Thermo Cables



Complete Cable Solutions

Since 1990, Thermo Cables Limited has engineered high performance, customized cable systems for the world's most demanding environments. 60% of our products are exported globally, serving as the strategic backbone for mission-critical sectors. With R & D expertise, unmatched financial strength and a strategic subsidiary in the Kingdom of Saudi Arabia (Thermo Cables Arabia Limited), we ensure project continuity for our partners worldwide.

Thermo Group Ecosystem

Thermo Cables: Global Expert in Speciality Cables Manufacturing.

Thermopads: Global Specialists in Commercial, Domestic and Industrial Heating Solutions.

Thermosystems: Turnkey EPC leaders in Fuel Oil Handling and Fire Protection Systems.



Major Approvals

ADNOC - OFFSHORE
ADNOC - ONSHORE
ALBA
AP GENCO & TRANSCO
ARO DRILLING
AVANT GARDE
BALTIC CHEMICAL PLANT
BAPCO ENERGIES
BDL, BEL, BEML, BHEL, BLW
BOROUGE
BPCL
CLW, CMRL, CSL
DESEIN LTD, DGMS, DVC
DLW, DMDE & DMW
DLRL, DMRL & DMRC
DOLPHIN ENERGY
DRDO - ASL & DRDL
DUBAI WORLD
EGA
ENGINEERS INDIA LTD
ENOC
EXPRO
FICHTNER CONSULTING
GRSE, GSPC
GOA SHIPYARD
HALLIBURTON
HINDUSTAN SHIPYARD
HPCL, HAL, HMRL
INTERNATIONAL MARITIME INDUSTRIES
IOCL, ICF, ISRO
JACOB'S H & G
KNPC - KUWAIT
KOC - KUWAIT
LAMPRELL
L & T
MAADEN
MATERIAL ORGANISATION - KARWAR
MATERIAL ORGANISATION - MUMBAI
MATERIAL ORGANISATION - VIZAG
MECON, MEW, MCF
MN DASTUR & CO.
MAZGOAN DOCK LIMITED
MUMBAI PORT TRUST
NMDC ENERGY
NORTH OIL
NPCIL, NSTL, NTPC
ONGC
ORLEN, OXY
PDIL, PGCIL
PDO OMAN, PETRONAS
PETROPERU
QAFAC, QCHEM
QATAR ENERGY, QATAR PETROLEUM
RCF
SABIC
SAIL, SAIPEM
SAPURA ENERGY
SAR
SHELL, SONATRACH
TATA CONSULTING ENGINEERS
TECNIMONT ICB LTD
TOYO ENGINEERING INDIA LTD
THYSSENKRUPP

Stringent quality retention on par with global standards of thorough precision, Thermo Cables is a name to reckon with in terms of meeting complete customer demand by producing and delivering a wide range of cables. Our commitment to quality, on-time delivery, and competitive pricing has earned us a strong reputation across the industry.

Product Range

- Instrumentation Cables
- Power, Control & Earthing Cables
- Thermocouple Cables
- Fire Resistant Cables
- High Temperature / Heat Resistant Cables
- Foundation Fieldbus Cables
- Special Application (LFH) Cables
- Renewable Energy Cables
- Naval Application Cables
- Marine / Shipboard Cables
- Pressure Tight (PT) Cables
- Digital Data Communication Cables
- Railway Cables
- Material Handling Cables
- Type P Cables
- VFD Cables
- Co-Axial Cables (RG Series)
- ESP Cables
- Downhole (TEC) Cables
- Electromechanical Cables
- Cathodic Protection Cables
- Custom Wiring & Cable Harnesses
  - Railway
  - Defence
  - Wind
- IV Coupler & Jumper Cable Assembly
- Cable Systems

Why Us

- Leading & reputed manufacturer of Speciality Cables
- One stop solution for all Low Voltage Cables
- Serving satisfied customers since 30+ years across 60+ countries
- In-house wire drawing, compounding, Electron beaming and testing facilities
- Quick response time and offer submission in less than 24 hours

Quality & Reliability

- An ISO 9001:2015 certified company with proven track record of delivering quality products
- NABL accredited full-fledged in-house testing laboratory
- Environment, Occupational Health and Safety Systems adhering to ISO 14001:2015, 45001:2018
- 15% of power consumption sourced through in-house generated renewable energy

Standards

- Cables designed and manufactured conforming to various National and International Standards

General Cables: ANSI MC 96.1, BS-6346, BS-5467, BS-7629, BS-6387, BS-7846, BS-5308-I & II, BSEN- 50288-7, IEC-60502-I, IEC-60189-I & II, IEC-60228, IEC-60584-I & III, IEC-60331, IS-8784, IS-613, IS-694, IS-1554-I, IS-7098-I, BS 16246, BS 7211, IEC 60227, UL 13, UL 44, UL 83, UL 1277, UL 2250.

Railway Cables: ELRS-0019 REV-4, CLW-0458 ALT-E, CLW-0459 ALT-C, EDTS - 132 REV - C, EDPS - 179, EDPS - 304, EN - 50264 - 3 - 1 & 2, EN - 50306 - 1, 2, 3 & 4, EN - 50382 - 1 & 2, EN - 45545 - 2, IEC 61156 - 6.

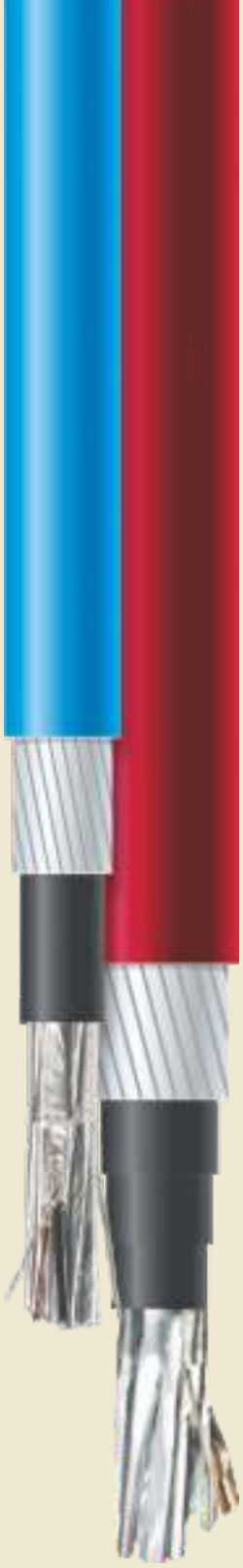
Navy & Marine Cables: EED 50-12 REV-3, EED 50-13 REV-2, DEF STAN 61-12 PART 18, DEF STAN 61-12 PART 31, DEF STAN 02-526, DEF STAN 02-527, MIL - DTL-24640C, MIL - DTL 24643C, IEC 60092 - 350, 353, 376 & 360, BS 6883, BS 7917, IS 9968 Part - I, IS 6380, EN 50525 - 2- 11-12-21-22-41-42, EN 50618, IEEE 1580

Mining Cables: IS 14494, **Co-Axial Cables:** MIL - DTL - 17H,

High Temperature / Aerospace Cables: JSS 51034, 51038, SAE-AS 22759 / 32A, 34B, 41B, 43B, 44A, 45A, 80D, 83E, 84E, 85E, 86E, 87E, 88E, 89E, 90D, 91D, 92D, ANSI / NEMA - WC - 27500, UL 13, UL 44, UL 1277, UL 2250.

Valuable Assets

- Over 5,00,000 sq ft of infrastructure facilities with latest technology
- 2250+ dedicated & high performing workforce
- Experienced & professional leadership team
- Offers technical support in cable selection through SAP



Instrumentation Cables

Instrumentation Cables are specially designed to transmit signals without any external interference. They are used in Data Acquisition Systems, Connections to Instruments, Computer Networking, PA Systems, Digital / Analog Control / Measuring & Communication Systems, Data Communication, Sensors, Transducers etc.

Construction : Cores, pairs, triads or quads

Voltage Grade : 90 V to 1100 Volts

Conductor : Electrolytic Grade Copper Bare / Tinned / Nickel Plated / Silver Plated
Solid / Stranded / Flexible Conductors

Range : 0.5 / 0.75 / 1.0 / 1.5 / 2.5 / 4 mm^2 up to 100 pair

Primary Insulation : General Purpose PVC / Heat Resistant PVC / PE / XLPE / PTFE / FEP / PFA / EPR / Silicone Rubber / Fibre Glass

Screening : Individual and / or overall with following options -
- Aluminium Mylar with Drain Wire / Copper Tape with Tinned Copper Drain Wire
- Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper

Inner Sheath : PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF / PE

Armouring : GI Round Wire / Flat Strip or GI / SS Wire Braiding / GI Braiding / Steel Tape Armour / Interlock Armour

Outer Sheath : PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF / PE

Rip Cord (Optional) : For easy removal of sheath

Standards : BS-EN 50288-7, BS-5308 Part-1 & 2, BS-7655, IEC-189 (1 & 2), IECAS-73-532, VDE-0815 & 0816, IEC-60332-1, IEC-60332-3-22, 23, 24, UL 13, UL 44, UL 1277

Additional Features : Communication pairs, Bi-colour extrusion, Band marking

Optional Bedding : Aluminium Tape + HDPE + Polyamide Sheath For Alternate Lead Sheath Cables (Moisture Barrier)

Note: We also offer Data Communication and Low Capacitance Cables

Technical Data

Conductor Resistance at 20^0 C Ohms/Km	Conductor Size mm^2	0.5	0.75	1.0	1.5	2.5	4	
	Maximum Resistance (Plain Copper Conductor)	39.0	26.0	19.5	13.3	7.98	4.95	Class-5
		36.0	24.5	18.1	12.1	7.41	4.61	Class-2
Capacitance nf/Km	Between Conductors	< 250 for PVC < 150 for Polyolefin						
Inductance mH/Km		<1.0						
L/R Ratio μH/Ohm	Conductor Size mm^2	0.5	0.75	1.0	1.5	2.5	4	
	L / R	< 25	< 25	< 25	< 40	< 60	<100	
Insulation Resistance at 20^0 C MOhm-Km	PVC	More than 100						
	PE / XLPE	More than 1000						
Electrostatic noise rejection ratio		More than 76.0 dB						



Power & Control Cables

Low Voltage Power and Control Cables are widely used for power distribution in power plants, industrial facilities, oil and gas installations, petrochemical plants, water treatment facilities, renewable energy projects and other critical infrastructure projects. Control Cables are designed for the transmission of control, signalling, monitoring, measurement, and auxiliary power circuits in industrial and commercial installations.

Construction	:	Single Core / Multi Core
Voltage Grade	:	Upto 1800 / 3300 V AC
Conductor	:	Aluminium / Copper, Solid / Stranded / Flexible Conductor
Range	:	Single Core up to 1000 mm^2 Multi Core up to 400 mm^2 Max 61 Cores of 1.5, 2.5, 4.0, & 6.0 mm^2
Primary Insulation	:	General Purpose PVC / Heat Resistant PVC / XLPE / EPR / HEPR
Inner Sheath	:	General Purpose PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF
Armouring	:	Steel Tape Armour / GI Round Wire / Flat Strip or GI / SS Wire Braiding Non-Magnetic / Armour / Braiding for Single Core (Unarmoured) / Interlock Armour
Outer Sheath	:	General Purpose / PVC / HRPVC / FRLS PVC / ZHFR / LSF
Standards	:	IS-694, IS-1554 (Part-I), IS-7098 (Part-I), IEC-60502-1 & BS-6346, BS-5467, IEC-60227, BS-6004, IEC-60332-1, IEC-60332-3-22, 23, 24, ICEAS-95-658, UL 44, UL 1277
Optional Bedding	:	Aluminium Tape + HDPE + Polyamide Sheath for an alternate Lead Sheath Cables

Core Identification

Cores shall be identified by different colours of PVC insulation. Following colour scheme shall be adopted

1 Core	:	Black or any Single colour
2 Core	:	Red & Black
3 Core	:	Red, Black, Yellow / Green, Red, Yellow, Blue
4 Core	:	Red, Yellow, Blue / Red, Yellow, Blue, Black
5 Core	:	Red, Yellow, Blue, Black & Grey
6 Cores and above	:	Two adjacent Cores (counting and direction Core) in each layer, Blue & Yellow, remaining Cores Grey

In addition to these, combinations from the following colours can also be offered -
Red, Black, Blue, Brown, Green, Grey, Orange, Violet, White, Yellow.

Alternately, any single colour insulation on all Cores with number printing can also be provided.



Earthing Cables

Earthing Cables are used in grounding of instruments and power appliances. These cables are with stranded copper conductors, PVC insulation and / or PVC sheath.

Voltage Grade	:	450 / 750 V and up to 1800 V
Conductor	:	Aluminium / Copper, Solid / Stranded / Flexible
Range	:	up to 1000 mm^2
Primary Insulation	:	General Purpose PVC / HRPVC / LSZH / FRLS PVC
Sheath (Optional)	:	General Purpose PVC / HRPVC / LSZH / FRLS PVC / LSF
Standards	:	IS 694, IEC 60227-3, IEC 60502-1
Core identification	:	Green / Yellow / Green with Yellow Stripe / Yellow with Green Stripe



Thermocouple Extension / Compensating Cables

Thermocouple extension and compensating cables are used for the accurate transmission of the thermoelectric electromotive force (e.m.f.) generated by a thermocouple to temperature measuring and control instruments.

Construction : Single or Multiple Pairs

Voltage Grade : Up to 1100 V

Cable Code : Kx, Kx (A), Tx, Jx, Ex, Sx / Rx, Bx, Nx, Ux, Wx

Range : 16 AWG / 18 AWG / 20 AWG up to 48 Pair

Primary Insulation : General Purpose PVC / Heat Resistant PVC / PE / XLPE / PTFE / FEP / PFA / Silicon Rubber / Fibre Glass

Screening : Individual and overall with following options -
- Aluminium Mylar / Copper Tape with Tinned Copper Drain Wire
- Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper

Inner Sheath : PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF / PTFE / PFA / FEP / Fibre Glass / PE

Armouring : GI Round Wire / Flat Strip or GI Wire Braiding and SS Wire Braiding / Steel Tape Armour / Interlock Armour

Outer Sheath : PVC / HRPVC / FRPVC / FRLSPVC / ZHFR / LSF/ PTFE / Fibre Glass / PFA / FEP

Standards : ANSI: MC-96.1, IEC-584-3, DIN, BS IEC-60332-1, IEC-60332-3-22, 23, 24, IS-8784

Note: Other conductor sizes and insulation materials on request

Technical Data

CABLE CODE		Kx	Kx (A)	Tx	Jx	Ex	Sx / Rx	N
CABLE TYPE		EXT.	COMP	EXT.	EXT.	EXT.	COMP	EXT.
Conductor	+Ve leg	Chromel	Copper	Copper	Iron	Chromel	Copper	Nicrosil
	-Ve leg	Alumel	Constantan	Constantan	Constantan	Constantan	Copper Alloy	Nisil
Suitable for Thermocouple Type		Kx	Kx	Tx	Jx	Ex	Sx / Rx	N
Conductor Combination		Chromel Alumel	Copper Alumel	Copper Constantan	Iron Constantan	Chromel Constantan	Platinum 10/13% Rhodium Platinum	Nicrosil / Nisil
Temperature range of measuring junction °C		0 to +1100	(0°C to +80°C) ☆	-185 to +300	+20 to +700	0 to +800	0 to + 1550 0 to + 1600	- 200 to + 1300
Applicable standards for output of Thermocouple conductors		BS 1843, ANSI / MC 96.1 type K, DIN 43710, NFC 42-324, JIS C 1610, IEC 60584-3, IS 8784/1987	Used for interconne-cting Type K thermo-couples ☆	BS 1843, ANSI / MC 96.1 type K, DIN 43710, NFC 42-324, JIS C 1610, IEC 60584-3, IS 8784/1987	BS 1843, ANSI / MC 96.1 type K, DIN 43710, NFC 42-324, JIS C 1610, IEC 60584-3, IS 8784/1987	BS 1843, ANSI / MC 96.1 type K, DIN 43710, NFC 42-324, JIS C 1610, IEC 60584-3, IS 8784/1987	BS 1843, ANSI / MC 96.1 type K, DIN 43710, NFC 42-324, JIS C 1610, IEC 60584-3, IS 8784/1987	BS 1843, ASTM E 230, IEC 60584-3
COLOUR CODING (Revised)	BS 1843							
	ANSI MC 96.1/ASTM E230							
	DIN 43710		-					No standard
	NFC 42-324							No standard
	JISC 1610							No standard
	IEC 60584-3		-					
	IS 8784							No standard
Approximate generated EMF change per deg. °C µV/°C at	100° C	42	☆	46	54	68	8/8	30
	500° C	43	☆	—	56	81	9/10	38

NOTES : ☆ Used for interconnecting Type 'K' thermocouples and instrumentation as an alternative to type 'K' material. Only used where the interconnection temperature is in the range 0° C to + 80° C

We can also offer NX, UX and WX Cables ◐ Kx (A) - also known as Vx



Fire Resistant Cables

Finds application where electrical integrity of the cable has to remain intact for at least three hours, so as to activate and maintain crucial functions such as fire fighting, public announcements, smoke extraction systems, sprinklers, emergency lighting, evacuation path lighting systems etc.

The areas for Fire Resistant cable applications include places where a large number of people congregate for short or limited period of time such as shopping malls, cinema theaters, educational institutions, airport terminals, mass transit systems (metro rail networks), high rise office buildings etc. FR cables also find use in power generation facilities, petrochemical complexes, nuclear power facilities, mines etc. for phased shut down of the plant and to keep critical functions like communication, rescue and evacuation systems functional during a fire.

Construction	:	Single & Multi Cores / Pairs / Triads
Voltage Grade	:	300 / 500 / 600 / 1000 / 1100 V AC
Conductor	:	- Solid or Stranded Annealed Bare or Tinned Copper Conductor / - Stranded Aluminium Conductor
Fire Barrier	:	Glass Mica Tape
Insulation	:	XLPE or EPR or Silicon Rubber
Screening	:	Individual and/or overall with following options - - Aluminium Mylar / with Copper Drain Wire / Copper Tape with Tinned Copper Drain Wire - Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper
Inner Sheath	:	FRLS PVC / LSOH / ZHFR / SHF1 / SHF2 or equivalent
Armouring	:	Galvanized Steel Wire Helical Armour / Steel Wire Braid / GI Wire Braid Steel Tape Armour / Interlock Armour
Outer Sheath	:	FRLS PVC / LSOH / ZHFR / SHF1 / SHF2 or equivalent
Standards	:	BS-7846, BS-7629, BS-8434 or equivalent with fire test confirming resistance to BS-6387 category CWZ 'or' IEC-60331-21, BSEN 50200, EN 50362
Optional Bedding	:	Aluminium Tape + HDPE + Polyamide Sheath for Alternate Lead Sheath (Moisture Barrier Sheath) Cables

- Fire Resistant cable type tested at BRE Global (UK) for BS-6387 CWZ category

0578





Complete In-house expertise & facilities to provide the entire range of High Temperature Insulations

High Temperature / Heat Resistant Cables

High temperature cables are used in areas where both working temperatures and ambient temperatures are too high. They are made with a wide range of conductors, insulating materials and screening materials depending on the temperatures and conditions under which the cable has to perform.

Single Core high temperature hook-up wires & Multi Core / Multi Pair, Screened & Unscreened and Armoured & Unarmoured Cables

Construction : Single Core or Multi Core / Pairs

Voltage Grade : 250 V AC, 600 V AC & 1000 V AC (Rating as per MIL-16878, VDE, DIN, JSS, UL.)

Conductors : Annealed Bare copper (up to 200° C) / Annealed tinned copper conductor (up to 180° C)

Annealed silver plated copper conductor (up to 200° C)

Nickel plated conductor (up to 260° C)

Insulation

Insulation Material	Temperature Range	Characteristics
PTFE	- 200° C to 260° C	Excellent chemical resistance. High temperature stability
FEP	- 200° C to 200° C	Good chemical resistance Thin wall insulation due to good electrical properties
PFA	- 200° C to 250° C	Good chemical resistance, Thin wall insulation due to good electrical properties. Good flexibility
ETFE	- 150° C to 150° C	Mechanically tough
XL ETFE	- 150° C to 200° C	Good electric insulation, radiation resistance, ARC tracking and cold flow
PEEK	- 160° C to 250° C	Mechanically very tough High temperature and radiation resistance
Kapton Tape	- 250° C to 300° C	Very thin wall insulation. High temperature resistance
Silicon Rubber	- 40° C to 180° C	Flexible and abrasion resistance
Ceramic Yarn / Quartz Yarn Braiding	600° C	Chemically stable and higher thermal resistance
Special High Temperature Yarn	1000° C	Superior resistance to temperatures. excellent resistance against radiant heat.

Screening : Individual and / or overall with following options
- Aluminium Mylar / Copper Tape with Tinned Copper Drain Wire
- Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper

Armouring : Steel galvanized wire, stainless steel wire, high strength steel wire braiding

Standards : JSS-51034, JSS-51038, UL-1581, UL 13, UL 44, UL 1277, UL 758
AS 22759-32/34/41/43/44/45/80/83 to 88/91/92 & ANSI/NEMA WC 27500

Industry & Applications

Steel / Cement : Cables for blast furnace, electric arc furnace, hot & cold rolling mills, steel refining facilities etc.

Communication : High frequency co-axial cables for VHF, UHF and SHF transmission

Marine : Engine proximity wiring for good resistance to high temperatures, fuel oils, chemicals, saline air / water etc.

Petrochemical : Instrumentation & control, temperature sensing, fire warning, ACWL (Aircraft Warning Light Cables), Ignition Cables etc.

Power : In proximity to the turbines, boilers, ash handling etc.



Foundation Fieldbus Cables

These Cables are meant for bi-directional communications protocol used for communications among field devices and to the control system. Installed in many process applications in industries like oil and gas refineries petrochemicals, power generation and even in food & beverage, pharmaceuticals and nuclear applications.

Voltage Grade	:	300 V / 600 V
Conductor	:	Plain / Tinned Annealed Copper (up to 120° C) Silver Plated Annealed Copper (up to 200° C) Nickel Plated Annealed Copper (up to 260° C)
Range	:	22 AWG / 18 AWG / 16 AWG / 14 AWG
Operating Temperature	:	-20° C to 90° C and for high temperature cables up to 260° C
Insulation	:	Solid Polyethylene (80° C) / XLPE (90° C) / Flouropolymers FEP (200° C) / PFA (250° C)
Screening	:	Individual and / or overall with following options - Aluminium Mylar with Drain Wire / Copper Tape with Tinned Copper Drain Wire - Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper
Inner Sheath	:	PVC / HR PVC / FR PVC / FRLS PVC / ZHFR / LSF / FEP / PFA / PE
Armouring	:	Round Galvanized Steel Wire / Flat Strip / Steel Wire Braid / GI Wire Braid Steel Tape
Outer Sheath	:	PVC / HR PVC / FR PVC / FRLS PVC / ZHFR / LSF / FEP / PFA with Plain Orange Jacket or with strip for easy identification and Blue jacket available for Intrinsically Safe applications
Standards	:	Cable specification Foundation Fieldbus FF-844 H1, Cable design based on EN 50288-7 / BS-5308 Part 1, IEC-60332 Electrical properties: FF-844 H1 and IEC-61158-2, Type A
Our FF Cable Features	:	Excellent Electrical Characteristics with Low Capacitance (for long runs) RoHs compliant and CE marked



Special Application (LFH) Cables

Power, Control & Signal Cables, Limited Fire Hazard Insulation & Sheath materials with halogen free, fire retardant with low smoke generation and low toxic properties.

Specification	:	Def Stan 61-12 (PT-18 & PT-31)
Construction	:	Multi Core, Multi Pair, Composite Cables, Unscreened, Individually Screened & Collectively Screened
Voltage Grade	:	600 V
Conductor	:	Circular electroplated & annealed tinned copper
Temperature Range	:	-50^0 C to $+120^0$ C
Insulation	:	Special Halogen free and fire retardant with low smoke generation and low toxic polymers with E-beam curing process
Screening	:	Annealed tinned copper braid
Outer Sheath	:	Special halogen free and fire retardant with low smoke generation and low toxic polymers with E-beam curing process
Application	:	Used in defence especially in Radar & Missile launching system for Power, Control, Lighting and Communication and Instrumentation circuits



Renewable Energy Cables

Solar Photovoltaic Cables

Solar photovoltaic cables are used for transmitting electrical power generated from the solar panel to the charging units, battery banks, change over systems, inverters etc. These cables have to function effectively while remaining exposed to a wide range of severe environmental conditions.

Construction:

Size (mm^2)	Number of Strands/ Diameter	Nominal Outer Dia (mm)	Max Conductor Resistance Ohms/Km
2.5	50/0.25	5.50	8.21
4.0	56/0.30	6.00	5.09
6.0	85/0.30	6.80	3.39
10.0	140/0.30	7.70	1.95
16.0	128/0.40	8.80	1.24

Size (mm^2)	Single Cable in Air (Amps)	Single Cable on Surface (Amps)	Multiple Cable on Surface (Amps)
2.5	41	39	33
4.0	55	52	44
6.0	70	67	57
10.0	98	93	79
16.0	132	125	107

Voltage Grade : 1000 V AC / 1500 V DC

Temperature Range : - 40° C to 120° C

Conductor : Tin Coated Copper Class 5 conductor

Insulation and Sheath : Electron Beam Irradiated Cross linked Polyolefin Compound

Standards : TUV-2PIG 1169 / 07 2008 (Standard for Photovoltaic cables) or BSEN 50618-2014 (Covers upto 240 mm^2)

Features : Resistant to ozone, water absorption & severe environmental conditions



Wind Power Cables

Torsion Cables

These cables are used for transmitting power from the generator mounted in the nacelle of the wind tower to base station. These are flexible cables made of special elastomeric compounds, so as to meet the torsional stresses exerted on the cable due to rotation of the nacelle towards wind direction.

Voltage Grade : 600 V / 1100 V

Conductor : Flexible Class-5 tinned or bare copper conductors, made to IEC-60228 / IS-8130

Range (Single Core) : 10 mm^2 to 400 mm^2

Insulation : EPR - in conformance to IEC-60502 / IS-6380

Sheath : Special elastomer compound with Oil, Fire, Hydrolysis & Torsion resistant properties (Zero halogen free sheath available on request)

Features

Short circuit temperature (max) for up to 5 seconds : + 250° C

Torsion angle : ± 150° C per meter (Degrees)

Minimum bending radius : 4D



Control & Instrumentation Cables

These cables are used in Wind Energy applications such as rotor blade pitch control, Yaw control, Top Box, Anemometer feedback, Remote data logging etc. Construction of Cables shall be as per Customer requirements and conforming to various National / International Standards.



Naval Application Cables

On Board Indian Naval Ships and Crafts Cables

For use on board Surface Ships, Submarines and Crafts for Power, Lighting, Control, Communication and Instrumentation. Used in Fuel and Lubrication Oils, Hydraulic Fluids and Water Surfaces.

Standards	:	EED-50-12-Thin Walled, Insulated, Electron Beam Cross Linked Irradiated Electric Cables EED-50-13-Fire Survival, High Temperature Zone, Fire Retardant Halogen Free Sheathed Electron Beam Cross Linked
Construction	:	Single Core, Multi Core, Multi Pair & Triad Cables, Unscreened / Individually Screened or Collectively Screened
Voltage Grade	:	440 V AC, 600 V AC and 1800 V AC (for Single Core Cables)
Conductor	:	Circular Electroplated, Annealed Tinned Flexible (Class V) Copper Conductor conformity with IEC 60228
Temperature Range	:	- 65º C to 120º C (EED-50-12 Cables) - 30º C to 120º C (EED-50-13 Cables)
Insulation	:	Electron Beam Cross Linked Polyolefin compound (EPR / EPDM LFH) / Silicon Rubber
Screening	:	Annealed Tinned Copper / GI Wire Braids
Outer Sheath	:	Electron Beam Cross Linked Polyolefin Compound (EVA / EMA / EEA LFH)
Protective Barrier	:	Fibre Glass Braid / Lacquer Mica glass tape to meet the Fire Performance (applicable for EED-50-13 Cables)

Special Navy Cables

Power Navy Cables, Light Power Navy Cables, Telecommunication Navy Cables, Light Telecommunication Navy Cables.

Construction	:	Multi Core Cables, Multi Pair Cables Unscreened or Individually Screened or Collectively Screened (Optional GI braided armoured) Limited Fire Hazard Sheathed
Conductor	:	Circular Annealed Bare Copper conductor
Insulation	:	EPR / HEPR as per relevant spec
Screening	:	Annealed Tinned Copper Braid, Individually Screened or Collectively Screened as per relevant spec
Outer Sheath	:	LFH Elastomeric Thermoset Compound
Temperature Range	:	- 30° C to + 90° C
Application	:	For use on board surface ships and crafts and power, control, lighting, submarines for communication and instrumentation circuits



Marine / Shipboard Cables

DEF STAN 02-526 (NES 526) and DEF STAN 02-527 (NES 527)

For use on board surface ships and crafts for power, control, lighting and communication and instrumentation circuits with or without fire survival characteristics.

Standards	:	NES 526 - Dual layer Insulated, Electron Beam Cross linked irradiated Electric cables NES 527 - Fire Survival, High Temperature, Fire Retardant Halogen Free Sheathed Electron Beam Cross linked Irradiated Electric cables
Construction	:	Single Core, Multi Core, Multi Pair & Triad, Unscreened or Individually Screened or Collectively Screened
Voltage Grade	:	440 V AC
Conductor	:	Circular Electroplated, Annealed Tinned Copper
Temperature Range	:	-30^0 C to $+105^0$ C
Insulation	:	Dual Layer Electron Beam Cross linked irradiated materials / Silicon Rubber
Screening	:	Annealed Tinned Copper Braid
Outer Sheath	:	Electron Beam Cross linked irradiated LFH Compound
Protective Barrier	:	Glass Braid/Lacquer, Mica Glass Tape to meet the fire performance applicable for DEF STAN 02-527 (NES 527) cables

IEC 60092-350, 353, 360 & 376, BS-6883, BS-7917, NEK 606

For use in shipboard & offshore application at marine environment and use for Power, Control, Instrumentation and Communication with or without fire survival characteristics.

Standards	:	IEC 60092-350 - Construction & Test methods of Power, Control and Instrumentation Cables IEC 60092-353 - Power Cables for rated voltage of 0.6 / 1 KV, 1.8 / 3 KV. IEC 60092-376 - Control & Instrumentation Cables for rated voltage of 150 V / 250 V IEC 60092-360 - Insulating and sheathing properties materials for shipboard and offshore cables BS 6883 - Elastomeric insulated Cables for fixed wiring in ships & offshore nits BS 7917 - Elastomeric insulated fire resistant (Limited Circuit Integrity) Cables for fixed wiring in ships & offshore units
Construction	:	Single Core, Multi Core, Single Pair, Multi Pair, Multi Triad and Quad Screened & Unscreened, Armoured & Unarmoured
Voltage Grade	:	150 V / 250 V AC, 0.6 / 1.0 KV and 1.8 / 3.0 KV AC
Conductor	:	Electroplated Annealed Bare / Tinned Copper of various classes
Temperature Range	:	-15^0 C to 95^0 C
Insulation	:	XLPE / EPR / HEPR, HF 90 / S 95
Screening	:	Al-Mylar Tape along with Drain Wire / ABC or ATC Braiding
Inner Sheath	:	SHF1 / SHF2 / SH / SF / SW2 / SW4 / SHF2 / SHF2 (Mud Resistant)
Braid Armour	:	Copper (Bare or Tinned) / Copper Alloy (Bare or Tinned) / Aluminium Wire / Bronze Wire / GI Wire Braid with $>$90% coverage.
Outer Sheath	:	SHF1 / SHF2 / SH / SF / SW2 / SW4 / SHF2 / SHF2 (Mud Resistant)



Pressure Tight (PT) Cables

Power, Control & Signal Cables, Data Communication, RF Cables, Halogen Free and Flame Retardant, Fire Survival with low smoke generation and low toxic properties of insulation & Sheath. These cables are suitable and designed to withstand radial and axial pressure up to 10 to 72 bar.

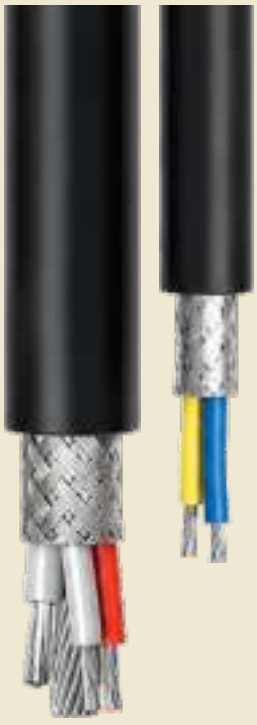
Specification	:	EED 57-03 & EED 57-04
Construction	:	Single Core, Multi Core, Multi Pair, Unscreened, Individually Screened & Collectively Screened
Voltage Grade	:	250 V AC, 600 V AC to 1000 V AC
Conductor	:	Circular electrolytic Bare and Tinned or Silver Plated Copper
Temperature Range	:	- 30° C to +120° C
Insulation	:	Special halogen free and fire retardant with low smoke generation and low toxic polymers with E-beam curing process
Screening	:	Annealed Bare / Tinned / Silver Plated Copper
Outer Sheath	:	Special halogen free and fire retardant with low smoke generation and low toxic polymers with E-beam curing process
Water Blocking Compound/Tape	:	Provided to withstand pressure requirement
Application	:	Used in Submarines for Power, Control, Lighting and Communication and Instrumentation circuits

UL/CSA Listed High Temperature Aerospace & Missile Wires & Cables

High Temperature Cables are used in areas where both working temperature and ambient temperatures are too high. They are made with a wide range of conductors, insulating materials and screening materials depending on the temperatures and conditions under which the cable has to perform.

Construction	:	Single Core high temperature hook-up wires & Multi Core / Multi Pair, Screened / Unscreened and Armoured / Braided Cables
Voltage Grade	:	250 V AC, 600 V AC & 1000 V AC (Rating as per MIL-16878, VDE, DIN, ANSI)
Insulation Materials	:	PTFE / FEP / PFA / PEEK / ETFE / XL-ETFE / Silicon Rubber / Varnished Fibre Glass Braid

Electron Beam Cross Linked ETFE (XL-ETFE), a type of Thermoset Insulation, provides excellent fluid / oil / moisture resistance also creates increased stability at higher temperatures. Wires and Cables conforming to MIL-W-22759 / 32-35 & 41-46 and MIL-STD-2223.



Digital Data Communication Cables

CAT5e | CAT6 | CAT6A | CAT7| WTB | MVB | ETHERNET

These cables are designed for reliable, high-speed digital signal transmission in communication networks. Suitable for control, monitoring, instrumentation, diagnostics, and industrial communication applications, ensuring dependable data exchange between interconnected electrical and electronic systems.

Cable Configuration	:	Pair / Quad (4 Cores)
Conductor	:	Annealed Bare Copper / Annealed Tinned Copper (Solid / Stranded / Flexible)
Conductor Size	:	22 AWG, 23 AWG, 24 AWG, 25 AWG, 26 AWG, 0.25 mm^2, 0.50 mm^2
Primary Insulation	:	Solid PE / Foamed PE
Screening (Optional)	:	Annealed Tinned Copper Braiding
Outer Sheath	:	PVC / FR PVC / FRLS PVC / ZHFR / LSZH / EBXL EVA / EBXL Special Compound (EM101 / EM104)
Fire survival (As per requirement)	:	Safely position Mica Tape to meet the requirement as per EN 50200 PH-30
Standards	:	ISO / IEC 11801, IEC 61156-6, ANSI / TIA-568.2-E
Application	:	Train Communication Network (TCN). Control & Instrumentation Systems. PLC & Automation Systems. Process Control & Monitoring. Diagnostic & Data Acquisition Systems
Key Features	:	High-speed data transmission. Excellent signal integrity. Low attenuation & controlled. impedance. Superior EMI shielding (screened versions) Fire Survival options available



Thin Walled Flexible Electron Beam Irradiated Elastomeric Cables

ELRS/SPEC/ELC/0019 REV-4

Electron beam irradiated thin walled flexible elastomeric cables with copper conductor, limited fire hazard, minimum flame spread, low smoke emission & limited toxic fumes emission.

Application : They are designed for fixed, protected internal use in power, auxiliary as well as control circuit of conventional tap changer electric locomotives, AC/DC EMU & BG AC EMU & MEMU / Coaching Stock

Fire performance meeting ELRS / SPEC / ELC / 0019 requirements along with EN 45545-2 HL3

Advantages : It's construction provides extreme durability against mechanical stress, chemicals and temperature fluctuations

Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

Resistance to mineral oil, diesel oil, fluids & ozone

Thin-wall design allows for space-efficient installation

Robust build guarantees a long service life

Construction:

	Single Core Cables		Multi Core Cables	
Component	up to 750 V	Above 750 V & Up To 1.8/3 KV	Above 750 V & Up To 1.8/3 KV	
Size (mm^2)	1.5 mm^2 to 150 mm^2	1.5 mm^2 to 300 mm^2	19C X 2.5 mm^2	19C X 4 mm^2
Operating temperature	- 40° C to +120° C			
Electrolytic Flexible Annealed Tinned Copper (Class-5)	☑	☑	☑	☑
Insulation (Type EBXL EPDM)	☒	☑	☑	☑
Insulation (Type EBXL EVA)	☑	☒	☑	☑
Sheath (Type EBXL EVA)	☒	☑	☑	☑
HV Test	6 KV for 5min	8 KV for 15min		
IR Constant-At room temp. at 90 ± 3° C	K ≥ 2000 MΩ-km K ≥ 30 MΩ-km	K ≥ 12000 MΩ-km K ≥ 200 MΩ-km		
Bending Radius:	3 X OD for cable diameter < 10mm 5 X OD for cable diameter > 10mm			

Colors: Various color options available as per customer requirement (Red, Yellow, Blue, Black, Grey, GNYE, Chocolate, White, etc.).

Compliance & Fire Safety

Low Flame Spread / Flame Retardancy : IEC 60332-1-2, IEC 60332-3, CAT-C

Low Smoke Emission : ASTMD 2843 / IEC 61034-2

Corrosivity of Combustion of gases (on Sheath only) : IEC 60754-2

Toxicity of Combustion of gases (on Sheath only) : NES 713

Key Features

Electron Beam Cross Linked (EBXL) Cable

Halogen-Free, Low Smoke & Toxicity

High Temperature Rated - 40° C to +120° C Continuous Operation

Oil, Diesel & Chemical Resistant for Railway Environments

Flexible Tinned Copper Conductors (Class 5) for Easy Installation

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.



Single Core Cables for Electric Locomotives & Rolling Stock

Types WAG-9, WAG-9H, WAP-5 & WAP-7 (CLW/ES/03/0458 Alt.E)

These high-performance cables are built for demanding applications, ensuring efficient and reliable power transmission in power, auxiliary, control, sensor and driver circuits for AC traction motors in railway rolling stock.

Construction:

Component	4GKW- 1.8 KV (1.8/3 KV) (Single Core Cable)	9GKW- 4 KV (3.6/6 KV) (Single Core Cable)	3GKW (300/500 V) (Single Core Wire)
Size (mm^2)	1.5 mm^2 to 150 mm^2	10 mm^2 to 150 mm^2	0.5 mm^2
Operating temperature	- 40° C to +120° C		
Circular Annealed Tinned Copper (Class-5) Complying to IEC 60228	☑	☑	☑
Insulation - EBXL EPDM	☑	☑	☒
Insulation - (Electron Beam Cross Linked Copolymer - Type EBXL EVA)	☒	☒	☑
Sheath-Type EBXL EVA	☑	☑	☒
HV TEST	6 KV for 15min	12 KV for 15 min	3 KV for 15 min
Min. Bending Radius	3 X OD for Cable dia ≤ 10mm 5 X OD for Cable dia > 10mm		3 X OD for fixed installation 4 X OD for flexing installation

* The 300 / 500 V grade: Insulation Color: Red, Yellow / with Green Strip, Customer requirements.
* For 1.8 KV (4 GKW) Insulation color: Grey & outer sheath color: Black
* For 4.0 KV (9 GKW) Insulation color: Red & outer sheath color: Black

Multi Core / Pair Cables for Electric Locomotives & Rolling Stock

Types WAG-9, WAG-9H, WAP-5 & WAP-7 (CLW/ES/03/0459 Alt.C)

These cables are used in control, sensor & roof circuit of Electric Locomotive with excellent flame retardant and low smoke halogen-free properties. Designed for durability, they resist extreme temperatures, oil, ozone, weathering and abrasion while remaining flexible and easy to strip.

Construction:

Component	300/300 V (0.5 mm^2) Screened	300/300 V (0.5 mm^2) Twisted	600/1000 V (1.0 mm^2) Screened	600/1000 V (1.0 mm^2) Twisted
Circular Annealed Tinned Copper (Class-5) Complying to IEC 228	☑	☑	☑	☑
Operating temperature	- 40° C to +120° C			
Insulation (Type EBXL EPDM)	☑	☑	☑	☑
Fillers	(Optional)	(Optional)	(Optional)	(Optional)
Separators	(Optional)	(Optional)	(Optional)	(Optional)
EMC Screening (Tin Copper Braiding)	☑	☒	☑	☑
Sheath (Type EBXL EVA) (BLACK)	☑	☑	☑	☑
HV Test	1.5 KV at 50HZ for 15 min		4 KV at 50HZ for 15min	
Min. Bending Radius (Fixed installations)	5 x Overall diameter			

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Application : Designed for critical power transmission and low voltage signal transmission in railway rolling stock

Advantages : These Electron Beam Cross Linked (EBXL) electrical cables are with limited fire hazard properties. This construction ensures extreme durability low frame spread, low smoke halogen free, flame retardant & excellent resistance to high and low temperature, oil, ozone, weathering and abrasion, flexible & easy to strip.

Ensures very good EMC compatibility for screened cables where signal integrity is essential for safe operation.

Compliance & Fire Safety : Low Flame Spread / Flame Retardant - IEC 60332-1-2, IEC 60332-3 CAT-C Smoke Intensity - IEC 61034-2. Corrosivity of combustion of gases IEC 60754-2 Toxicity of combustion of gases (sheath only) adheres to UTIP part 2 E7 / NES 713

Fire Performance as per EN-45545-2 HL2/HL3

Key Features : Environmental resistance – resists oil, diesel and various chemicals. Physical properties - flexible and highly durable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp.



Power and Control Cables designed for Railway Rolling Stock, Traction & Metro Applications

EN 50264-3-1 Single Core Cables

Offering exceptional flame resistance, durability and EMC compatibility, these cables are ideal for fixed installations in locomotives, metros & EMUs.

Application : Used for power transmission, control in various applications in Railway Rolling Stock (Locomotives, Metros, EMU, MEMU)

They are suitable for use in confined spaces due to their reduced bending radius

They can withstand harsh operating conditions, including exposure to oil, ozone and wide temperature fluctuations

The conductors are rated for continuous operation at temperatures 90° C (Optional: 120° C)

Advantages : Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

They are resistant to oils, fuels and ozone, ensuring durability and reliable performance even when exposed to harsh chemicals

They can withstand mechanical stresses like vibration and impact, which are common in railway environments

Construction:

Single Core Cables

Component	0.6/1 KV (Unsheathed) M	1.8/3 KV (Unsheathed) M	1.8/3 KV (Sheathed) MM	3.6/6 KV (Sheathed) MM
Size (mm^2)	1.0 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2
Operating temperature	- 40° C to +90° C / +120° C			
Flexible Tinned Coated Annealed Copper Conductor (Class 5)	☑	☑	☑	☑
Conductor screening	☒	☒	☒	☑
Separator Tape	(Optional)	(Optional)	(Optional)	☒
Insulation (Type EI 106/107/108/109/110)	☑	☑	☑	☑
Separator Tape	☒	☒	(Optional)	(Optional)
Sheath (Type EM 101/102/103/104)	☒	☒	☑	☑
Test Voltage	3.5 KV for 5 min	6.5 KV for 5 min	6.5 KV for 5 min	11 KV for 5 min

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Key features & Fire Safety : IEC 60332-1-2 – Flame Retardant

IEC 60754-1/2 – Corrosivity of Combustion of gases

IEC 61034-2 – Low Smoke Emission

EN 45545-2 HL-2/HL-3 - Fire behavior of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Power and Control Cables designed for Railway Rolling Stock, Traction & Metro Applications

EN 50264-3-2 Multi Core Cables

Offering exceptional flame resistance, durability and EMC compatibility, these cables are ideal for fixed installations in locomotives, metros & EMUs.

Application : Used for power transmission, control in various applications in Railway Rolling stock (Locomotives, Metros, EMU, MEMU)

The cables can withstand harsh operating conditions, including exposure to oil, ozone and wide temperature fluctuations

The conductors are rated for continuous operation at temperatures 90° C (Optional :120° C)

Their flexible, multi-core design enables easy routing in limited spaces, especially where movement or vibration is present

Advantages : Halogen-free, fire safety by reducing flame spread, smoke and toxic gas emissions

They are resistant to oils, fuels and ozone, ensuring durability and reliable performance even when exposed to harsh chemicals

The cables can withstand mechanical stresses like vibration and impact, which are common in railway environments

Construction:

Multicore Cables

Component	300 / 500 V (Unscreened) MM	300 / 500 V (Screened) MMS	0.6 / 1 KV (Unscreened) MM	0.6 / 1 KV (Screened) MMS
Size (mm^2)	1.0 mm^2 to 2.5 mm^2	1.0 mm^2 to 2.5 mm^2	1.5 mm^2 to 50 mm^2	1.5 mm^2 to 50 mm^2
Operating temperature	- 40° C to +90° C / +120° C			
Flexible Tinned Coated Annealed Copper Conductor (Class 5)	☑	☑	☑	☑
Separator Tape	(Optional)	(Optional)	(Optional)	(Optional)
Insulation (Type EI 106/107/108/109/110)	☑	☑	☑	☑
Metallic Screening	☒	☑	☒	☑
Separator Tape	(Optional)	(Optional)	(Optional)	(Optional)
Sheath (Type EM 101/102/103/104)	☑	☑	☑	☑
Test Voltage	2 KV for 5 min		3.5 KV for 5 min	

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request

Key features & Fire Safety : IEC 60332-1-2 – Flame Retardant

IEC 60754-1/2 – Corrosivity of Combustion of gases

IEC 61034-2 – Low Smoke Emission

EN 45545-2 HL-2 / HL-3 – Fire behavior of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



Thin-Walled Single, Multi-Core & Multi-Pair, Railway Signal & Control Cables with Special Fire Performance for Railway Rolling Stock

EN -50306-1,2,3,4

Ideal for modern railway applications where space, weight, safety and EMC performance are critical.

Application : They are designed for fixed & protected internal & external wiring in all railway vehicles, from locomotives to trams. Rated for occasional thermal stress, with a continuous operational life equivalent to temperatures of 105° C (Optional: 120° C). Their compact size and flexibility are perfect for confined spaces

These cables are crucial for power transmission, controlling & various low voltage signal transmission in various Rolling stock applications (Locomotives, Metros, EMU, MEMU, Control circuits). Their halogen-free, cross linked construction ensures superior fire safety, providing essential protection for passengers and crew

Advantages : Resists mechanical stress, chemicals and extreme temperatures

Halogen-free, cross-linked construction with good flexibility and durability compact and light weight design, very good EMC compatibility for screened cable.Thin-wall design and low bending radius allow for space-saving installations Robust build guarantees a long service life



EN 50306 Thin-Wall Railway Rolling Stock Cables

EN 50306 Cables offer diverse constructions (single / multi core, screened / unscreened, multipair), operate reliably from -40° C to +105° C (Optional 120° C) They are rated for 300 V to earth.

Available in 0.50 mm^2 to 2.5 mm^2 cross-sections, they feature electron-beam cross linked, halogen-free materials ensuring superior fire performance (low smoke, non-toxic, non-corrosive gases) and robust resistance to oils, fuels, ozone and UV, all in a compact, durable, thin-wall design.

Construction:

Component	50306-2	50306-3	50306-4
Size (mm^2)	0.5 mm^2 to 2.5 mm^2	0.5 mm^2 to 2.5 mm^2	0.5 mm^2 to 2.5 mm^2
Operating temperature	- 40° C to +105° C /+120° C		
Cable Types	Single Core	Single Core & Multi Core Cables	Multi Core & Multi Pair Cables
Screening	Unscreened	Screened	Unscreened / Screened
Flexible Tinned Coated Annealed Copper Conductor (120° C) (Class 5)	☑	☑	☑
Separator Tape	☒	(Optional)	(Optional)
Insulation (as per 3.1 of EN 50306-1)	☑	☑	☑
Laying up & Fillers	☒	☑	☑
Metallic Screening	☒	☑	☑
Separator Tape	☒	(Optional)	(Optional)
Sheath (Type S1 or S2 as per 3.2 of EN 50306-1)	☒	☑	☑
Test Voltage	2 KV for 5 min		

☑ = Included | ☒ = Not Included



Key features : IEC 60332-1-2 – Flame Retardant
IEC 60754-1/2 – Corrosivity of Combustion of gases
IEC 61034-2 – Low Smoke Emission
EN 45545-2 HL-2/HL-3– Fire behaviour of the Cable

Fire retardant | Good Chemical Resistance | Good Resistance to UV, humidity and ozone | Highly Flexible | Halogen Free | Low Corrosivity of combustion gases | Low toxicity | Operatingtemp | Screened Versions



High-Temperature Silicon Rubber Insulated Power Cables having Special Fire Performance for Railway Rolling Stock/Traction/Metro

EN 50382-1 and EN 50382-2

These railway cables deliver superior performance in high-temperature environments, offering excellent flexibility and mechanical strength. Engineered for safe and efficient power transmission in traction systems, metro trains and rolling stock operating under extreme thermal and environmental conditions.

Application : Designed for railway rolling stock applications requiring superior fire performance and thermal endurance. Halogen-free with low smoke, toxicity and corrosivity. Ideal for power distribution in locomotives, metros, EMUs and MEMUs, they are well-suited for high-stress areas like traction converters, rooftop and under frame wiring and control systems

Advantages : Engineered with advanced cross-linked silicon rubber compounds, superior mechanical durability & demonstrating high resistance to abrasion, tensile stress and cut through damage. Outstanding chemical resistance ensures reliable performance in environments exposed to oils, fuels, acids and alkalis

Designed for flexibility and ease of handling, these cables simplify installation and stripping processes, meeting the rigorous operational demands of modern railway systems

Construction: EN 50382-2

Component	1.8/3 KV (Unsheathed) F/FZ	1.8/3 KV (Sheathed) FF	3.6/6 KV (Unsheathed) F/FZ	3.6/6 KV (Unsheathed) FX/FXZ	3.6/6 KV (Sheathed) FF
Size (mm^2)	1.5 mm^2 to 400 mm^2	1.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2	2.5 mm^2 to 400 mm^2
Flexible Bare copper (150° C) or Tinned copper conductor (120° C) (Class 5)	☑	☑	☑	☑	☑
Flexible Bare copper (150° C) or Tinned copper conductor (120° C) (Class 6)	☒	☒	☒	☑	☒
Conductor screening	☒	☒	(Optional)	☒	(Optional)
Separator tape	(Optional)	(Optional)	☒	(Optional)	(Optional)
Insulation (Type EI 111)	☑	☑	☑	☑	☑
Insulation (Type EI 112)	☒	☑	☒	☒	☑
Textile braid on request for FZ, FXZ	☑	☒	☑	☑	☒
Sheath (EM 105/106/107)	☒	☑	☒	☒	☑
Test Voltage (R.M.S)	6.5 KV for 5 mins	6.5 KV for 5 mins	11 KV for 5 mins	11 KV for 5 mins	11 KV for 5 mins
Bending Radius	4 x Outer diameter if OD ≤ 12 mm 6 x Outer diameter if OD > 12 mm				

☑ = Included | ☒ = Not Included | (Optional) = May be included as per specification or customer request
*Type FFXS jumper cable with EMC-protected metallic braided screen is available on request

Compliance & Fire Safety

EN 50382-1 – General construction and performance requirements
EN 50382-2 – Specifications for single core silicon rubber insulated cables
IEC 60332-1-2 – Flame Retardant
IEC 60754-1/2 – Corrosivity of combustion of gases
IEC 61034-2 – Low smoke emission
EN 45545-2 HL-2 / HL-3 – Fire behaviour of the cable stems

Key Features

Safety focused design for enclosed and public environments
Approved for flexible and fixed wiring in rolling stock, tunnels and depots
Low toxicity materials preserve electronics and ensure occupant safety
Resistance to mineral oils, fuels, ozone and UV radiation





Material Handling Cables

CRD & Trailing Cables

These cables are used in conveyor machinery such as transfer cars, boom-stackers, side arm chargers, bulk material conveyors etc. They find application in almost every industry segment like Steel Mills, Cement Plants, Docks, Power Plants, Automobile Industries & Refineries and Petrochemicals.

Construction	:	Single cable comprising multiple elements like composite type, power cores, control cores, signaling pairs, etc for multipurpose functions
Voltage Grade	:	600 / 1100 V AC
Conductor	:	Class 5 flexible tinned or bare copper
Insulation	:	EPR
Screening	:	Tinned or bare copper wire braid (If Applicable)
Inner Sheath	:	HOFR Elastomer
Anti Kink Braid	:	Fabric braid embedded between inner and outer sheath
Outer Sheath	:	HOFR Elastomer
Features	:	Designed to withstand continuous reeling and unreeling sheath materials that have a high degree of flex fatigue resistance, excellent heat, oil and fire resistant properties
Operating Temperature	:	- 20° C to + 90° C
Test Voltage	:	3000 V AC / 3500 V AC
Bending Radius	:	8 D
Core Marking	:	1-5 Cores colour coded as Green / Yellow, Blue, Brown, Black, Grey or Coloured Rubberised cotton tapes. 6 Cores and above with numbered Cores, with one earth Core of Green / Yellow
Standards	:	IS 8130, IS 6380, IS 9968 I, IEC-60228, IEC-60502, IEC-60332



HO7RN-F-Heavy Duty Rubber Cables

These heavy duty elastomer cables are used in generators, heavy machinery, portable power tools and equipment, moving machinery in wet, hot or oily environments. Their flexibility permits to use in constricted spaces with sharp and complex bends. They can be made with special abrasion resistant sheaths to withstand rough use in portable equipment.

Voltage Grade	:	450 / 750 V AC
Conductor	:	Bare or tinned flexible Class 5 conductor as per (EN 60228)
Range	:	Single Core: up to 630 mm^2 Multi Core: 1 mm^2 - 2.5 mm^2 up to 61 Cores 4 mm^2 - 6 mm^2 up to 19 Cores 10 mm^2 - 300 mm^2 up to 5 Cores
Insulation	:	EPR
Sheath	:	Black heavy duty elastomer
Temperature Range	:	- 25° C to + 85° C
Colour Coding	:	1-5 Cores colour coded as Green / Yellow, Blue, Brown, Black, Grey or Coloured Rubberised cotton tapes. 6 Cores or more with numbered Cores and earth Core of Green / Yellow
Standards	:	EN 50525-2-21, BS 7919



Type P Cables

Type P Cables are specifically designed for installation and use in harsh environments found within offshore and onshore drilling rigs. These extreme environments may include severe cold, high heat, constant vibration, drilling mud, mechanical stress and salt corrosion.

Specification	:	IEEE 1580, IEC 60092-353, IEC 60092-376, UL 1309
Temperature Range	:	90^0 C, 100^0 C, 110^0 C & 125^0 C
Conductor	:	Flexible stranded tinned copper
Application	:	Powering Machinery, Communication Devices, Navigation Systems, Offshore Drilling Rigs, Shipboard Wiring and Marine Vessels
Cable Type	:	Multi Core, Single Core, Power, Control, VFD and Instrumentation Cables
Voltage Grade	:	300 V, 0.6 / 1.0 KV & 2 KV
Insulation	:	XLPO
Sheath	:	Extruded Flame Retardant, Oil & Abrasion Resistant Synthetic Elastomer
Armour (Optional)	:	Tinned copper or bronze wire braid
Shield (applicable for Instrumentation Cables)	:	An aluminium/polyester tape with drain wire, 100% coverage, is applied over each twisted pair and the cabled core, the single pair construction has only the overall shield



VFD Cables

VFD cables are used to connect the VFD drive to the variable frequency motors, drives precisely controls the speed and torque of the motors. During this operation of controlling the motor by changing the frequency there is every chance for noise generation, sudden induced voltage and spikes and intense electric field around the conductor which can be suppressed with special design.

Construction	:	Metallic layer over the core / cable will reduce the noise / strong electric field around the core / earthing of all spikes generated during the operation
Voltage Grade	:	Up to 1800 / 3300 V AC
Conductor	:	Circular electrolytic bare copper / tinned copper (stranded / flexible)
Insulation	:	XLPE or EPR or HEPR
Screening	:	Combination of copper tape and copper wire braid or double layer of copper tape and concentric braiding
Outer Sheath	:	PVC / ZHFR / SHF1 / SHF2
Application	:	This construction of metallic layer over the core / cable will reduce the noise / strong electric field around the core / earthing of all spikes generated during the operation



Co-Axial Cables (RG Series)

Radio Frequency or Signal Transmission Cables, Polyethylene / XLPE / Flourpolymer / Dielectric Insulation & Halogen Free Flame retardant with low smoke and low toxic polymers, Sheath materials.

Specification	:	Def Stan 02-512 (PT-5) & MIL-DTL-17H & customer specification
Construction	:	Single Core Screened Cables
Primary Conductor	:	ABC / ATC / SPC & special conductors like CCS (Copper Clad Steel) etc
Temperature Range	:	- 30^0 C to +120^0 C
Insulation	:	Polyethylene / XLPE / Flouropolymer
Outer Conductor	:	Aluminium Mylar Tape / Annealed Tinned / Bare Copper Braid
Outer Sheath	:	Special halogen free and fire retardant with low smoke generation and low toxic properties with E-beam curing process
Type of Cables	:	RG 11, RG 213, RG188, RG 58, RG 59, RG 214
Application	:	For use of VHF (Very High Frequency) signal transmission





Electrical Submersible Pump (ESP) Cables

High, medium & low temperature flat & round cables are 3 KV, 4 KV & 5 KV rated for operating temperatures up to 450º F, 284º F, 205º F & 160º F.

Sizes : 1, 2, 4, 6 AWG & other sizes and KV ratings available upon request

Application : Downhole extraction systems are critical for crude oil extraction. The reliability of the electrical power supply to an Electrical Submersible Pump (ESP) system depends on the performance and reliability of the power feed through the wellhead, power cable, motor lead cable, pig tail connectors and related equipment such as the pump and motor. These cables offer an efficient, rugged and easy to handle solution that delivers reliable performance in a package that is straight forward to install and maintain

Construction :
- Solid or stranded plain or tinned copper conductor
- Proprietary PP / EPDM rubber insulation with a poly-adhesive layer to the conductor
- Lead Sheath (applicable only for SL.No 4,11 & 13 from the below table)
- HDPE / EPDM / Nitrile Rubber Jacket
- Longitudinally applied rubber backed fabric / Special heat resistant tape
- Galvanized steel / Stainless Steel / Monel armour

SL. No	Rated Temp. °F (°C)	Cable Construction	Voltage Rating KV	Conductor Size (AWG)	Conductor Coating	Insulation Material	Barrier Material	Tape	Jacket Material	Standard Armour
1	160(71)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	PP	NA	Rubber Backed Woven Fabric	HDPE	Galvanized
2	205(96)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	PP	NA	Rubber Backed Woven Fabric	EPDM	Galvanized
3	205(96)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	PP	NA	Rubber Backed Woven Fabric	Nitrile Rubber	Galvanized
4	250(121)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	PP	Lead Sheath	Rubber Backed Woven Fabric	Nitrile Rubber	Galvanized
5	250(121)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	PP	NA	Rubber Backed Woven Fabric	Nitrile Rubber	Galvanized
6	284(140)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	EPDM	NA	Rubber Backed Woven Fabric	Nitrile Rubber	Galvanized
7	284(140)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	EPDM	NA	Rubber Backed Woven Fabric	EPDM	Galvanized
8	300(148)	Flat/Round	3,4,5	1,2,4,6	Bare/Tin	EPDM	NA	Special Heat Resistant tape	EPDM	Galvanized
9	400(204)	Flat/Round	3,4,5	1,2,4,6	Bare	Polyimide Tape / EPDM	NA	Special Heat Resistant tape	EPDM	Galvanized
10	400(204)	Flat/Round	3,4,5	1,2,4,6	Bare	Polyimide Tape / EPDM	NA	Special Heat Resistant tape	EPDM	Galvanized
11	450(232)	Flat/Round	3,4,5	1,2,4,6	Bare	Polyimide Tape / EPDM	Lead Sheath	Special Heat Resistant tape	EPDM	Galvanized
12	450(232)	Flat/Round	3,4,5	1,2,4,6	Bare	Polyimide Tape / EPDM	NA	Special Heat Resistant tape	EPDM	Galvanized
13	450(232)	Flat/Round	4,5	1,2,4,6	Bare	Polyimide Tape / EPDM	Lead Sheath	Special Heat Resistant tape	EPDM	Monel

note : 1. Materials and specifications are subject to change without notice. 2. Jacket is not applicable for Flat cable construction



Downhole Tubing Encapsulated Conductor (TEC) Cables

These cables are used in the Oil and gas refineries, oil well monitoring, powering downhole equipment and instrumentation, Underground power distribution, pressure sensing equipment & data collection etc.

They are used to monitor, provide power and transmit signals in a downhole application. Cables used in the oil & gas industry must be able to withstand extreme environments, temperatures and pressure which is why Thermo Cables is the choice of industry professionals.

TEC (Tubing Encapsulated Conductor) cables have the traditional characteristics of stranded wires or cables – they have some form or copper conductor surrounded by an insulation material or jacket. The difference comes when the stranded wire or the tubing layer that surrounds the product with an armoured metal component. Lastly, the final layer encapsulates the entire cable. TEC tubing encapsulated cables can withstand temperature ranges from 150° C to 300° C.

These are made with 5 layers and can be constructed with the following materials:

Conductor Layer : can be comprised of 20 AWG to 12 AWG, solid or stranded, bare copper, tinned copper, nickel plated copper, or silver plated copper

Insulation Layer : can be comprised of either FEP, PFA, ETFE or ECTFE

Extruded Filler Layer : can be comprised of PFA, FEP or Polypropylene

Armour Layer : can be comprised of 316L Stainless Steel, Alloy 825 or Alloy 625

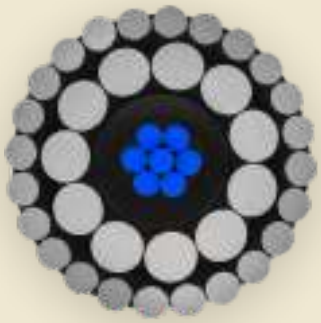
Final Layer : an encapsulation layer can be comprised of FEP, PFA, ETFE, Polyolefin or Polyamide

Shapes : either square or round

Cables Specification:

Voltage Rating V DC	1000	1000	1000	1000	1000	1000	1000	1000
Conductor Gauge (AWG)	18	16	18	16	18	16	18	16
Conductor Type	Solid or Stranded							
Conductor Coatings	Bare, Tinned, Nickel Plated, Silver Plated							
Insulation	ETFE, ECTFE, FEP, PFA							
Filler	Polypropylene, FEP, PFA							
Armour Type	316L (0.028" & 0.035") Alloy 825 (0.028" & 0.035")							
Max. Conductor Resistance Ohms / KFT 20° C	7	4.4	7	4.4	7	4.4	7	4.4
Max. Conductor Resistance Ohms / KFT 150° C	10.5	6.5	10.5	6.5	10.5	6.5	10.5	6.5
Capacitance pF / ft 20° C	26	27.2	32	29.3	26	27.2	32	29.3
Capacitance pF / ft 150° C	27.5	30.9	33.5	33.3	27.5	30.9	33.5	33.3
Min. Insulation Resistance Mohms / KFT	6500	15000	6500	15000	6500	15000	6500	15000
Encapsulation Cable Type	Polyolefin		Polyamide		FEP		PFA	
Encapsulation Cable Color	Yellow		Black		Natural			
Max. working temperature, degC (degF)	150 (302)				200 (392)		250 (482)	





Electromechanical Cables

These specialized heavy-duty cables are designed to provide both electrical power transmission and exceptional mechanical strength. They are primarily used in oil, gas, and mining industries to lower, power, and retrieve heavy subsurface tools and sensors, often operating at depths of several tens of thousands of feet.

Construction

Sizes : 14, 15, 16, 18 AWG & other sizes

Conductor : Solid or stranded, plain, tinned, or nickel-coated copper. Typically manufactured from high-purity copper, the central conductor serves as the primary pathway for transmitting electrical power to downhole logging tools while simultaneously carrying data signals from the tools back to the surface

These are manufactured in accordance with ASTM B355, Class 10 requirements. The nickel coating enhances the conductor's resistance to corrosion, oxidation, and high-temperature environments, making it particularly suitable for demanding downhole applications where long-term reliability and durability is critical

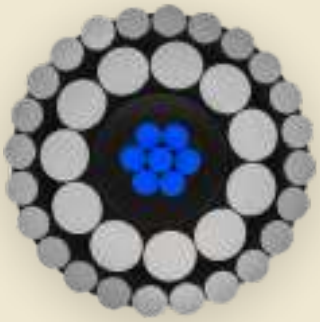
Insulation Layer : Specialized polymers such as PTFE , ETFE, or polypropylene are used to insulate the copper conductor. This insulation prevents electrical short circuits, provides excellent dielectric properties, and minimizes electrical capacitance between the conductor and the outer steel armour. They also offer superior resistance to high temperatures, chemicals, abrasion, and harsh operating conditions

Fillers : Filling Between Armour Layers: SUPERSEAL, a specialized pressure blocking and sealing compound is applied between the armour layers to prevent the migration of fluids and gases along the cable. This filling material enhances the cable's resistance to high pressure downhole environments, provides additional protection against moisture ingress, and helps maintain the structural integrity and reliability of the cable during operation

Armour Wires : The cable armour consists of high strength, corrosion and H_2S resistant alloy steel wires helically applied over the cable core in one or more counter rotating layers to provide the required tensile strength, mechanical protection, and torque balance during deployment and retrieval

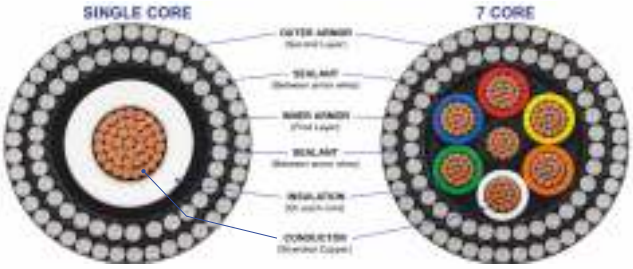
The armour wires are manufactured from premium grade corrosion resistant alloy steel specifically developed for service in high level H_2S (Hydrogen Sulphide) and CO_2 (Carbon Dioxide) well environments. The material offers excellent resistance to sulphide stress cracking (SSC), hydrogen embrittlement, CO_2 corrosion, abrasion, and cyclic fatigue while maintaining high tensile strength and flexibility under repeated bending over sheaves and drums







Electromechanical Cables



Cable Type Decoding :

Number of Conductors : 1 and 7

W : Armour wires (number of inner wires / number of outer wires) : 12 / 18

X : Armour wires (number of inner wires / number of outer wires) : 24 / 24

Y : Type of conductor: 6 wires around 1 central wire nickel plated

Z : Type of conductor: 12 wires around 6 wires around 1 wire nickel coated

Insulation : P: PFA, F: FEP, E: ETFE

Armour Material : NS - Nickel Stainless, ENS - Enhanced Nickel Stainless, CR - Corrosion Resistant

Size	Cable type	Temperature rating °C/F			Insulation	Insulation thickness mm	Conductor configuration mm	Number and Sizes of wires		Resistance Typical Ω/Km	Capacitance pf/m	OD Each mm	Cable breaking strength KN
		1 Hr. max temp	8 hr max temp	Const. max temp				Inner Armour mm	Outer Armour mm				
1C x 18AWG	1WYP-NS	260/500	232/450	204/400	PFA	0.775	7 x 0.404	12 x 0.787	18 x 0.787	22	141	2.743	20.9
1C x 18AWG	1WYP-ENS	260/500	232/450	204/400	PFA	0.775	7 x 0.404	12 x 0.787	18 x 0.787	22	141	2.743	21.8
1C x 18AWG	1WYP-CR	260/500	232/450	204/400	PFA	0.775	7 x 0.404	12 x 0.787	18 x 0.787	22	141	2.743	23.14
1C x 16AWG	1WZP-NS	260/500	232/450	204/400	PFA	0.813	19 x 0.302	12 x 0.909	18 x 0.909	15.1	174	3.124	26.7
1C x 16AWG	1WZP-ENS	260/500	232/450	204/400	PFA	0.813	19 x 0.302	12 x 0.909	18 x 0.909	15.1	174	3.124	29.8
1C x 15AWG	1WZF-NS	260/500	232/450	204/400	FEP	0.432	19 x 0.325	12 x 1.016	18 x 1.016	13.1	157	2.489	34.7
1C x 15AWG	1WZE-NS	260/500	232/450	204/400	ETFE	0.483	19 x 0.325	12 x 1.016	18 x 1.016	13.1	157	3.454	34.7
1C x 15AWG	1WZF-ENS	260/500	232/450	204/400	FEP	0.432	19 x 0.325	12 x 1.016	18 x 1.016	13.1	157	2.489	36
1C x 15AWG	1WZE-ENS	260/500	232/450	204/400	ETFE	0.483	19 x 0.325	12 x 1.016	18 x 1.016	13.1	157	3.454	36
1C x 14AWG	1WZF-NS	260/500	232/450	204/400	FEP	0.622	19 x 0.361	12 x 1.13	18 x 1.13	10.5	148	3.048	43.16
1C x 14AWG	1WZE-NS	260/500	232/450	204/400	ETFE	0.444	19 x 0.361	12 x 1.13	18 x 1.13	10.5	148	3.937	43.16
7C x 15AWG	7XZPP-ENS	260/500	232/450	204/400	PFA / PFA	0.737	19 x 0.325	24 X 0.991	24 X 1.257	36.4	131	2.438	85

Cathodic Protection Cables

For added protection against corrosive gases and brackish water, a PVDF fluoropolymer insulation covered by an HMWPE jacket can be used. Polyvinylidene difluoride (PVDF) inner layer has exceptional chemical resistance when present in chlorine, sulfuric acid and hydrochloric acid. High molecular weight polyethylene (HMWPE) exhibits superior dielectric and tensile strength and protection and can withstand considerable abuse during installation.

Used for underground DC power supply feeder to cathodic protection systems for pipelines, storage tanks, and other buried or submerged structures.

Construction/Range : Single Core up to 95 mm^2

Voltage Grade : Up to 1000 V

Conductor : Bare Copper / Tinned Copper Stranded / Flexible Conductor

Primary Insulation : PVDF Fluoropolymer / ECTFE (Halar)

Outer Sheath : High molecular weight polyethylene (HMWPE)









Cable Assembly, Harnesses & Systems

We specialize in the design, development and manufacture of high quality customised cable assemblies and wiring harnesses. We serve critical industries such as Railway Transportation, Defence, Renewable Wind Energy, Oil and Gas etc. Our products are engineered to perform in the most demanding environments which undergo rigorous electrical testing and quality validation to meet international standards and ensure superior reliability.

Railway

- Cable harnesses for locomotives and passenger coaches
- Inter-vehicular (IV) coupler and jumper cable assemblies
- Reliable power, signal, and communication connectivity solutions

Defence

- Rugged cable assemblies for military communication systems
- Pressure tight cable assemblies for naval ships and submarines
- Shore charging and shore supply cable assemblies

Wind Energy

- High performance wind turbine harnesses
- Cable assemblies designed to withstand harsh environmental conditions
- Durable solutions for long term field reliability

Solutions:

IV Coupler & Jumper Cable Assemblies

- Advanced coach to coach and locomotive connectivity systems designed for dependable power, signal, and data transmission

Custom Cable Assemblies & Wiring Harnesses

- From standard wire assemblies to highly complex, customer specific harness solutions

Defence Cable Assemblies

- In house designed outfitted cable assemblies, shore charging connectors, shore supply assemblies, and pressure tight cable assemblies tested up to 100 Bar for demanding naval applications

Locomotive & Coach Harnesses

- Complete wiring harness solutions manufactured to customer specifications

Engineering Capabilities:

- Precision cutting, stripping and coiling
- Cable sizes ranging from 0.2 mm^2 to 400 mm^2
- Custom cable and harness design
- Die and tooling development
- Connector design and product development
- Semi automatic soldering
- Hydraulic and pneumatic crimping
- Potting and sealing
- Compression moulding

Quality & Compliance:

- Electrical Testing - 100% electrical testing for every assembly
- Simultaneous testing capability of up to 1,080 test points, with programmable & traceable
- IPC/WHMA-A-620 Class 3 compliance

Product Certifications



DNV

CERTIFICATE OF CONFORMITY

This is to certify that the product(s)

Power, Control, Instrumentation & Thermocouple Cables

manufactured by

THERMO CABLES LTD.



DNV

TYPE APPROVAL CERTIFICATE



ABS

CERTIFICATE OF

Product Design Assessment

THERMO CABLES LIMITED

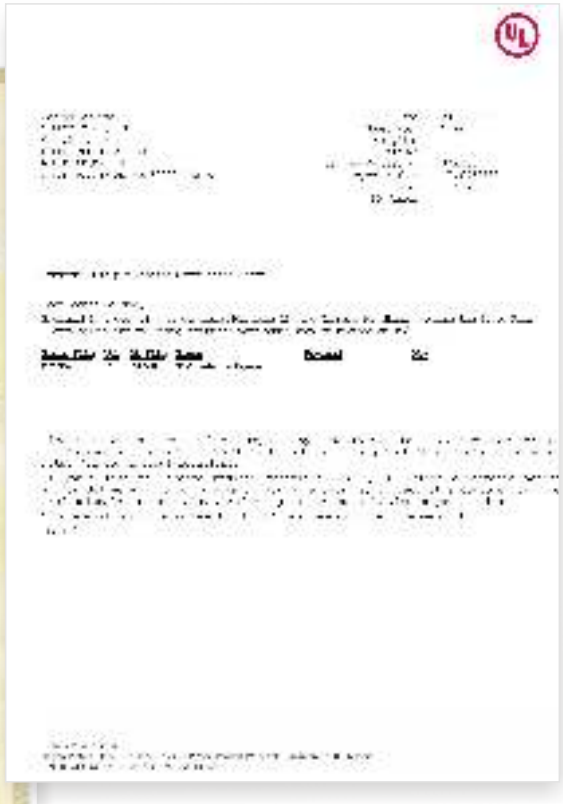
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Type Approval Certificate



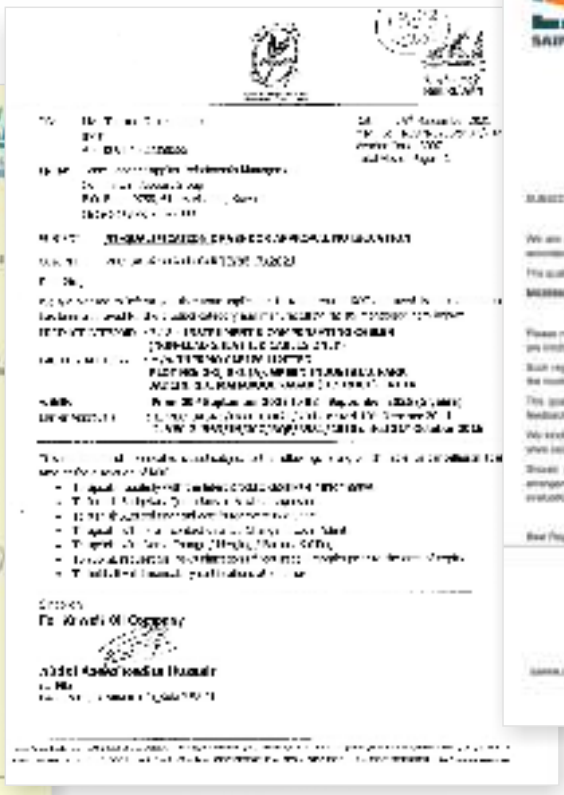
EAC



UL

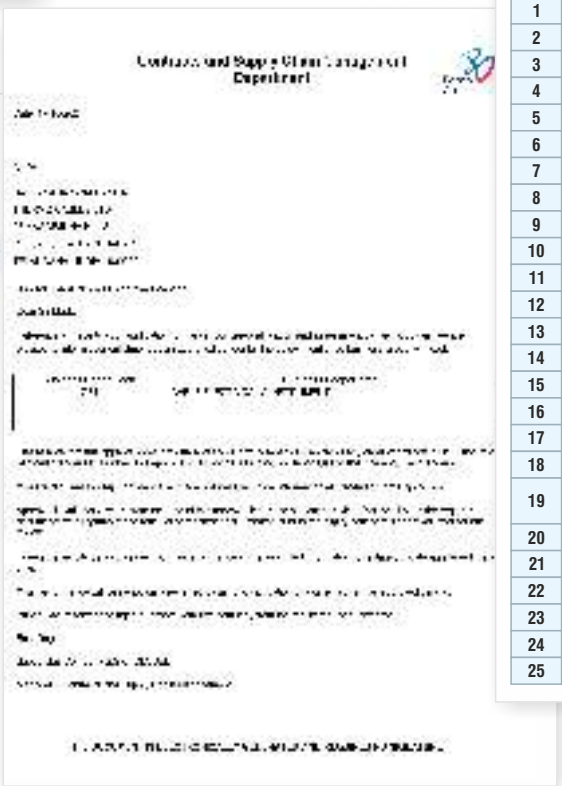
International Approvals





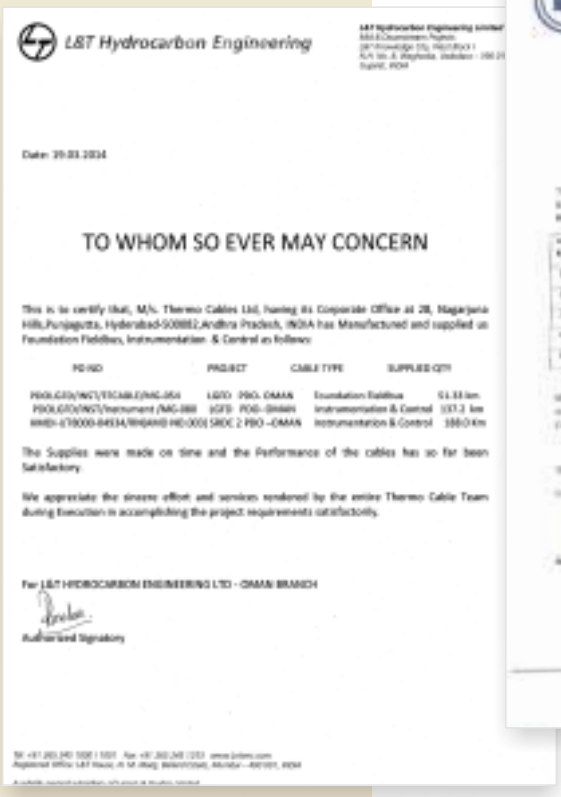






S.No	Customer	Vendor Code
1	ADNOC	20009092
2	Advance Petrochemical	201463
3	Aluminium Bahrain B.S.C. (ALBA)	7791
4	Borogue	000003394
5	Dolphin Energy Ltd	112792
6	Dry Docks	99393
7	Emirates National Oil Company (ENOC)	1001101538
8	ExxonMobil	PC-2024.091753
9	FARABI	9000403
10	GE	SQ-076734.2
11	KOCH Engineered Solutions	SPS000472
12	Kuwait National Petroleum Company (KNPC)	177128
13	Kuwait Oil Company (KOC)	30971
14	MAADEN	20230002
15	NEOM	S10764408
16	National Water Company (NWC)	40317
17	Petroleum Development Oman (PDO)	104158
18	Petronas	1125426A
19	PTT Exploration and Production Public Company Limited (PTTEP)	309104
20	Qatar Energy	309104
21	Qatar Fuel Additives Company Limited (QAFAC)	106712
22	Saudi Arabian Railway (SAR)	4895
23	Saudi Electricity Company	2012054
24	SIBUR	61293
25	TASNEE	S11312730

Accolades



L&T Hydrocarbon Engineering

Date: 20.03.2024

TO WHOM SO EVER MAY CONCERN

This is to certify that, M/s. Thermo Cables Ltd, having its Corporate Office at 28, Nagarjuna Hills,Punjagutta, Hyderabad-500082,Andhra Pradesh, INDIA has Manufactured and supplied as Foundation Fieldbus, Instrumentation & Control as follows:

PO NO	PROJECT	CABLE TYPE	SUPPLIED QTY
PSOL/LTO/WCT/TTCABLE/IMC-054	LOTO PDO, OMAN	Foundation Fieldbus	51.33 km
PSOL/LTO/WCT/Instrument /IMC-080	LOTO PDO -SHAHIN	Instrumentation & Control	137.2 km
8MED-179000-84934/RHAMR HO-0001	SROC 2 PDO –OMAN	Instrumentation & Control	160.0 Km

The Supplies were made on time and the Performance of the cables has so far been Satisfactory.

We appreciate the sincere effort and services rendered by the entire Thermo Cable Team during Execution in accomplishing the project requirements satisfactorily.

For L&T HYDROCARBON ENGINEERING LTD - OMAN BRANCH

Authorised Signatory



Chennai Metro Rail Limited

(A Joint Venture of Govt. of India and Govt. of Tamil Nadu)

TO Whomsoever It May Concern

Sl. No	Purchase Order	PO Date	Indent/ SR#	Cable Type	Project	Quantity supplied (Km./Nos.)	Year of manufacture/ installation
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Thanking you,

For Chennai Metro Rail Ltd.

Authorised Signatory



NATIONAL CEMENT COMPANY LTD

Building The Nation

SIMBA CEMENT

Dated : 29.02.2020

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s.Thermo Cables Ltd., Hyderabad have supplied LT Power, Control, Signal, Thermocouple and Composite Cables to our 3000 TPD Clinkerisation Unit at Hiroshi, Embl-Lukkiluk Road, Kajiado County, KENYA vide our PO No.NCCL/PRIJ/YML-DAD/0162014-2019 dated 9th November, 2015.

This PO consists supply of 15000 Mtrs of 3.5 C X 300 Sq mm alongwith other type of Cables.

We appreciate Thermo Cables effort in executing this Order with quick deliveries to meet our Project Schedules. The Cables are in operation for more than 1 Years and the performance is found to be satisfactory.

for NATIONAL CEMENT COMPANY LTD.,

Name: Lokesh Kumar

Designation: Commercial Director

Seal



cpp

Date: 24 June 2025

To Whomsoever It May Concern

Subject: Performance Letter for Supply of Cables

This is to certify that Thermo Cables Limited, having its registered office at 28, Nagarjuna Hills Punjagutta, Hyderabad, Telangana, India – 500082 has successfully supplied cables for our various projects over the past years.

Details of the major supply orders executed are as follows:

Project Name	Purchase Order No.	Year of Supply	Quantity Supplied	Description of Material Supplied
RAS MARKAZ CRUDE OIL PARK PROJECT - OTTCO	CPP-RM-PO-0117	2025/2025	806.31 KM	Instrumentation and Control Cables

Thermo Cables Limited has met all the technical and delivery requirements of the above projects and has demonstrated good performance in terms of quality, timely delivery, and support for Ras-al-Khaimah oil Park project.

We acknowledge their contribution and purchase orders and wish them all the best in their future endeavors.

For and on behalf of

China Petroleum Pipeline Engineering Company Limited - Middle East

Head of Procurement, CPP MEE

Address: 40th Floor, Addax Tower, Al Reem Island, Abu Dhabi, UAE



Abhivarya Group

Date: 13.03.2024

TO WHOM SO EVER MAY CONCERN

This is to certify that, M/s. Thermo Cables Ltd, having its Corporate Office at 28, Nagarjuna Hills, Punjagutta, Hyderabad-500082,Andhra Pradesh, INDIA has Manufactured and supplied as Foundation Fieldbus, FF Instrumentation & Control of 40E line against our Purchase order PSOSC-LE/018 for Kuwait Company NEW GC 16 Project.

The Supplies were made on time and the Performance of the cables has so far been Satisfactory.

We appreciate the sincere effort and services rendered by the entire Thermo Cable Team during Execution in accomplishing the project requirements satisfactorily.

For Abhivaryaa Group Company

Authorised Signatory



HITACHI

Inspire the Next

Date : 30.03.2021

Subject: Letter of Appreciation to Thermo Cables Limited

To, Thermo Cables Limited Hyderabad.

Dear Thermo Cables Team,

We extend our sincere gratitude for the exceptional support provided during the period of 2020-2021. As it was previous Thermo Cables Limited has played a pivotal role in the success of Hitachi Energy India Ltd, particularly in the manufacturing of different type of cables for GIS at our Vadodara facility.

Hitachi Energy India Limited is excited to enter in strategic partnership, providing the most comprehensive grid portfolio across the entire value chain. Hitachi provides compact, reliable, fast, Insulated Switchgear (GIS) with high end technology for which Thermo Cables is also an important stakeholder for the supplies of required, Instrumentation Shielded XLPE cables.

Your unique blend of excellence, the consistent quality of your products and on time supply has significantly contributed to the smooth functioning of our manufacturing processes. Thermo Cables Limited's dedication to delivering top-notch solutions aligns seamlessly with our standards at Hitachi.

As we reflect on the successes of the past year, we eagerly anticipate continuing and strengthening this successful partnership in the years ahead.

In recognition of Thermo Cables Limited's substantial contributions, we present this letter of appreciation.

Best wishes to Thermo Cables Limited for continued success.

Regards

For Hitachi Energy India Limited, Vadodara

Prasanth Thomas

Category Manager

Hitachi Energy India Limited

Registered and Corporate Office:

Factory Address:

Hitachi Energy

System Certifications

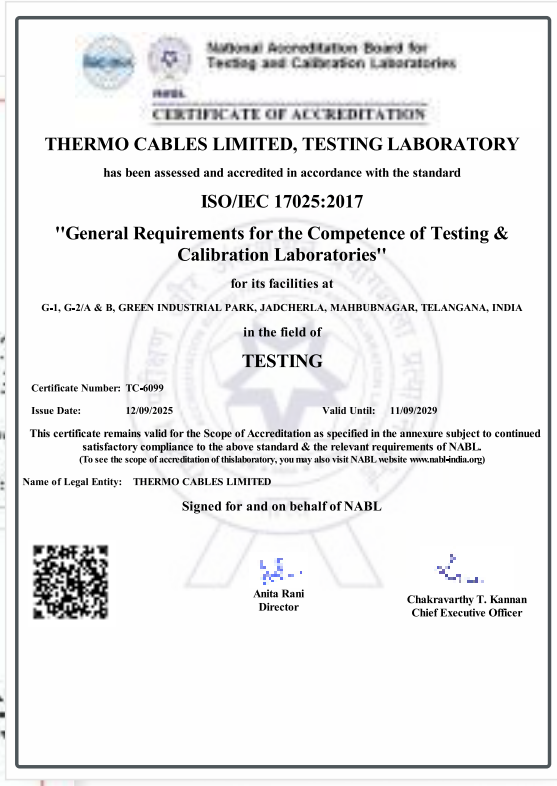












Infrastructure

Machinery

Name of the Machine	Name of the Machine
Rod Break Down Machine (9 Die)	HOIST 'H' - 48 Armouring - 2 Nos
Rod Break Down Machine (11 Die)	HOIST 'H' - 48 B Armouring - 2 Nos
Rod Break Down Machine (13 Die)	HOIST 'J' - 72 B Armouring
Skip Stranding Machine - 2 Nos	HOIST 'F' - 96 Armouring
Electroplating Tinning Machine - 2 Nos	HOIST 'K' - HV Area
Multi Wire Drawing Machine 30 mm	HOIST 'L' - Drum Twister Area
Multi Wire Drawing Machine 8 Wire - 2 Nos	HOIST 'O' - RBD Area
Fine Wire Drawing Machine - 4 Nos	HOIST 'I' - Despatch - 2 Nos
Mixing Machine 75 mm - 3 Nos	HOIST - MMH Area - 6 Nos
Kneader Line - 2 Nos	Chain Hoist 'A' - G I Rewinding - 2 Nos
75 L Kneader	Chain Hoist 'C' - Simon Taping - 4 Nos
Ring Marker	High Speed Bunching Machine - 10 Nos
High Speed Core Rewinding - 4 Nos	Chiller - 2 Nos
Taping Machine - 8 Nos	Chiller - 5 TR - 5 Nos
Vertical Taping Machine - 6 Nos	Chiller - 10 TR - 5 Nos
Horizontal Taping Machine - 12 Nos	Chiller - 20 TR
Single Twist Bunching Machine	PVC Mixer
400 Single Twist Bunching Machine	High Speed Mixer 60 kg
Tandem Extrusion Line (Ø50 + 65 / 35 mm)	High Speed Mixer 120 kg
Tandem Extruder Line (Ø80+ Ø100 / Ø35)	High Speed Mixer 200 kg
Tandem Extruder Line (Ø35+ Ø50 / Ø35)	16 A High Speed Braiding - 3 Nos
Extruder Machine 20 mm Bi Color	16 F High Speed Braiding - 2 Nos
Extruder Machine 45 mm	24 High Speed Braiding - 2 Nos
Extruder Machine 45 mm Bi Color	24 A High Speed Braiding - 5 Nos
Extruder Machine 65 mm - 9 Nos	24 E High Speed Braiding - 4 Nos
Extruder Machine 70 mm - 2 Nos	24 F High Speed Braiding
Extruder Machine 70 / 35 mm	48 High Speed Braiding
Extruder Machine 75 mm - 3 Nos	3 HP Air Compressor
Extruder Machine 80 mm - 4 Nos	10 HP Air Compressor - 3 Nos
Extruder Machine 100 mm	15 HP Air Compressor
Extruder Machine 120 mm - 2 Nos	20 HP Air Compressor - 2 Nos
Extruder Machine 150 mm	25 HP Air Compressor
Foam Extruder Machine	100 HP Air Compressor - 7 Nos
Core Rewinding Machine - 7 Nos	Brazing Machine - 4 Nos
Cooling Tower - 6 Nos	H V Testing - 3 Nos
High Speed GI Rewinding Machine - 27 Nos	Drum Twister Machine - 2 Nos
Ceramic Butt Welding Machine	630 Single Twister Machine 7 Bobbin
Butt Welding Machine - 15 Nos	800 Single Twister Machine 12 Bobbin
Electron Beam Accelerator - 2 Nos	1250 Single Twister Machine 19 Bobbin
Pairing Machine - 4 Nos	1050 Single Twister Machine
Pairing Back Twist Machine - 3 Nos	Pairing Back Twist Machine - 2 Nos
Laying Machine (7 Bobbins)	DT 500 & 800 Buncher Machine - 1 No & 5 Nos
Laying Machine (7 Bobbins) - Single Twist	Scissor Lift 2 ton
Laying Machine (13 Bobbins)	Steam Boiler
Laying Machine (19 Bobbins) - 4 Nos	PVC Grinder
Laying Machine (37 Bobbins) - 3 Nos	Hydraulic Press
Laying (42 Bobbin)	PT Stranding & Taping Machine
Armouring Machine (30 Bobbin) - 2 Nos	Vertical Taping Machine -18 Nos
Armouring Machine (40 Bobbin)	Silicon Rubber Mixing Machine
Armouring Machine (48 Bobbin) - 4 Nos	65/150 Two Stage Extruder (Compounding Line)
Armouring Machine (72 Bobbin) - 2 Nos	60 KVA UPS
Armouring Machine (96 Bobbin)	80 KVA UPS - 2 Nos
Extruder Sheathing Machine 80 mm - 2 Nos	100 KVA UPS
Extruder Sheathing Machine 100 mm	120 KVA UPS
Cable Rewinding Machine - 5 Nos	160 KVA UPS
GI Rewinding Strip Machine - 2 Nos	200 KVA UPS
Off Line Annealer	250 KVA UPS - 5 Nos
Nickel Plating - 2 Nos	320 KVA DG Set
Pointing Machine - 2 Nos	365 KVA DG Set
Fork Lift - 2 Nos	600 KVA DG Set
Auto Clave	1000 KVA DG Set
HOIST 'A' - Skip	Inkjet Printers - 36 Nos
HOIST 'B' - 54 Stranding	Laser Printers - 4 Nos
HOIST 'P' - Stores	EOT 15MT
HOIST 'C' - 7 B Laying	80 / 50 Insulation Line (High Speed)
HOIST 'E' - 13 Laying	Rubber Compound Line
HOIST 'E' - 19 Laying - 2 Nos	Electro Tin Plating
HOIST 'E' - 19 B Laying - 2 Nos	Multi Wire Drawing Machine (16 wire)
HOIST 'G' - 30 Armouring - 2 Nos	37 Bobbin Planetary Laying Machine
HOIST 'G' - 30 B Armouring	Interlock Armouring Machine
HOIST 'F' - 37 Laying	Induction Heating System
HOIST 'F' - 37 B Laying - 2 Nos	3150 Cable Rewinding Machine
HOIST 'K' - 40 Armouring	

Testing Equipment

Name of the Machine - Range/LC
Fourier Transmission infrared Spectrometer (FTIR)
Profile Projector
Digital Thermometer With Sensor - 2 Nos
Hot Air Ageing Oven
Hot Air Oven 6 Nos - Upto 250° C & 300° C
Hot Set Oven - 3 Nos
Ozone Resistance Test Equipment
Smoke Density Apparatus - 3 Nos
Oxygen & Temperature Index Apparatus - 2 Nos
Flammability Tester - 3 Nos
Cold Chamber Bend Cold Impact Test Set - 2 Nos 20° C to +25° C -30° C
Hot Set Test Apparatus - 3 Nos
Toxicity Index Test Equipment
Halogen Acid Gas Emission Test Apparatus
pH & Conductivity Test Equipment - 2 Nos - 0 to 14 pH
Abrasion Resistance Tester - 2 Nos
Electronic Tensile Tester - 3 Nos - 0 to 1000 N
Dielectric Breakdown Tester & Leakage Current Tester
High Frequency Spark Tester - 8 Nos - 0 to 15 KV AC
Main Frequency Spark Tester - 2 Nos - 0 to 15 KV AC
Digital Micro Ohm Meter 5 Nos - 1 mΩ to 19.999 kΩ (2 Nos.) & 1 mΩ to 1.9999 kΩ (1 No.)
H V Tester - 4 Nos - 0-5/10 KV
Million Mega Ohm Meter - 6 Nos - 1 MΩ to 100 GΩ, 1 MΩ to 50 TΩ & 2 MΩ to 20 GΩ
Digital L C R Q Meter
Thermal E M F Error Test Apparatus - 0 to 200 mV DC
Digital M V Source Cum Meter - 0 to 199.9° C
Digimatic Caliper - 0 to 300 mm
Acid Gas Generation Apparatus - 2 Nos
Swedish Chimney Test Equipment
Water Immersion Test Equipment - Upto 100° C
4 Cell Ageing Oven With Data Scanning Logger - 2 Nos - 16 Channels
Heating Oven - Upto 200° C
Thermal Stability Test Apparatus
Water Absorption Test Apparatus Gravimetric
Electronic Balance Weighing Machine 3 Nos - 0 to 180 gms 10 gms to 3 kgs
Kelvin Bridge - 0-11 Ω
Torsion Testing Machine (Digital Control Meter - Upto 99999 Count)
Fire Survival Test Equipment
Static Noise Rejection Ratio Meter - 60 to 100 dB
H V Break Down Tester - 0 to 2.5 KV DC
Transfer Impedance Tester
Steel Rule & Test Mandrel Set - 0 to 1 Metre
Condition Chamber - 2 Nos - 20° to 40° C (Temp.) & 40 to 80 RH
Insulation Resistance Tester - 0 to 1000 MΩ / 500 V
Hydro Meter - 4 Nos - 0.700 - 1.000 g/ml
Digital Stop Watch - 5 Nos - 0 - 24 hrs
Mutual Capacitance Meter - 1.999 nF - 1999.9 nF
Length Counter Meter - Upto 99999 mtr
Tear Resistance Die
Coating Thickness Measurement Meter
Digital Multimeter - 4 Nos - MΩ
Inductance Decade Box - 10 mH-10 H
Capacitance Decade Box - 10 pF-10 μF
Wet & Dry Thermometer - 2 Nos - -40° to + 50° C
Glass Thermometer - 5 Nos - -10° C to + 110° C & -10° to 250° C
Thermometer - 2 Nos - 195° C to 205° C
Digital Anemo Meter - 0 -45 m/s
Digital Thermo Hygrometer - 2 Nos - 0 to 95° C / 20 to 99% RH
Senior Double Kelvin Bridge
UV Radiation Test Apparatus
Notch Propagation Tester (Analog)
Water Bath (Size 120cm X 90cm X 60cm)
H V Probe Milimeter
Abrasion Resistance Tester
Dynamic Cut Through Tester
Cable Analyzer
Universal Testing Machine
PC Based Crosstalk Attentuation & Impedance Meter - Attenuation 0.1 to 20 dB, Cross talk (-40 to 100 dB), Impedance 199.9 Ω to 1.999 kΩ
Network Analyzer (AESA)
Fluke - DSX - 8000
Toxity Index Tester as per EN 45545-2
Step Load Tester
Bending Torsion Tester
Vibration Tester
Fluorine Content Test Equipment
Thermal Endurance Test Ovens - 12 Nos
Cable Harness Testers - 2 Nos
Melt Flow Index Testers - 2 Nos
A.C High Voltage Tester 0-8KV - 3 Nos
High Temperature Oven upto 400° C - 2 Nos
Pull Force Tester
Micro Scope (Terminal Analyzer with Software)
DC milli Volt Drop Test Equipment
Variable mA Current Source Tester
DC-20MHz Dual Trace Oscilloscope
Conduit Flexing Tester
Digital Compression Tester - 2 Nos
Mooney Viscometer
Dust Particle Counter (Light House)
Bulk Density Test Apparatus
Digital Million Megohm Meter with Volume Resistivity



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