7)	yes

MANOHAR SINGH JADON
23/07/2016
(C.E.O.)
Issued By

Delhi-110035

23/07/2016
SADHANA JADON
(Quality Manager)
Authorised Signatory

1 of 3

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number : CDD - [illegible] **Dated:** 04/06/2017
Name & Address of the Customer : M/s. Gloster Cables Ltd., S.No.310/E, NH 44, Kallakal(V), Toopran (Mn), Medak District, Telangana- 502336
Name & Address of the Manufacturer : M/s. Gloster Cables Ltd., S.No.310/E, NH 44, Kallakal(V), Toopran (Mn), Medak District, Telangana- 502336
Particulars of sample tested : 3 X 400 mm^2 Al Conductor, XLPE Insulated, Galvanised Steel Formed Wire Armoured, PVC Sheathed, 6.35/11 kV Cable
Condition of the sample on receipt : New
Type : A2XCEFY
Description of test sample : Conductor Material : Aluminium; No of cores : Three; Size : 400 mm^2; Insulation : XLPE; Armour : Galvanised Steel Formed Wire; Outer sheath : PVC; Voltage Rating : 6.35/11 kV; Embossing : GLOSTER XLPE 6.35/11KV(E) 400 SQ MM ELECTRIC CABLE ST2 2016 IS 7098 PART II [illegible]
Serial Number : Drum No. [illegible]
Number of Samples tested : One
Date(s) of Test(s) : 22.02.2017 to 27.03.2017
CPRI Sample Code no(s) : [illegible]
Particulars of test conducted : Type Test
Test in accordance with Standard Specification : As per IS 7098 Part II- 2011, Amd - 2015
Sampling plan : Not Applicable
Customer's requirement : Nil
Deviation if any : Nil
Name of the witnessing persons
Customer's representatives : None
Other than customer's representatives : None
Test subcontracted with address of the laboratory : Nil
Documents constituting this report (In words)
Number of sheets : Thirteen
Number of oscillograms : Twelve (Three Pages)
Number of graphs : Nil
Number of photos : Nil
Number of test circuit diagrams : Nil
Number of drawings : Nil

(Thirumurthy)
TEST ENGINEER

(Dr. B Nageshwar Rao)
ADDITIONAL DIRECTOR

Sheet 1 of 13

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number : CDD-0140 Dated: 15.12.2016
Name & Address of the Customer : M/s. Gloster Cables Ltd., S.No.310/E, NH 44, Kallakal(V), Toopran (Mn), Medak District, Telangana- 502336
Name & Address of the Manufacturer : M/s. Gloster Cables Ltd., S.No.310/E, NH 44, Kallakal(V), Toopran (Mn), Medak District, Telangana- 502336
Particulars of sample tested : 3 X 120 mm^2 A2XCY phase conductors + 1 X 95 mm^2 AAAC XLPE insulated messenger 6.35/11(E) Aerial bunched Cable
Condition of the sample on receipt : New
Type : 11 kV (E) Aerial bunched XLPE cable
Description of Test Sample : 3 X 120 sq.mm Aluminium conductor, XLPE insulated PVC Sheathed main conductor + 1 X 95 sq.mm XLPE insulated Aluminium Alloy Messenger Conductor 6.35/11 kV (E) Aerial Bunched Cable. Embossing: GLOSTER XLPE 6.35/11 kV (E) 120 SQ MM CABLE ST2 2016
Serial Number : Nil
Number of Samples tested : One
Date(s) of Test(s) : [illegible] to 15.12.2016
CPRI Sample Code no(s) : [illegible]
Particulars of test conducted : Type Test
Test in accordance with Standard Specification : In General Accordance with IS 7098 (Part-II) 2011, Amd 1 2015 & Messenger conductor as per IS 398 Part IV
Sampling plan : Not Applicable
Customer's requirement : Nil
Deviation if any : Nil
Name of the witnessing persons
Customer's representatives : None
Other than customer's representatives : None
Test subcontracted with address of the laboratory : Nil
Documents constituting this report (In words)
Number of sheets : Twelve
Number of oscillograms : Twelve (Three Pages)
Number of graphs : Nil
Number of photos : Nil
Number of test circuit diagrams : Nil
Number of drawings : Nil

(R Arunjothi)
Test Engineer

(K P Meena)
Joint Director

Sheet 1 of 12

THE POWER IS WITHIN .....

LOW VOLTAGE XLPE CABLES

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. Outer sheath PVC is Antirodent, Antitermite and Ultra Violet resistant. 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.

ACCEPTENCE TESTS

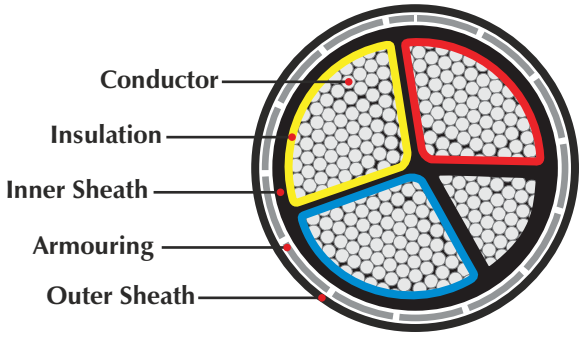
These tests are again carried out as per relevant IS specification in the presence of the concerned Inspecting Authority for testing, approval and release of material offered for inspection.

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

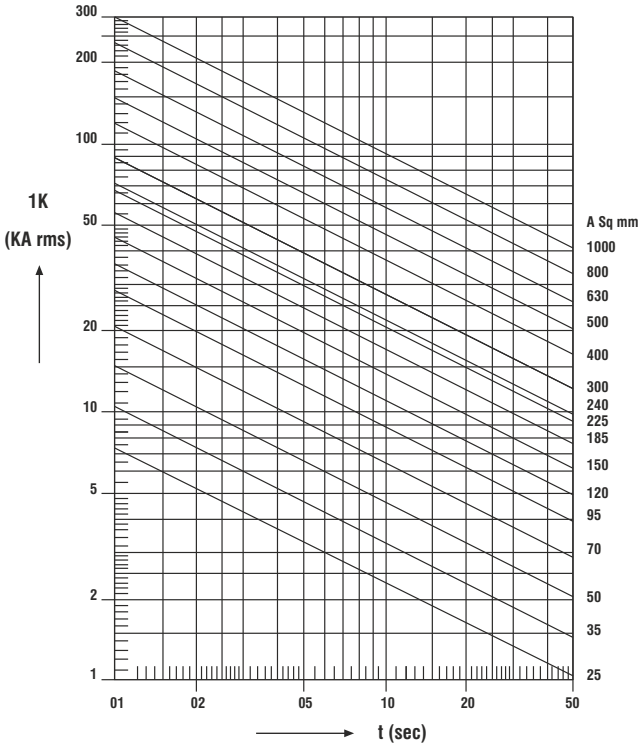
I_k : Short Circuit Current In KA (rms)

t: Duration of short circuit in seconds

A: Area of aluminum conductor in mm ^{2}

Short circuit ratings of cables for one-second duration is given in Table 13.

For any other duration of **t** seconds divide the value given in the respective table by ($\sqrt{t}$).

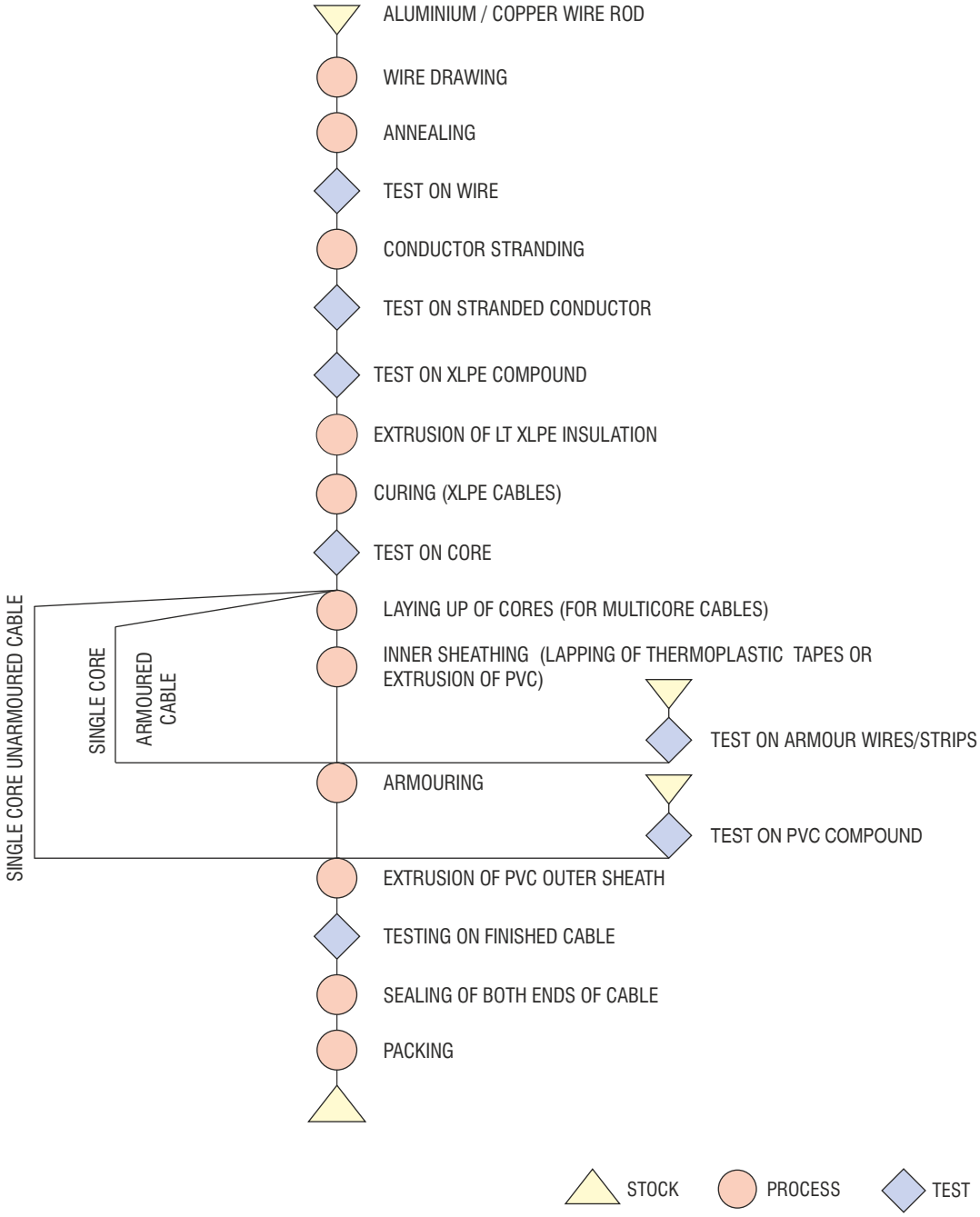


OPERATING CHARACTERISTICS:

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)	= 0.75 m 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								
					Single Layer - Wire (A2XWY)					Single Layer - Strip (A2XFaY)			
	Nominal thickness of insulation	Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	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							
						Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	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	23.5	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							
						Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	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							
						Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	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

			UN-ARMOURED CABLES A2XY			ARMOURED CABLES							
						Single Layer - Wire (A2XWY)				Single Layer - Strip (A2XFY)			
Nominal size of conductor	Nominal thickness of insulation	Minimum thickness of inner sheath	Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of Aluminium cable	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

			UN-ARMOURED CABLES 2XY			ARMOURED CABLES							
						Single Layer - Wire (2XWY)				Single Layer - Strip (2XFY)			
Number of cores	Nominal thickness of insulation	Minimum thickness of inner sheath	Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	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							
						Single Layer - Wire (2XWY)				Single Layer - Strip (2XFY)			
			Nominal thickness of outer sheath	Approx. overall diameter of cable	Approx. weight of cable	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.	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 Single Core Cables		Twin & Multicore	XLPE INSULATED CABLE Single Core Cables		Twin & Multicore
(Sq.mm)	Ohm / km	Un-armoured	Armoured		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 ^{0}C	Rating Factor (Maximum conductor temperature 90^0 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 ^{0}C	Rating Factor (Maximum conductor temperature 90^0 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 or more	0.90

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	300
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.

LT AERIAL BUNCHED CABLES

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

Application:

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

1. Where reliability, stability of power supply is very important.
2. Where space is limited like those in densely populated area or dense forests.
3. Where existing overhead distribution feeders capacity has to be up graded without raising the system voltage.
4. Temporary installations where building plan have not been fully approved.
5. Installations in hilly areas where erecting costs of overhead lines or Underground cables are prohibitively high.

Advantages:

1. Safe system because phase conductors are insulated, no risk or danger of accidental touching live conductors.
2. Accidental short circuit eliminated due to high winds, falling of tree branches, bird landing etc.
3. Reliable power supply since all line faults practically eliminated / minimized.
4. Reduction in pole height, elimination of insulators and associated hardware lowers total cost of system.
5. Power thefts minimized.
6. Lesser labour intensive installation compared to conventional overhead lines.
7. Lesser space required for installation unlike conventional overhead lines.
8. Maintenance easier when compared to Underground cables.
9. Connections can be made at any point with insulation piercing connectors.
10. Life of associated transformers & switchgear increased since tripping of same reduced considerably due to elimination / minimizing of line faults.

Applicable standards :

- IS 8130: 2013 Conductors for insulated cables.
- IS 398: 1994 Part IV Aluminium alloy conductor.
- IS 14255:1995 Aerial Bunched Cable Specification.

Conductor:

- Power + Lighting conductors Grade H4 conform to Class 2 of IS 8130:2013
- Messenger conductor :
  - Special Aluminium Alloy (usually specially treated Silica, Magnesium alloy & Aluminium Alloy)
  - Either stranded circular or compacted circular type
  - Minimum 7 strands
  - Surface of conductor shall be smooth
- Lighting conductor size = 16 sqmm
- No joints permitted in any wire in messenger conductor.
- Direction of outer layer of wires in messenger is right hand.

Insulation:

- Specially formulated for exposure to sunlight and outdoor application.
- The phase conductors are insulated with black weather resistant with UV protection polyethylene (PE) or cross linked polyethylene (XLPE).

LT AERIAL BUNCHED CABLES

Insulation Colour :

As cable remains exposed to the environmental elements such as UV from sunlight, some amount of carbon black is added to the insulation, to prevent insulation deterioration due to harmful effects of UV radiation.

Identification:

Phase conductor

Phase 1 = 1 ridge
Phase 2 = 2 ridges
Phase 3 = 3 ridges

Neutral conductor (if insulated) = 4 ridges
Lighting Conductor = No identification mark

Max Operating Temp:

XLPE: Max 90°C , PE: Max 70°C

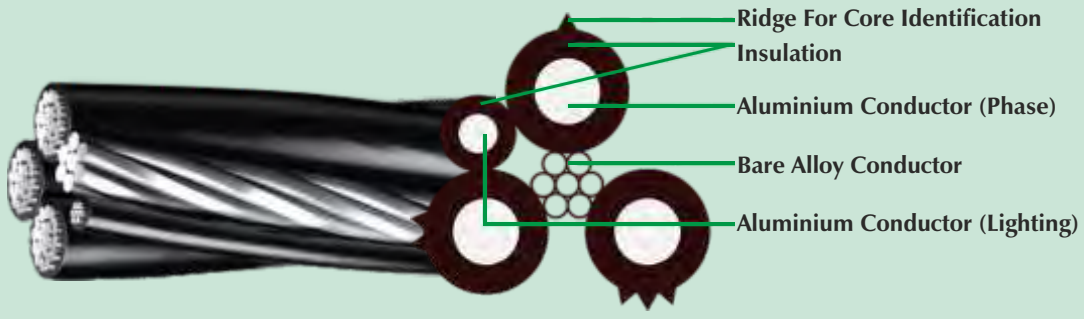
Construction:

The phase conductor(s) can be of single phase or three phases. A Lighting conductor can be also incorporated to give supply for street lighting. All the insulated cores are bundled together or laid up around high tensile Messenger conductor [which may be bare or insulated] The Messenger conductor supports the weight of the cable and keeps the assembly strung under tension. The Messenger Conductor also serves as the earth – cum – neutral conductor.

Routine tests are carried out in each and every length of cable manufactured as per relavant IS specifications

LT AERIAL BUNCHED CABLES : TECHNICAL PARTICULARS AS PER IS 14255-1995

LT Aerial Bunched Cable Size	Thickness Of Insulation		Appx. Overall Diameter	Appx. Weight Of Cable	Breaking Load Of Messenger	Maximum DC Resistance At 20°C ohms/km		AC Current Rating In Air At 40°C
Phase+Messanger +Lighting	Phase (mm)	Messenger (mm)	(mm)	(Kgs/Km)	KN (min)	Phase (ohm/Km)	Messenger (ohm/Km)	(Amps)
1X16+1X25+1X16	1.20	–	16.60	220	7.0	1.91	1.38	72
1X25+1X25+1X16	1.20	1.20	17.70	250	7.0	1.20	1.38	98
1X35+1X25+1X16	1.20	1.20	18.40	270	7.0	0.868	1.38	119
1X50+1X35+1X16	1.50	1.50	21.00	350	9.8	0.641	0.986	145
1X70+1X50+1X16	1.50	1.50	25.40	470	14.0	0.443	0.689	185
1X95+1X70+1X16	1.50	–	29.60	600	19.7	0.320	0.492	235



THE POWER IS WITHIN .....

HIGH VOLTAGE CABLES

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 CONTRUCTION

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:

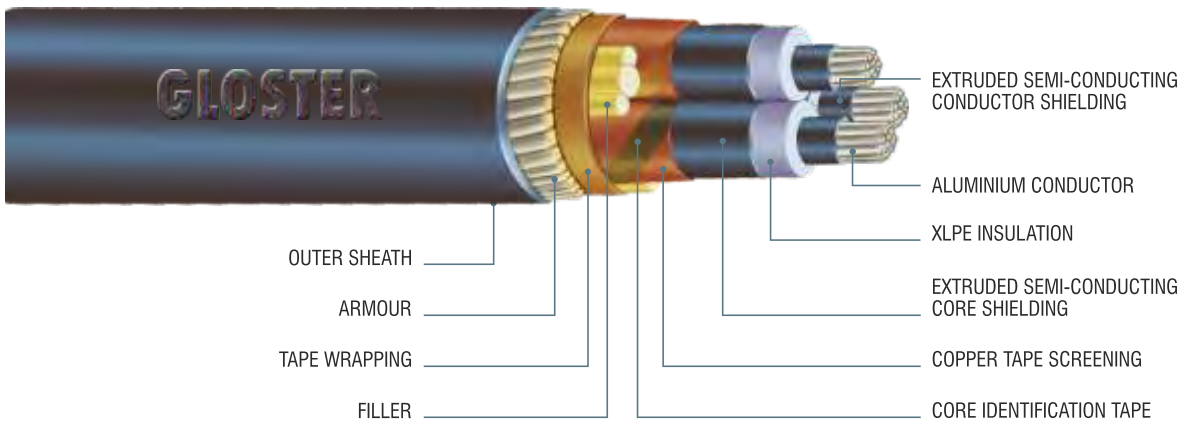
- By numerals (1, 2, 3) printed on cores. OR
- By colored strips applied on the cores.

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.

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)	3.3 KV To 11 KV =0.90 m. 22 KV To 33 KV =1.05 m.

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

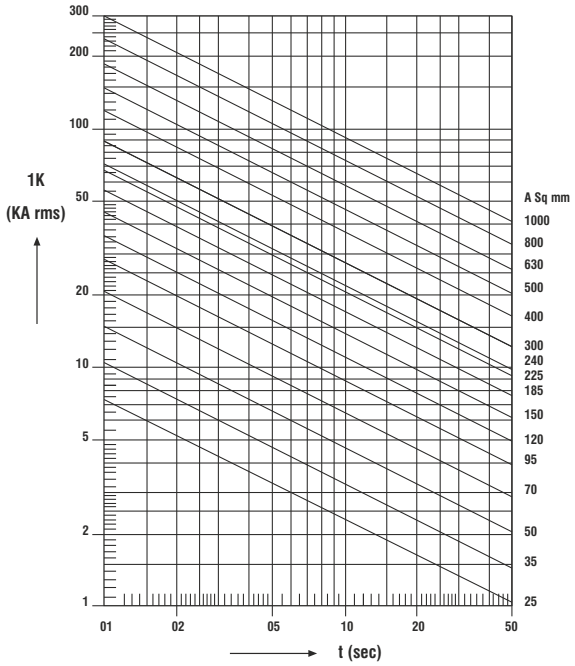
I_k: Short Circuit Current In KA (rms)

t: Duration of short circuit in seconds

A: Area of aluminum conductor in mm^2

Short circuit ratings of cables for one-second duration is given in Table 14.

For any other duration of **t** seconds divide the value given in the respective table by ($\sqrt{t}$).



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 CONDUCTORSFOR INSULATED CABLES CONFORMING

TABLE - 15

Nominal Area	Number of wires		Max A C resistance at 90°C (Copper)	AC resistance at 90°C (Aluminum)
	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 or more	0.90	0.92

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	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- 28

	Cable Sqmm.														
Cores	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.

HT AERIAL BUNCHED CABLES

Applicable Standards :

- REC Specification 64/1993.
- IS 8130: 2013 Conductors for insulated cables.
- IS 398: 1994 Part IV Aluminium alloy conductor.
- IS 7098-Part 2: 2011 used generally for Aerial Bunched Cable.

Conductor:

- Power conductors conform to Grade H4 and Class 2 of IS 8130:2013.
- Messenger conductor :
  Special Aluminium Alloy (usually specially treated Silica, Magnesium alloy & Aluminium Alloy).
  Either stranded circular or compacted circular type.
  Minimum 7 strands.
  Surface of conductor shall be smooth.
- No Lighting conductor envisaged in HT AB Cable.
- No joints permitted in any wire in messenger conductor.
- Direction of outer layer of wires in messenger is right hand.

Insulation:

As per IS : 7098 Part (II)

Identification:

Identification by Ridges like in LT AB Cable on PVC/PE sheathing over copper tape or by R - Y - B below copper tape.

Max Operating Temp :

XLPE: Max 90°C.

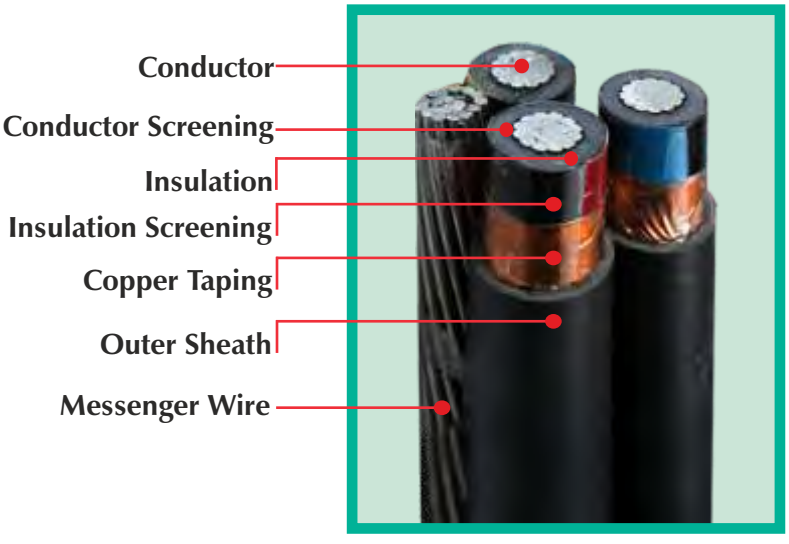
Construction:

The phase conductor are screened with extruded semi conducting layer over the conductor, forming the conductor screen
Suitable Voltage grade XLPE compound is then extruded over conductor screen.
Another semi conducting layer is then extruded over the insulation forming the insulation screen.
Additionally a metallic screen (copper tape) is wrapped over the insulation screen.
Further cores are sheathed with PVC or PE.
Rest of construction is now same as that of LT AB cable.

Routine tests are carried out on each and every length of cable manufactured as per relavant IS specifications.

Manufacturing :

As Per Customer Requirement.



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 form 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 º 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.

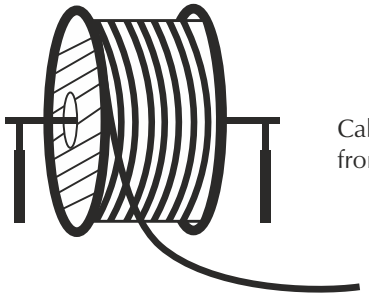
If possible, cables should be laid along the footpath rather than the carriageway. Plans for future building projects should be considered. The route should be away from parallel running gas, water pipes and telephone cables. Also suitable locations for cable joints and end termination should be selected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

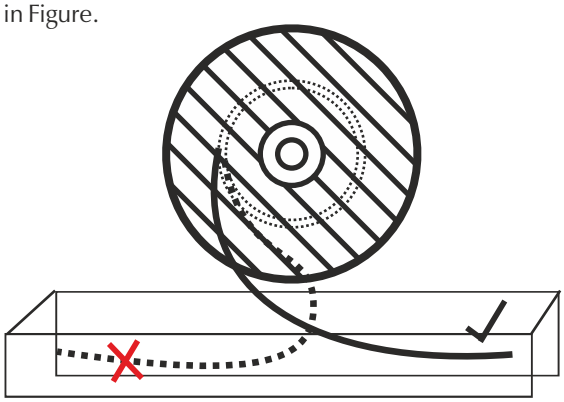
Provision should be made to break the drum to avoid further rolling & buckling of cable during sudden stop. A simple wooden plank can serve this purpose



Cable must be pulled from the top

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 Figure.



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 AC 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 DC 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/mm^2
Copper conductor cables: 5.0 kg/mm^2

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

TRIPLE LAYER FRLSH PVC INSULATED (HR-FRLSH+FRLSH+FRLSH)

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

SINGLE CORE UNSHEATHED INDUSTRIAL FLEXIBLE CABLE AND MULTI CORE INDUSTRIAL FLEXIBLE CABLES

Safety is not EXPENSIVE - It is PRICELESS !

Triple Layer FRLSH PVC Insulated
HR+FRLSH+FRLSH+FRLSH
(Heat Resistant+Flame Retardant+Low Smoke+Low Halogen)
Single Core Unsheathed Industrial Flexible Cable

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 Resistence+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.

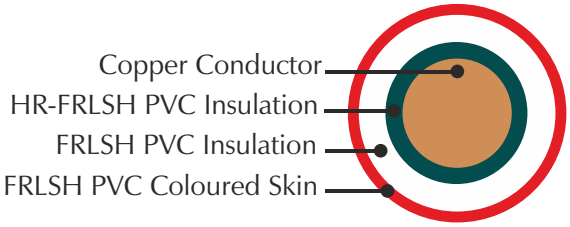
2nd layer of FRLSH Insulation: A thick layer of specially formulated thick FRLSH insulation is provided over the HR-FRLSH insulation to restrict the spread of flames and to ensure near total absence of smoke as well as toxic and corrosive fumes.

3rd layer of FRLSH Skin: A layer of specially formulated colour FRLSH master batch is provided to ensure clear colour indentification 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.



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 70^0 C – our wires can handle temperatures way beyond 70^0 C continuous and 105^0 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 cam 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

SINGLE/MULTI CORE 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 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 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.

IS 694

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

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

MULTICORE INDUSTRIAL FLEXIBLE CABLES (6 CORES TO 24 CORES)
COMFORMING/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 Diamter (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 Diamter (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 Diamter (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 Diamter (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 Diamter (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 Diamter (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 Diamter (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 Diamter (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 Diamter (Approx) mm	15.5	17.2	18.3	19.85	24.3	28.9

THREE & FOUR CORE INDUSTRIAL FLEXIBLE CABLES
COMFORMING/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

- Any required colour can be provided on specific request subject to minimum order quantity
- Cables can be supplied in longer lengths, in multiples of 100 OR as required by the customer.

COLOUR CODING

TABLE - 6

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.

GLOSTER

FIRE Safety ON

FIRE Hazards GONE

Triple Extrusion

ZHFR

ZERO HALOGEN FLAME RETARDANT

ZHFR + ZHFR + ZHFR

(Zero Halogen Flame Retardant + Zero Halogen Flame Retardant + Zero Halogen Flame Retardant)

No Flame | No Gas | Clear Visibility | Less Smoke | Eco-Friendly | ERDA Tested

IS 694 : 2010

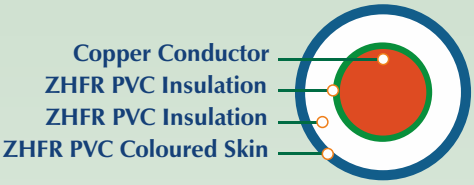
ISO 9001:2008 Certified Company

DNV Certification B.V., The Netherlands

Domestic Wires With Triple Layer ZHFR Technology

ZHFR+ZHFR+ZHFR

(Zero Halogen Flame Retardant+Zero Halogen Flame Retardant+Zero Halogen Flame Retardant)



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 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 (ZHFR+ZHFR+ZHFR) SINGLE CORE UNSHEATHED INDUSTRIAL FLEXIBLE CABLE WITH BRIGHT ANNEALED COPPER CONDUCTOR FOR VOLTAGE GRADE 1100V CONFORMING TO IS-694 : 2010

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).

BIS Licence No : CM/L 0006487791 and CM/L 0004410544

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

Safety is not EXPENSIVE - It is PRICELESS

3 CORE FLAT CABLES

(For Submersible Pump Motors)

GLOSTER

ISO 9001:2008
Certified Company

DNV
MGMT. SYS.
RvA C 024
DNV Certification B.V., The Netherlands

ISI
IS 694 : 2010

www.glostercable.com

APPLICATION

Connecting Cable to Submersible Motors, Pumps and Industrial Machines

SPECIAL FEATURES

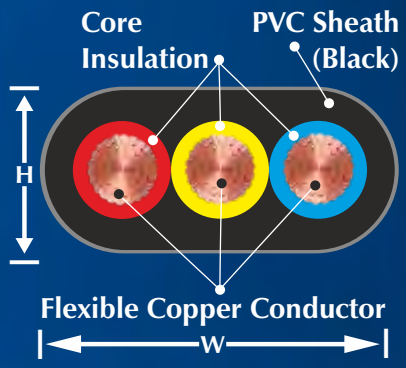
- High Conductivity Bright Annealed, Bunched Flexible, more than 99.97% Pure Electrolytic grade Copper Conductor as per IS 8130:1984
- High Grade, Special Flexible PVC Insulation
- Cores Insulated with Red, Yellow and Blue Colour
- Special PVC Sheath to withstand Abrasion, Prevent Water Ingress and with 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 MW/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-694:2010

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	13.30	14
2.5	50/0.25	0.70	1.00	12.60	5.60	7.98	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-694:2010

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

GLOSTER

Safety is not EXPENSIVE - It is PRICELESS

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.

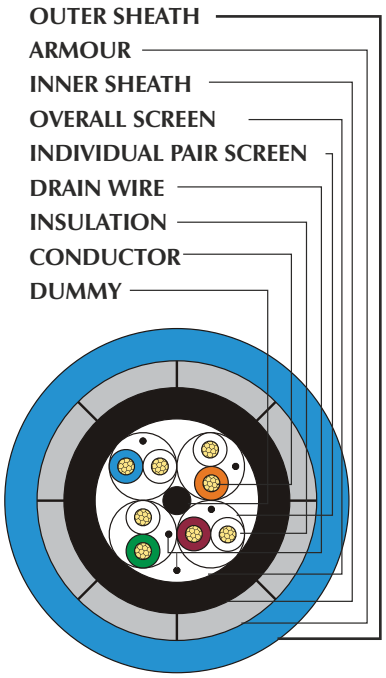
Instrumentation process is critical for controlling various parameters during the process. The signals can be of analogue, data or voice type and from a variety of transducers such as pressure, proximity or microphone. Microprocessor based control devices demand very low noise levels and attenuation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

Overall Shielded Triad Unarmoured Cables

Overall Shielded Triad Armored Cables

Individual Shielded Pair & Overall Shielded Pair Unarmoured Cables

Individual Shielded Pair & Overall Shielded Pair Armored Cables

Individual Shielded Triad & Overall Shielded Triad Unarmoured Cables

Individual Shielded Triad & Overall Shielded Triad Armored 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	0.5mm² : <39Ω/km, 0.75mm² : <26Ω/km, 1.0mm² : <19.5Ω/km, 1.5mm² :< 13.3 Ω/km 2.5mm² : <7.98Ω/km	Special sizes on request.
Core Insulation	Specially In-house formulated general purpose PVC 70ºC	Heat Resistant PVC 85º / 90º / 105ºC 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/Traids 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 = 2000 V RMS for 1 Minute	
Insulation Resistance	> 10 MΩ/Km (with PVC), >1000 MΩ/Km (PE/XLPE)	
Mutual Capacitance	As per BS 5308 : Part-1 and Part-2	
L/R Ratio	0.5mm²: Max 25 μH/Ω, 0.75mm²: Max 25 μH/Ω, 1.0mm²: Max 25 μH/Ω, 1.5mm²: Max 40 μH/Ω, 2.5mm²: Max 60 μH/Ω	

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

'GLOSTER' Solar (Photovoltaic) Cables

Solar (Photovoltaic) Cables

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

Electrical

- Rated Voltage U0/U : 0.6/1.0 KV AC; 0.9/1.5 KV DC
- Maximum Permitted Voltage on No Load : 1.8 KV DC; 0.7/1.2 KV AC
- Operating Voltage : 1.0 KV DC
- Insulation Resistance : >1000 MΩ-km
- Spark Test : 6.0 KV AC
- Voltage Withstand : 6.5 KV AC for 5min

Mechanical

- Minimum Bending Radius : 5×OD (Fixed), 15×OD (Flexing occasionally)
- Dynamic Penetration : According to 2 Pfg 1169/08.2007 (Annex-F)
- Notch Propagation : According to 2 Pfg 1169/08.2007 (Annex-G)
- Tensile Strength, Elongation of Insulation & Jacket According to EN-60811
- Shrinkage as per EN-60811-1-3
- Anticipated life : Appx. 25 years

Thermal

- UV Resistant
- Ambient Temperature : (-) 15°C to (+) 90°C Lower Operating Temperatures On Request)
- Maximum Temperature at Conductor : 120°C (20000h)
- Short Circuit Temperature : 200°C/5 sec
- Thermal Endurance Test : According to EN-60216-2 (Temperature Index +120° C)
- High Temperature Pressure Test : According to EN-60811-3-1
- Damp-Heat Resistance : According to EN-60068-2-78 with 85% humidity

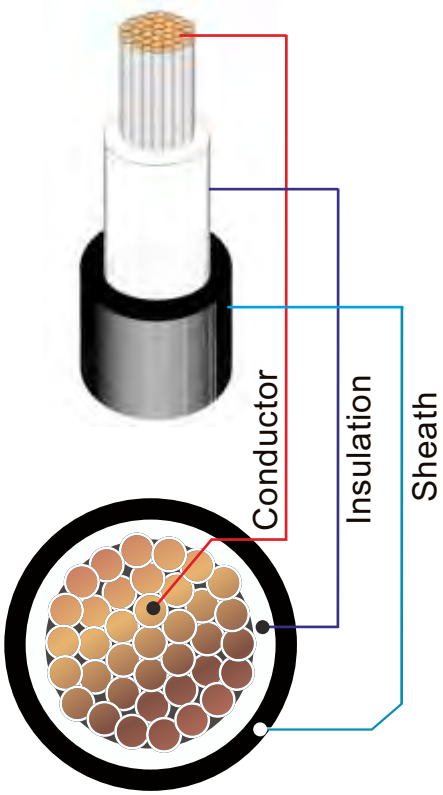
Chemical

- 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

Fire

- Flame Retardant – as per IEC : 60332-1-2
- Low Smoke Emission
- Halogen Free (Acid Gas Emission less than 0.5%)

Cross Section Of Solar (Photovoltaic) Cables



Conductor : Annealed Bare / Tinned Copper Flexible Conductor
As Per IS 8130 : 2013, IEC 60228 Class - 5

Insulation : Special Cross Linked Polyethylene / Cross Linked Halogen Free - Flame Retardant - Low Smoke Compound.

Sheath : Special UV Resistant PVC - St2 / Cross Linked Halogen Free - Flame Retardant - Low Smoke Compound With UV Resistant Properties. Black / Red Colour (or as per customer requirement).

Solar (Photovoltaic) Cables

"GLOSTER" manufactures Solar (Photovoltiac) Cables with following options :-

OPTION : 1 (a)

ATC/XL-HFFR-LS/XL-HFFR-LS/SOLAR/CONFORMING TO EN-50618-2014 / TUV 2fg 1169/08-2007

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Flexible Annealed Tinned Copper Flexible Conductor, Cross Linked Halogen Free Fire Retardant Low Smoke Insulated and Sheathed UV Resistant Solar Cable Conforming to EN - 50618-2014 (Formerly TUV 2fg 1169/08-2007).

- Annealed Tinned Copper Conductor
- Crossed Linked HFFRLS Insulation
- UV / Ozone Resistance
- Fully Conforming To EN-50618-2014 (Formerly TUV 2fg 1169/08-2007)

Features :

- Very Good Thermal Endurance
- Excellent Flame Properties.
- Excellent Resistance To Corrosion.
- Passes Both Dynamic Penetration And Notch Propagation Tests.
- Longer Shelf Life, Appx 10 Times More Than Bare Copper. Easy To Solder.
- Avoids Wear And Tear Due To Oxidation Specially Above 100° Temperature.

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	8.21	0.70	0.80	5.00	5.20	45.40	41	39	33
4.0	2.59	5.09	0.70	0.80	5.20	5.70	60.90	55	52	44
6.0	3.18	3.39	0.70	0.80	6.00	6.30	80.40	70	67	57
10	4.13	1.95	0.70	0.80	7.00	7.30	120.80	98	93	79
16	5.19	1.24	0.70	0.90	8.10	8.50	178.00	132	125	107

OPTION : 1 (b)

ATC/EBXL-HFFRLS/EBXL-HFFRLS/SOLAR/CONFORMING TO EN-50618-2014 / TUV 2fg 1169/08-2007

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Flexible Annealed Tinned Flexible Copper Conductor, Electron Beam Cross Linked Halogen Free Fire Retardant Low Smoke Insulated and Sheathed UV Resistant Solar Cable Conforming to EN - 50618-2014 (Formerly TUV 2fg 1169/08-2007).

- Annealed Tinned Copper Conductor
- Electron Beam Crossed Linked HFFRLS Insulation
- UV / Ozone Resistance
- Fully Conforming To EN-50618-2014 (Formerly TUV 2fg 1169/08-2007)

Features :

- Very Good Thermal Endurance
- Excellent Flame Properties.
- Excellent Resistance To Corrosion.
- Passes Both Dynamic Penetration And Notch Propagation Tests.
- Longer Shelf Life, Appx 10 Times More Than Bare Copper. Easy To Solder.
- Avoids Wear And Tear Due To Oxidation Specially Above 100° Temperature.

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	8.21	0.70	0.80	5.00	5.20	43.60	41	39	33
4.0	2.59	5.09	0.70	0.80	5.20	5.70	58.80	55	52	44
6.0	3.18	3.39	0.70	0.80	6.00	6.30	78.00	70	67	57
10	4.13	1.95	0.70	0.80	7.00	7.30	117.90	98	93	79
16	5.19	1.24	0.70	0.90	8.10	8.50	174.30	132	125	107

OPTION : 2 (a)

ABC/XL-ZHFRLS/XL-ZHFRLS/SOLAR/GENERALLY CONFORMING TO EN-50618-2014 / TUV 2fg 1169/08-2007

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Annealed Bare Copper Flexible Conductor, Cross Linked Halogen Free-Fire Retardant-Low Smoke Insulated and Cross Linked Halogen Free-Fire Retardant-Low Smoke Sheathed UV Resistant Solar Cable Generally Conforming to EN - 50618-2014 (Formerly TUV 2fg 1169/08-2007).

- Annealed Bare Copper Conductor
- Crossed Linked ZHFRLS Insulation
- UV / Ozone Resistance Outer Sheath
- Generally Conforming To EN-50618-2014 (Formerly TUV 2fg 1169/08-2007)

Features :

- Very Good Thermal Endurance
- Better Hot Deformation
- Excellent Flame Properties.
- Excellent Resistance To Corrosion.
- Avoids Wear And Tear Due To Oxidation Specially Above 100° Temperature.

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	7.98	0.70	0.80	5.00	5.20	45.40	41	39	33
4.0	2.59	4.95	0.70	0.80	5.20	5.70	61.10	55	52	44
6.0	3.18	3.30	0.70	0.80	6.00	6.30	80.90	70	67	57
10	4.13	1.91	0.70	0.80	7.00	7.30	121.50	98	93	79
16	5.19	1.21	0.70	0.90	8.10	8.50	179.90	132	125	107

OPTION : 2 (b)

ATC/XL-ZHFRLS/XL-ZHFRLS/SOLAR/GENERALLY CONFORMING TO EN-50618-2014 / TUV 2fg 1169/08-2007

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Annealed Tinned Copper Flexible Conductor, Cross Linked Halogen Free-Fire Retardant-Low Smoke Insulated and Cross Linked Halogen Free-Fire Retardant-Low Smoke Sheathed UV Resistant Solar Cable Generally Conforming to EN - 50618-2014 (Formerly TUV 2fg 1169/08-2007).

- Annealed Bare Copper Conductor
- Crossed Linked ZHFRLS Insulation
- UV / Ozone Resistance Outer Sheath
- Generally conforming to EN-50618-2014 (Formerly TUV 2fg 1169/08-2007)

Features :

- Very Good Thermal Endurance
- Better Hot Deformation
- Excellent Flame Properties.
- Excellent Resistance To Corrosion.
- Avoids Wear And Tear Due To Oxidation Specially Above 100° Temperature.

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	8.21	0.70	0.80	5.00	5.20	44.90	41	39	33
4.0	2.59	5.09	0.70	0.80	5.20	5.70	60.30	55	52	44
6.0	3.18	3.39	0.70	0.80	6.00	6.30	79.65	70	67	57
10	4.13	1.95	0.70	0.80	7.00	7.30	119.90	98	93	79
16	5.19	1.24	0.70	0.90	8.10	8.50	176.90	132	125	107

OPTION : 3 (a)

ABC/XLPE/UV PVC-ST2/SOLAR/CONFORMIMG TO IS : 7098 (Part-1)

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Annealed Bare Copper Flexible Conductor, XLPE Insulated and UV Resistant-ST2 PVC Sheathed Solar Cable Conforming to IS : 7098 - (Part-1)

❍ Annealed Bare Copper Conductor ❍ Specially Formulated XLPE Insulation❍ UV Resistance Outer Sheath
❍ Conforming to IS : 7098 (Part-I)

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	7.98	0.70	0.90	5.00	5.50	46.40	37	35	30
4.0	2.59	4.95	0.70	0.90	5.50	6.00	62.00	48	46	38
6.0	3.18	3.30	0.70	0.90	6.00	6.50	81.50	61	58	49
10	4.13	1.91	0.70	0.90	7.00	7.50	121.90	83	79	66
16	5.19	1.21	0.70	0.90	8.00	8.50	175.60	108	103	86

OPTION : 3 (b)

ATC/XLPE/UV PVC-ST2/SOLAR/CONFORMIMG TO IS : 7098 (Part-1)

'GLOSTER' [1.5 (1.8) KV DC] / [1.0 (1.2) KV AC] Single Core Annealed Tinned Copper Flexible Conductor, XLPE Insulated and UV Resistant-ST2 PVC Sheathed Solar Cable Conforming to IS : 7098 - (Part-1)

❍ Annealed Tinned Copper Conductor❍ Specially Formulated XLPE Insulation❍ UV Resistance Outer Sheath
❍ Conforming to IS : 7098 (Part-I)

Size Of Conductor	Average Conductor Diameter	Maximum Resistance Value (ATC/ABC)	Nominal Insulation Thickness	Nominal Sheath Thickness	Appx Overall Dia Of Cable		Appx. Overall Weight Of The Cable	Current Carrying Capacity		
					Minimum	Maximum		In Air	Single Cable On Surface	Two Adjacent Cables On Surface
Sqmm.	mm	ohm/Km	mm	mm	mm	mm	Kgs.	Amps	Amps	Amps
2.5	2.04	8.21	0.70	0.90	5.00	5.50	45.90	37	35	30
4.0	2.59	5.09	0.70	0.90	5.50	6.00	61.10	48	46	38
6.0	3.18	3.39	0.70	0.90	6.00	6.50	80.30	61	58	49
10	4.13	1.95	0.70	0.90	7.00	7.50	120.20	83	79	66
16	5.19	1.24	0.70	0.90	8.00	8.50	172.50	108	103	86

‘GLOSTER’ 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 Annealed Bare Copper	Copper Clad Steel
Dielectric	Nitrogen Gas Injected Foam PE	Nitrogen Gas Injected Foam PE
Nominal Diameter	18 SWG (+/- 0.02mm)	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

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

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 04783-2008-AQ-IND-RvA | Initial certification date: 27. September, 2003 | Valid: 27. September, 2015 – 15. September, 2018

This is to certify that the management system of

Gloster Cables Limited

Unit I: Survey No. 310/E, NH - 44, Kallakal Village, Toopran 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, 08. October, 2015

IAF MGMT. SYS. RvA C 074

The RvA is a signatory to the IAF MLA

For the issuing office:
DNV GL – Business Assurance
ROMA, No. 10, GST Road, Alandur,
Chennai - 600 016, India

Sivadasan Madiyath
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., Zwolseweg 1, 2994 LB, BARENDRECHT, NETHERLANDS. TEL: +31(0)102922689

DNV·GL

Certificate No: 04783-2008-AQ-IND-RvA
Place and date: Chennai, 08. October, 2015

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, Toopran 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. 291, NH - 44 Kallakal Village, Toopran 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

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., Zwolseweg 1, 2994 LB, BARENDRECHT, NETHERLANDS. TEL: +31(0)102922689

Regional Offices

NORTH	NEW DELHI	103, Ist. Floor, Arunachal Building, 19-Barakhamba Road, Connaught Place, New Delhi-110001 Tel : +91 11 23412425/6141 Fax : +91 11 23415663 Email: gcldelhi@glostercable.com
EAST	KOLKATA	3, Pretoria Street, 'Chandrakunj Building', 2nd Floor, Kolkata - 700 071 Tel: +91 91 33 40061595, 46017995/7996/7787 Email: gclkolkata@glostercable.com
WEST	MUMBAI	3-B, 111, Mittal Industrial Estate, Andheri Kurla Road, Andheri East, Mumbai - 400 059 Tel : +91 22 6692 6227, Email: gclmumbai@glostercable.com
	VADODARA	612, Saffron Complex, Fathegunj Fountain, Vadodara - 390 002 Tel: +91 265 2795347 Fax: +91 265 2794761 Email: gclbaroda@glostercable.com
SOUTH	BENGALURU	Chandra Kiran Building, 4th. Floor, Kasturba Road, Bangalore - 560 001 Tel: +91 80 22129305 Fax: +91 80 22226098 Email: gclbanglore@glostercable.com
	CHENNAI	Flat No. 3, VIIth. Floor, "A" Wing, Parsn Manere, 602 Anna Salai, Chennai - 600 006 Tel: +91 44 28213952 Fax: +91 44 28255826 Email: gclchennai@glostercable.com
	COCHIN	Door No. 4-58/A1, Near Marankulangara Temple and Eroor ROB, Tripunithura, Ernakulam District, Kerala-682306 Email: gclcochin@glostercable.com
	COIMBATORE	5/245, Thadagam Road, Kanuvai, Coimbatore - 641 108 Tel: +91 0422 2401210 Email: coimbatore@glostercable.com
	HYDERABAD	302-303, Mittal Chambers, 3rd. Floor, 2-2-51, M. G. Road, Secunderabad-500 003 Tel : +91 40 27703011 E-mail : hyd11gcl@gmail.com

PAN India Sales Network

Ahmedabad
Allepey
Asansol
Bengaluru
Baharampur (WB)
Bhubaneshwar
Calicut
Chennai
Kochi
Coimbatore
Cuttack
Guwahati
Hyderabad
Indore
Kanpur

An ISO 9001:2008 Certified Company

DNV Certification B.V., The Netherlands

Kolkata
Malda
Mumbai
Nagpur
New Delhi
Palakkad
Pune
Raipur
Rajkot
Siliguri
Surat
Trivandrum
Vadodara
Vijayawada
Visakhapatnam

GLOSTER

Gloster Cables Limited

Corporate Office : 183/184, (5-3-370 to 372-A), 2nd Floor, Above Mody Motors, R P Road, Secunderabad - 500 003
Works (Unit-1) : Survey No. 310/E, NH-44, Kallakal (Village), Toopran (Mandal), Medak (District), Telangana State - 502 336
Works (Unit-2) : Survey No. 293, NH-44, Kallakal (Village), Toopran (Mandal), Medak (District), Telangana State - 502 336

www.glostercable.com