



Thermo Cables





Thermo Cables is a recognized and preferred brand across various industries including Oil & Gas, Railways, Navy, Defence, Renewable Energy, Nuclear Power, Process Industries, Power etc, exporting 50% of products.

Established in 1990, it is a leading manufacturer of various types of speciality cables. Thermo Cables is a part of Thermo Group – a multi-product & multi-service organization with other group companies:
Thermopads: A specialist in Commercial, Domestic and Industrial Heating
Thermosystems: An EPC company in the field of Fuel Oil Handling Systems, Fire Detection Protection Systems etc.



Major Approvals

ADNOC - OFFSHORE

ADNOC - ONSHORE

ALBA

AP GENCO

AP TRANSCO

AVANT GARDE

BDL, BEL

BHEL, BLW

BOROUGE

BPCL

CLW, CMRL, CSL

DLW, DMW

DLRL, DMRL

DMRC

DESEIN LTD

DGMS, DVC

DRDO, DRDL

EGA

ENGINEERS INDIA LTD

FICHTNER CONSULTING

GRSE, GSPC

GOA SHIPYARD

HINDUSTAN SHIPYARD

HPCL, HAL, HMRL

IOCL, ICF, ISRO

JACOB'S H & G

KNPC, KUWAIT

KOC, KUWAIT

L & T

MATERIAL ORGANISATION - KARWAR

MATERIAL ORGANISATION - MUMBAI

MATERIAL ORGANISATION - VIZAG

MECON, MCF

MN DASTUR & CO.

MAZGOAN DOCK LIMITED

MUMBAI PORT TRUST

NPCIL, NSTL, NTPC

ONGC

PDIL, PGCIL

PDO OMAN, PETRONAS

QATAR PETROLEUM

RCF

SAIL

TATA CONSULTING ENGINEERS

TECNIMONT ICB LTD

TOYO ENGINEERING INDIA LTD

THYSSENKRUPP

Stringent quality requirements, global standards of precision and increasingly demanding customers are the order of the day. Thermo Cables, sensitive to this reality, designs, manufactures and supplies a wide range of cables to satisfy customers' specifications and requirements.

Product Range

- Instrumentation Cables
- LV Power & Control Cables
- Thermocouple Cables
- Fire Resistant Cables
- Railway Cables
- Naval Application Cables
- Marine / Shipboard Cables
- Pressure Tight (PT) Cables
- Renewable Energy Cables
- High Temperature Cables
- Material Handling Cables
- Foundation Fieldbus Cables
- Special Application (LFH) Cables
- Co-Axial Cables (RG Series)
- VFD Cables
- Cathodic Protection Cables

Why Us

- Leading & reputed manufacturer of Specialty 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:
ANSI MC 96.1, BS-6346, BS-5467, BS-7919, BS-7629, BS-6387, BS-7846, BS-5308-I & II, BSEN 50288-7, DEF-02 526, DEF-02 527, EED 50-12, 50-13, IEC-60502-I, IEC-60189-I & II, IEC-60228, IEC-60092 350 353 376, IEC-60584-I & III, IEC-60331, IS-8784, IS-613, IS-694, IS-1554-I, IS-7098-I, IS-9968-I, JSS-51034, JSS-51038, MIL-C-17, MIL-DTL-22759/86A, MIL-DTL-22759/87A, MIL-DTL-27500H, MIL-DTL-24640C, MIL-DTL-24643C, UL-1581, UL-758, VDE-0815, VDE-0816, VG-95218 60-66 etc.

Valuable Assets

- Over 3,00,000 sq ft of infrastructure facilities with latest technology
- 1000+ dedicated & high performing workforce
- Experienced & professional leadership team
- Offers technical support in cable selection through SAP



Instrumentation Cables

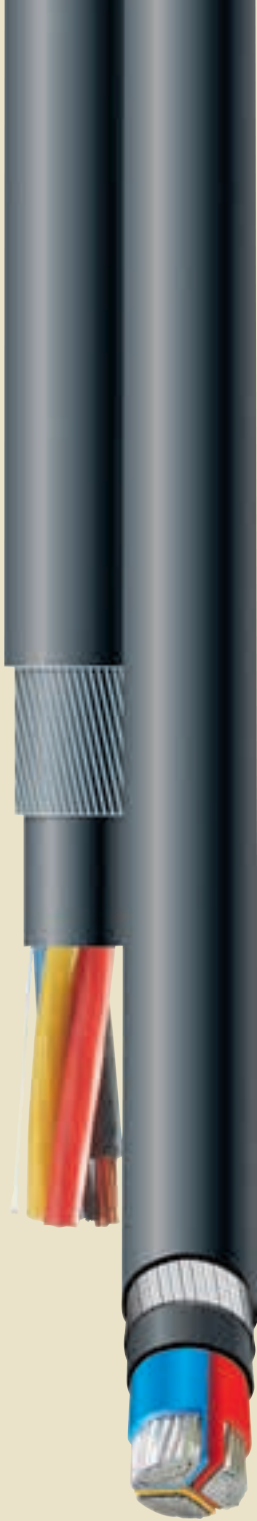
Instrumentation Cables are specially designed to transmit signals without any external interference. They are used in Data Acquisition Systems, Connections to Instruments, Computer Networking, PA Systems, Digital / Analog Control / Measuring & Communication Systems, Data Communication, Sensors, Transducers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

Construction	: Cores, pairs, triads or quads
Voltage Grade	: Up to 1100 V
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 Sq mm 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 - - Aluminum 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
Armouring	: GI Round Wire / Flat Strip or GI / SS Wire Braiding
Outer Sheath	: PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF
Rip Cord	: For easy removal of sheath
Standards	: BS-5308 Part-1 & 2, BS-7655, IEC-189 (1 & 2), VDE-0815 & 0816 and BS-EN 50288-7, IEC-60332-1, IEC-60332-3-22, 23, 24
Additional Features	: Communication pairs, Bi-colour extrusion, Band marking
Optional Bedding	: Aluminum Tape + HDPE + Polyamide Sheath for Alternate Lead Sheath Cables

Note: We also offer Data Communication and Low Capacitance Cables

Technical Data

Conductor Resistance at 20° C Ohms/Km	Conductor Size mm ²	0.5	0.75	1.0	1.5	2.5
	Maximum Resistance (Plain Copper, Class-2 Conductor)	39.0	26.0	19.5	13.3	7.98
Capacitance nf/Km	Between Conductors	< 250 for PVC < 150 for Polyolefin				
Inductance mH/Km		<1.0				
L/R Ratio μ H/Ohm	Conductor Size mm ²	0.5	0.75	1.0	1.5	2.5
	L/R	< 25	< 25	< 25	< 40	< 60
Insulation Resistance at 20° C MOhm-Km	PVC	More than 100				
	PE/XLPE	More than 5000				
Electrostatic noise rejection ratio		More than 76.0 db				



LV Power & Control Cables

Construction	: Single Core / Multi Core
Voltage Grade	: Upto 1800 / 3300 V AC
Conductor	: Aluminum / Copper, Solid / Standard / Flexible Conductor
Range	: Single Core up to 1000 Sq mm Multi Core up to 400 Sq mm Max 61 Cores of 1.5, 2.5, 4.0, & 6.0 Sq mm
Primary Insulation	: General Purpose PVC / Heat Resistant PVC / LDPE / XLPE / EPR / HEPR
Inner Sheath	: PVC / HRPVC / FRPVC / FRLS PVC / ZHFR / LSF
Armouring	: GI Round Wire / Flat Strip or GI / SS Wire Braiding Non-Magnetic Armour / Braiding for Single Core
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
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, Yellow & Blue
4 Core	: 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.

Designation Code

Y	-- PVC insulation
W	-- Steel round wire armour
F	-- Steel strip armour
WW	-- Steel double round wire armour
FF	-- Steel double strip armour
Y	-- PVC outer sheath
Wa	-- Non-magnetic round wire armour
A	-- Aluminium conductor

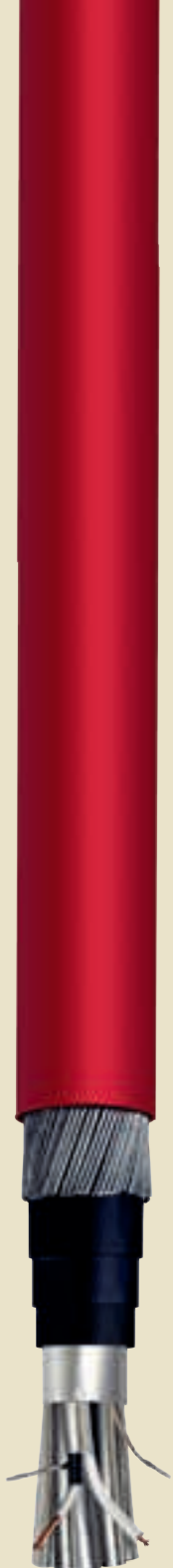
No Abbreviations used when the conductor material is Copper

- Note:- Other conductor sizes and insulation materials on request

CABLE CODE		Kx	Kx (A)	Tx	Jx	Ex	Sx / Rx
CABLE TYPE		EXT.	COMP	EXT.	EXT.	EXT.	COMP
Conductor	+ Ve leg	Chromel	Copper	Copper	Iron	Chromel	Copper
	-Ve leg	Alumel	Constantan	Constantan	Constantan	Constantan	Copper Alloy
Suitable for Thermocouple Type		Kx	Kx	Tx	Jx	Ex	Sx / Rx
Conductor Combination		Chromel Alumel	Copper Alumel	Copper Constantan	Iron Constantan	Chromel Constantan	Platinum 10/13% Rhodium Platinum
Temperature range of measuring junction °C		0 to +1100	☆	-185 to +300	+20 to +700	0 to +800	0 to +1550 0 to +1600
Applicable standards for output of Thermocouple conductors		BS-4937 part 4 ANSI/MC 96.1 type K DIN 43710 NF C 42-321 JISC 1602	☆	BS-4937 part 5 ANSI/MC 96.1 type T NF C 42-321 JISC 1602	BS-4937 part 3 ANSI/MC 96.1 type J NF C 42-321 JISC 1602	BS-4937 part 6 ANSI/MC 96.1 type E NF C 42-321 JISC 1602	BS-4937 part 1 ANSI/MC 96.1 type S, R, NF C 42-321 JISC 1602
COLOUR CODING	BS						
	ANSI						
	DIN						
	NF						
	JISC						
Approximate generated 100°C EMF change per °C mV/C at		42 500°C	☆ ☆	46 —	46 56	68 81	8/8 9/10

NOTES : ☆ Used for interconnecting Type 'K' thermocouples and instrumentation as an alternative to type 'K' material. Only used where the interconnecting 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 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 / Traids
Voltage Grade	: 600 / 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 Silicone Rubber
Screening	: Individual and/or overall with following options - - Aluminum Mylar / Copper Tape with Tinned Copper Drain Wire - Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper
Inner Sheath	: LSOH / ZHFR / SHF1 / SHF2 or equivalent
Armouring	: Galvanized Steel Wire Helical Armour / Steel Wire Braid
Outer Sheath	: 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

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



0578





Railway Cables

Thin Walled Electron Beam Irradiated Flexible Elastomeric Cables With Copper Conductors

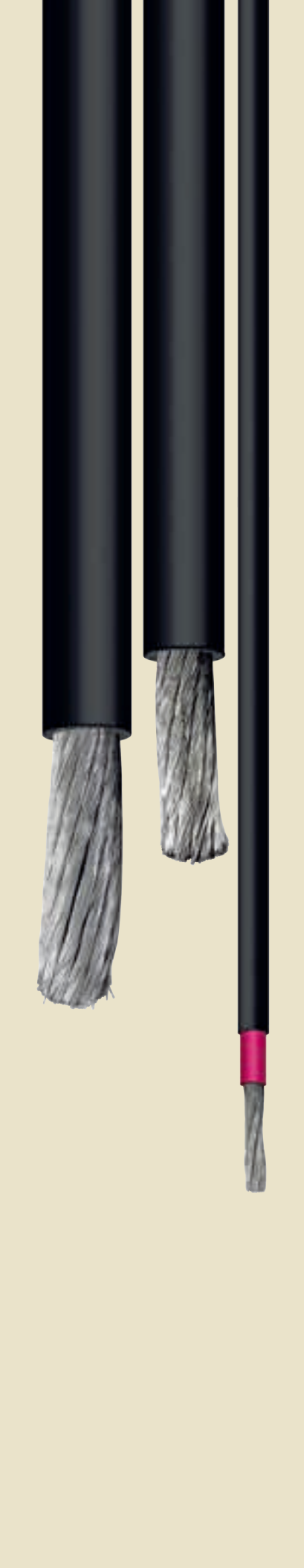
Electron beam irradiated thin walled flexible cables with copper conductor, limited fire hazard, minimum flame spread, low smoke emission and limited toxic fume emission properties.

Specification	: ELRS / SPEC / ELC / 0019, Rev.4
Temperature Range	: - 40° C to 120° C
Conductor	: Electrolytic flexible annealed tinned copper (Class 5)
Application	: For use in power, auxiliary as well as control circuits of conventional tap changer electric locomotives AC / DC EMU, BG AC EMU & MEMU / coaching stock
Cable Type	: Single Core Cable (single layer)
Size	: 1.5 Sq mm to 150 Sq mm
Voltage Grade	: Up to 750 V
Insulation	: EBXL EVA
Cable Type	: Single Core Cable (dual layer)
Size	: 1.5 Sq mm to 300 Sq mm
Voltage Grade	: Above 750 V & up to 1.8 / 3.0 KV
Insulation	: EBXL EPDM
Sheath	: EBXL EVA
Colours	: Red / Yellow / Blue / Black / Grey / GNYE / Chocolate / White as per customer requirement
Cable Type	: Multi Core Cables 19 Core 2.5 Sq mm and 19 Core 4.0 Sq mm
Voltage Grade	: Above 750 V & up to 1.8 / 3.0 KV
Insulation	: EBXL EPDM
Sheath	: EBXL EVA

Thin Walled Electron Beam Irradiated Flexible Elastomeric Cables With Copper Conductors as per EDTS 132, REV-C

LFH type cables i.e. minimum flame spread, low smoke and toxic fume emission.

Data Sheet-1 (Single Core Cable)	Data Sheet-5 (UIC Cable)
Voltage Grade : 1800 V / 3000 V	ITEM 1 -4Q x 1 Sq mm + 1P x 0.75 Sq mm (18 core cable)
Conductor : Circular annealed tinned copper (Class 5)	ITEM 2 -5Q x 1 Sq mm + 1P x 0.75 Sq mm (22 core cable)
Insulation : EBXL EPDM	Voltage Grade : 300 / 300 V
Sheath : EBXL EVA (black)	Conductor : Circular annealed tinned copper (Class 5)
Data Sheet-2 (Single Core Cable)	Insulation : EBXL EPDM (white numbered cores)
Voltage Grade : 600 V / 1000 V	EMC Screen : Annealed tinned copper
Conductor : Circular annealed tinned copper (Class 5)	Sheath : EBXL EVA (black)
Insulation : EBXL EVA (grey)	Data Sheet-6 (Multi Core Unscreened Cable)
Data Sheet-3 (Multi Core Unscreened Cable)	Voltage Grade : 600 V / 1000 V
Voltage Grade : 600 V / 1000 V	Conductor : Circular annealed tinned copper (Class 5)
Conductor : Circular annealed tinned copper (Class 5)	Insulation : EBXL EPDM (white numbered cores)
Insulation : EBXL EPDM (white, brown, black & green / yellow coloured cores)	Sheath : EBXL EVA (black)
Sheath : EBXL EVA (black)	Temperature Range : -40° C to 120° C
Data Sheet-4 (Multi Core Screened Cable)	Application : For power, signalling & control application in coaches
Voltage Grade : 600 V	
Conductor : Circular annealed tinned copper (Class 5)	
Insulation : EBXL EPDM (white, brown, black & green / yellow coloured cores)	
EMC Screen : Annealed tinned copper	
Sheath : EBXL EVA (black)	



Railway Cables

Single Core Cables for Electric Locomotives Types WAG-9, WAG-9H, WAP-5 & WAP-7

Limited fire hazard electrical insulation cable, dual wall insulation, low smoke halogen free, flame retardant, excellent resistance to high and low temperature, oil, ozone, weathering and abrasion flexible easy strippable.

Specification : CLW / ES / 3 / 0458 Alt. E
Temperature Range : - 40° C to 120° C
Application : For the purpose of use in power, control, sensor and driver circuits for protected installation, inside and outside railway rolling stock to connect fixed and moving parts.

Data Sheet-1

Cable Type : Single Core Cable
Size : 1.5 Sq mm to 150 Sq mm
Voltage Grade : 4 GKW (1.8 KV)
Conductor : Circular flexible annealed tinned copper (Class 5)
Insulation : EBXL EPDM
Sheath : EBXL EVA

Data Sheet-2

Cable Type : Single Core Cable
Size : 10 Sq mm to 150 Sq mm
Voltage Grade : 9 GKW (4.0 KV)
Conductor : Circular flexible annealed tinned copper (Class 5)
Insulation : EBXL EPDM
Sheath : EBXL EVA

Data Sheet-3

Cable Type : Single Core wire red / GY colour 0.5 Sq mm
Voltage Grade : 300 V / 500 V
Conductor : Stranded tin plated copper
Insulation : EBXL EVA

Multi Core Cables for Electric Locomotives Types WAG-9, WAG-9H, WAP-5 & WAP-7

Limited fire hazard electrical insulation cable, dual wall insulation, low smoke halogen free, flame retardant, excellent resistance to high and low temperature, oil, ozone, weathering and abrasion flexible easy strippable.

Specification : CLW / ES / 3 / 0459 Alt. C
Temperature Range : - 40° C to 120° C
Application : For the purpose of use in control, sensor and driver circuits for protected installation, inside and outside railway rolling stock to connect fixed and moving parts.

Data Sheet-1

Cable Type : Multi Core Screened & Unscreened Cables
Voltage Grade : 300 V / 300 V (0.5 Sq mm)
Conductor : Circular flexible annealed tinned copper (Class 5)
Insulation : EBXL EPDM
EMC Screen : Annealed tinned copper
Sheath : EBXL EVA

Data Sheet-2

Cable Type : Multi Core Screened & Unscreened Cables
Voltage Grade : 600 V / 1000 V (1.0 Sq mm)
Conductor : Circular flexible annealed tinned copper (Class 5)
Insulation : EBXL EPDM
EMC Screen : Annealed tinned copper
Sheath : EBXL EVA



Railway Cables

Control Wires for Diesel Electric Locomotives including AWG size # 3

Thermosetting, flame retardant, oil grease resistant compound also resistant to moisture, caustic cleaning solutions, high ambient conditions, electrical overload conditions, abrasion, cut-through, compression and crush force and low smoke and acid gas generation properties.

Specification	: EDPS 179
Temperature Range	: - 65° C to 125° C
Cable Type	: Single Core Wires
Voltage Grade	: 600 V to 2100 V
Conductor	: Annealed tinned copper (Class 5)
Insulation	: Thermosetting flame retardant compound
Application	: For use within the electrical control system of diesel electric locomotives and other heavy duty industrial equipment

Power Cables for Diesel Electric Locomotives including AWG size # 1 & larger

Thermosetting, flame retardant, oil grease resistant compound that is also resistant to moisture, caustic cleaning solutions, high ambient conditions, electrical overload conditions, abrasion, cut-through, compression and crush force and low smoke and acid gas generation.

Specification	: EDPS 304
Temperature Range	: - 70° C to 130° C
Cable Type	: Single Core Power Cables
Voltage Grade	: 600 V to 2100 V
Conductor	: Annealed tinned copper (Class 5)
Insulation	: Thermosetting flame retardant compound
Application	: For use within the power distribution of diesel electric locomotives and other heavy duty industrial equipment with variable duty cycle

Traction / Rolling Stock / Metro Application as per BSEN Specification

Cable Type	Specification	Voltage Grade
Railway rolling stock high temperature power cables having special fire performance	BSEN-50382-1 BSEN-50382-2	1.8 / 3 KV unscreened, unsheathed with or without textile braid (1.5 mm² to 400 mm²) 1.8 / 3 KV unscreened, sheathed (1.5 mm² to 400 mm²) 3.6 / 6 KV unscreened, unsheathed with or without textile braid (2.5 mm² to 400 mm²) 3.6 / 6 KV unscreened, sheathed (2.5 mm² to 400 mm²)
Railway rolling stock power and control cables having special fire performance	BSEN-50264-1 BSEN-50264-3-1 BSEN-50264-3-2	0.6 / 1 KV unscreened & unsheathed (1 Sq mm to 400 Sq mm) 1.8 / 3 KV unscreened & unsheathed (1.5 Sq mm to 400 Sq mm) 1.8 / 3 KV unscreened & sheathed (1.5 Sq mm to 400 Sq mm) 3.6 / 6 KV unscreened & sheathed (2.5 Sq mm to 400 Sq mm)
Railway rolling stock cables having special fire performance thin wall	BSEN-50306-1 BSEN-50306-2 BSEN-50306-3 BSEN-50306-4	EN 50306-4 specifies requirements for and constructions and dimensions of multi core & multi pairs cables rated 300 V to earth of the following type - Unscreened, sheathed for either exposed or protected wiring (Size: 0.5 to 2.5 Sq mm & no of cores: 2 to 48) - Screened, sheathed for either exposed or protected wiring (Size: 0.5 to 2.5 Sq mm & no of cores: 2 to 8) - Screened, sheathed for either exposed or protected wiring (Size: 0.5 to 2.5 Sq mm & no of cores: 2 to 7)



Naval Application Cables

On Board Indian Naval Ships and Crafts Cables

For use on onboard 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 to IEC-60228
Temperature Range	: - 65° C to 120° C (EED-50-12 Cables) - 30° C to 120° C (EED-50-13 Cables)
Insulation	: Electron Beam Cross Linked Polyolefin compound (EPR / EPDM LFH) / Silicone 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

VG 95218 Part 61- 66 – 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

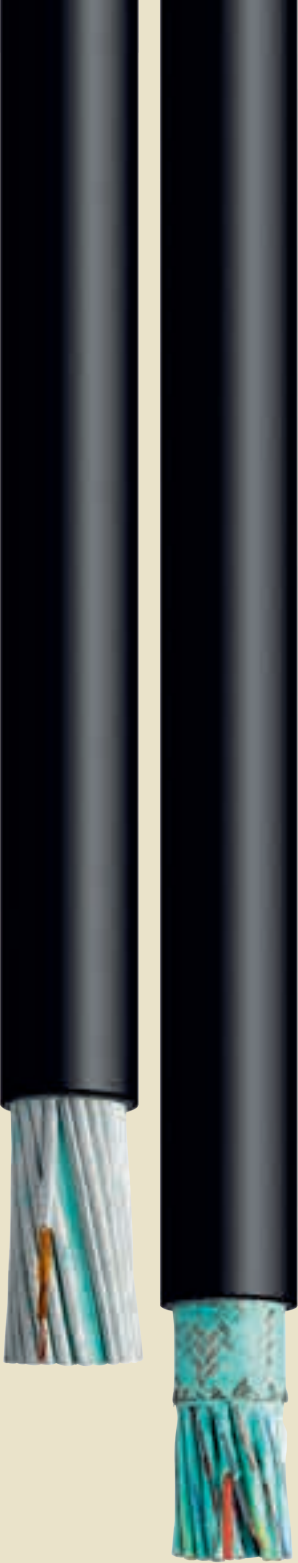
DEF STAN 02-526 (NES 526) and DEF STAN 02-527 (NES 527)

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

Construction	: Single Core, Multi Core, Multi Pair & Triad, Unscreened or Individually Screened or Collectively Screened, Limited Fire Hazardous Sheathed Cables
Voltage Grade	: 440 V AC
Conductor	: Circular Electroplated, Annealed Tinned Copper
Temperature Range	: - 30° C to + 105° C
Insulation	: Dual layer of Gp5 and LFH Material / Silicone Rubber
Screening	: Annealed Tinned Copper Braid
Outer Sheath	: LFH Elastomeric Compound
Protective Barrier	: Glass Braid/Lacquer, Mica Glass Tape to meet the fire performance applicable for DEF STAN 02-527 (NES 527)

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

Construction	: Single Core, Multi Core, Single, Multi Pair, Multi Triad and Quad Screened & Unscreened, Armoured & Unarmoured
Voltage Grade	: 150 V / 250 V and 600 V / 1000 V AC
Conductor	: Electroplated Annealed Bare / Tinned Copper of various classes
Temperature Range	: -15° C to 95° 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
Outer Sheath	: SHF1 / SHF2 / SH / SF
Braid Armouring	: Bare Copper / Tinned Copper / GI Wire Braid with >90% coverage MIL W-22759 / 32-35 & 41-46 and MIL STD-2223



Pressure Tight (PT) Cables

Power, Control & Signal 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 pressure.

Specification	: EED 57-03 & EED 57-04
Construction	: Single Core, Multi Core, Multi Pair, Unscreened, Individually Screened & Collectively Screened
Voltage Grade	: 600 V AC to 1000 V AC
Conductor	: Circular electrolytic bare copper (Class 2)
Temperature Range	: - 30° C to +120° C
Insulation	: Special halogen free and fire retardant with low smoke generation and low toxic properties 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 properties 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 / Silicone 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.

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 (Sq mm)	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 (Sq mm)	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

: 600 / 1000 V AC
1000 / 1800 V DC

Temperature Range

: - 40° C to 90° C

Maximum Conductor Temperature : 120° C withstands 250° C for 5 seconds

Conductor

: Tin Coated Copper Class 5 conductor

Insulation

: Electron Beam Irradiated Cross linked Polyolefin Compound

Standards

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

Features

: Resistant to ozone, water absorption & severe environmental conditions
Working life of more than 25 years

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 in relation to 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 Sq mm to 300 Sq mm

Insulation

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

Sheath

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

Features

Maximum conductor temperature (continuous) : + 90° C

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

Maximum permissible tensile load on cable : 15 N/mm²

Torsion angle

: ± 100° per meter

Minimum bending radius

: 8 D

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 Customers' requirement and conforming to various National/International Standards.

High Temperature 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, ANSI)
- Conductors** : Annealed bare and / or tinned copper conductor (up to 120° C)
Annealed silver plated copper conductor (up to 200° C)
Nickel plated conductors (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
PTFE	- 150° C to 150° C	Mechanically tough
XL ETFE	- 150° C to 250° 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

- Screening** : Individual and / or overall with following options
- Aluminum 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

Industry & Applications

- Steel** : 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 XHF 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 etc.
- Power** : In proximity to the turbines, boilers, ash handling etc.

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



Material Handling Cables

CRD & Trailing Cables

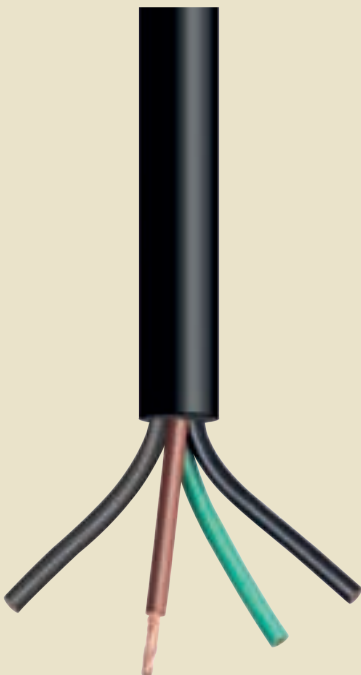
These cables are used in conveyor machinery such as transfer cars, boom-stackers, side arm chargers, bulk material conveyors etc. They find application in almost every industry segment like Steel Mills, Cement Plants, Docks, Power Plants, Automobile Industries & Refineries and Petrochemicals.

Construction	: Single cable comprising multiple elements like 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
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	: 2500 V AC
Bending Radius	: 10 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	: IEC-60228, IEC-60502, IEC-60332

H07RN-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 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 conductors as per IEC-60228/1
Range	: Single Core: up to 300 Sq mm Multi Core: 1 Sq mm - 2.5 Sq mm up to 61 Cores 4 Sq mm - 6 Sq mm up to 19 Cores 10 Sq mm - 300 Sq mm 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





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 such as refining, petrochemicals, power generation, 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
Insulation	: Solid Polyethylene / XLPE / PFA for temp. > 150° C
Screening	: Individual and / or overall with following options - Aluminum Mylar / 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
Armouring	: Round Galvanized Steel Wire / Flat Strip / Steel Wire Braid
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 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° C to + 120° C
Insulation	: Special Halogen free and fire retardant with low smoke generation and low toxic properties 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 properties with E-beam curing process
Application	: Used in defence especially in Radar & Missile launching system for Power, Control, Lighting and Communication and Instrumentation circuits



Co-Axial Cables (RG Series)

Radio Frequency or Signal Transmission Cables, Polyethylene Dielectric Insulation & Sheath material with Halogen Free, Fire Retardant with low smoke generation and low toxic properties.

Specification	: Def Stan 02-512 (PT-5) & customer specification
Construction	: Single Core, Multi Core Cables, Unscreened Collectively Screened
Primary Conductor	: ABC / ATC / SPC & special conductors like CCS (Copper Clad Steel) etc
Temperature Range	: - 30° C to +120° C
Insulation	: Polyethylene / FEP Dielectric Compound
Outer Conductor	: Aluminium Mylar Tape / Annealed Tinned / Bare Copper Braid if applicable
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, RG 188 etc.
Application	: For use of VHF (Very High Frequency) signal transmission

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 of lot of noise getting generated, induced voltage and sudden spikes generation 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.

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 Sq mm
Voltage Grade	: Up to 1000 V
Conductor	: Bare Copper / Tinned Copper Standard / Flexible Conductor
Primary Insulation	: PVDF Fluoropolymer / ECTFE (Halar)
Outer Sheath	: High molecular weight polyethylene (HMWPE)





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Major Approvals

[illegible][illegible]

 ENGINEERS INDIA LIMITED of Engineers and Architects 200, Park Road, Chennai - 600 006, India Phone: 044-26340000, Fax: 044-26340001, Email: info@engineersindia.com		Procurement Development Department													
Ref: info@engineersindia.com (E/IN/2016)		Date: 07 th October, 2021													
M/s. Phoenix-Global Ltd Plot No. 38, Nagarajapuram, Porur, Chennai - 600093, Tamil Nadu															
Subject: Revocation of Contract with EIS															
Dear Sirs, We refer to your application on subject matter and are pleased to inform that your tender/contract with EIS has been terminated for the items as described below:-															
<table border="1"> <thead> <tr> <th>Item Description</th> <th>Material/Range</th> </tr> </thead> <tbody> <tr> <td>M/S Power Cable - 110 kV/1000</td> <td>All-range</td> </tr> <tr> <td>Lighting Medium Voltage Power-FAC / LMF</td> <td>Type of insulation: PVC & XLPE</td> </tr> <tr> <td>Officer (Contract Management) POC/IN/2016</td> <td>No. of Cables required for all Type of insulation: PVC & XLPE</td> </tr> <tr> <td>Transformer (Single phase, 1000 kVA)</td> <td>All-range</td> </tr> <tr> <td>Signal Cable, 4</td> <td>All-range</td> </tr> </tbody> </table>	Item Description	Material/Range	M/S Power Cable - 110 kV/1000	All-range	Lighting Medium Voltage Power-FAC / LMF	Type of insulation: PVC & XLPE	Officer (Contract Management) POC/IN/2016	No. of Cables required for all Type of insulation: PVC & XLPE	Transformer (Single phase, 1000 kVA)	All-range	Signal Cable, 4	All-range			
Item Description	Material/Range														
M/S Power Cable - 110 kV/1000	All-range														
Lighting Medium Voltage Power-FAC / LMF	Type of insulation: PVC & XLPE														
Officer (Contract Management) POC/IN/2016	No. of Cables required for all Type of insulation: PVC & XLPE														
Transformer (Single phase, 1000 kVA)	All-range														
Signal Cable, 4	All-range														
*Single offer shall be submitted to M/s Phoenix Global Ltd. (This announcement is valid for your works located at EIS, 40/248A, 6A/248B & 41A, Street Industrial Park, Adambakkam, Tamil Nadu-600028, Chennai). Finally your agreement with EIS does not guarantee any regular flow of enquiries. Any information on projects issued by EIS, kindly refer our website www.engineersindia.com (Notice/Tenders/EIS/IN/2016) / CPM portal cpm.engineersindia.com . In the event of direct / indirect orders for the projects executed by EIS, requests shall quote/tender/offer and supply material/works as per the material / range / wants as stated above including agreed responsibility matrix, as applicable. Secondly, kindly bring on submitting your regular queries for EIS IN/2016 to bring which EIS shall be the primary decision maker as the primary supplier at per the Terms and Conditions for tenders.															
Any change in the project scope, location of Works/Site Office, Management/ Organization structure etc., shall be intimated to us immediately along with relevant document for our necessary actions. Further, kindly update your contact details on regular basis as find you may keep in receiving EIS communications. This hereby assure submission of your finished document before the expiry time to enable us deliver your service faster.															
Please note that this announcement is subject to performing execution of orders in delivery and quality of above items when adopted for various projects of EIS, our clients, you are expected to adopt either of highest standard and a very high degree of integrity, commitment & efficiency towards the work undertaken for projects under EIS execution, following which, EIS shall be entitled to initiate actions as specified in EIS procedure for suspension/revocation of tenders/contracts, displayed on www.engineersindia.com .															
 Mr. S. Senthil Kumar Director, Procurement Development Department		(Seal) (e/2)													
Mr. S. Senthil Kumar Director, Procurement Development Department		(Seal) (e/2)													
This is a public notice.															
To: info@engineersindia.com / info@engineersindia.com / Phone: +91 44 26340000-26340001 And Email address: info@engineersindia.com / info@engineersindia.com / info@engineersindia.com Address: 200, Park Road, Chennai - 600 006, India															

Accolades

[illegible]



Chemical Metro Rail Limited

(A Joint Venture of Chem, MTR and East of Hong Kong)

Date: 18.12.2010

To Whomever it May Concern

This is to certify that M/s. Thomas Cable Ltd - Hyderabad has supplied the following quantities of Cable Power & Control Cables to M/s. Chemical Metro Rail Limited project through M/s. Vastec Limited for Phase 1 and Phase 2 (sets of Overhead and Underground Stations for the below referred purchase order).

S. No.	Purchase Order	Date	Value in INR	Cable Type	Project
1	1200002095	05.07.10	16,806,081	FR/GV/1-Cables	SRM-05-03 & SRM-05-04
2	1200003001	05.10.10	82,54,373	PO Cables	SRM-05-10C
3	1200003004	25.08.10	55,46,511	FR/GV/1-Cables	SRM-05-10C
4	1200003063	03.06.10	6,13,34,062	LVMS/1-Cables	SRM-05-10C
5	1200003077	20.08.10	4,46,71,667	FR/GV/1-Cables	SRM-05-10C
6	1200003090	06.09.10	15,86,107	FR/GV/1 Cables	SRM-05-02 & SRM-05-03
7	1200003903	25.03.10	6,20,985	FR/G Cables	SRM-05-05C
8	1200004004	23.09.11	37,00,000	FR/GV /1 Cables	SRM-12-05C
9	1200004700	08.08.11	37,90,612	PO Cables	SRM-12-05C
10	1200004205	06.07.11	25,64,848	PO Cables	SRM-12-05C

M/s. Thomas Cable have supported in meeting our project schedules by supplying Cables within the stipulated delivery period. The Cables are in operation and the Performance of the Cables found to be Satisfactory.

Thanking you,

For Chemical Metro Rail Ltd



Authorized Signatory



CMRL Depot, Admin Building, Poonamallee High Road, Kanchi, Chennai - 600 107.

Phone : 0220000100 Fax : 0220000100

E-mail : chemicalmetrorail@vsnl.in Website : www.chemicalmetrorail.org

 **M/s. Thermo Cable Ltd.**
Plot No D-44, 45, 46, 47 & 50, Phase-V,
IDA Jewar Road, Hyderabad.
Telangana, India
Pin-500055
Phone : 080-23495038

mexco sde hollard india
(yd was mumbai sde hollard)
were want to work)
Muzoon Dock Shipments Limited
(Formerly known as Muzoon Dock Limited)
(at least of their company)
solved the, mumbai, yd
Southern Road, Bangalore, Karnataka - 560 016
Tel: 91(22) 2376 3000
Fax: 91(22) 2373 8158
E-mail: southindia@muzzdock.com
Flat No. GRD/D/L/Cables
Date: 18/11/2021

Appreciation Letter to M/s. Thermo Cable Ltd., Hyderabad

MEX had a urgent requirement of special cable for Rail Low Hefe Traversing System (RLTTS) application system, which was not available India. The tender for this cable was floated and only M/s. Thermo Cable Ltd. has offered the supply of cable meeting the stipulated special requirements.

The PO for supply of this cable was placed at M/s. Thermo Cable Ltd. on 28 Sep 21. As per PO terms and conditions, the cable contract/delivery was 28 weeks from the placement of PO i.e. 24 Nov 21.

However, the trials of RLTTTS were scheduled in the first week of November. In order to complete those trials as per Delivery schedule to Indian Navy, MEX requested M/s. Thermo Cable Ltd. to supply this special cable within 25 weeks in lieu of 28 weeks as per PO which was agreed by M/s. Thermo Cable Ltd.

MEX, and Indian Navy representatives had regular interaction with the following executives of M/s. Thermo Cable Ltd. for early execution of the order and mutual cordial co-operation. Those executives have made the special efforts at their ends to expedite the production of the cables

- 1. Mr. Srivatsava Rao, President (Marketing)
- 2. Mr. Manish Acharya, Sr. GM(Marketing)
- 3. Mr. Valsangkar K. DGM (Development)

MEX management highly appreciates all the efforts and commitments shown by M/s. Thermo Cable Ltd. for supplying the critical cable before schedule and extending timely support to MEX.


(Shrikrishna V. Madhureddy)
GM(Design)

कोचलिन शिपयार्ड लिमिटेड
 १०८ नंवा-४२, मल्ल रोड, कोचलिन, मुंबई - ४०० ०३७

COCLEIN SHIPYARD LIMITED
 108 N.W.-42, Mall Road, Colaba, Mumbai - 400 037

Coclhin
 04.03.2025

To Whomsoever It May Concern

This is to certify that M/s. Thermo Cables Ltd., Hyderabad has successfully executed 28 Km of RG-13 Coaxial Cable vide our PO No.40/00004341 dtd.04.03.2025. Thermo Cables has supported in meeting our project schedules by delivering Cables as per the terms and conditions of PO. The Cables are in operation and the Performance of Cables is found to be satisfactory.

For Coclhin Shipyards Ltd.,


ANOOPI B MANOJ
 Manager
 Quality Control & Safety
 Coclhin Shipyards Ltd.
 Mob:- +91-9822-0175

ANOOPI B
MANAGER-MATERIALS
 Phone: +91 484 2501629
 Mobile: +91 9138027484
 E-mail: anoop_b@coclhinshipyard.in



Coclhin Shipyards Limited
 108 N.W.-42, Mall Road, Colaba, Mumbai - 400 037

Registered Office: Coclhin Shipyards Building, T2, Bay No. 853/3, Nariman Point, Mumbai - 400 029
 Main Phone: +91(022) 2214911 / 2214922 / 2214933 / Fax: +91-(022)-22149201 / 22149202
 Website: www.coclhin.com Email: info@coclin.com

JSW Steel Ltd

Head Office: 1st Floor,
JSW House, 100/101,
1st Floor, Connaught Place,
New Delhi - 110028
Phone : +91 11 2606 1000
Fax : +91 11 2606 1001
E-mail : jsw@jsw.co.in

JSW Steel Ltd

To Whom So Ever It May concern

This is to certify that M/s. Thyssen Cables is a reliable, Hyderabad is one of the supplier for CRD Application, Composite Fibre/Rope CFR Cable used in mining winding shafts.

M/s. Thyssen Cables Ltd. had supplied 200 T & 400 Tonn of RCX 2500-mm x 150-mm & RCX 3500-mm x 150-mm Composite Cable with one for CRD Application for our ONGC CR Project against the PO's.

S/S20K/M00073/CAP/E/4700048224 Dated 04/02/2017 - 04048
S/S20K/M00073/CAP/C/4700007394 Dated 04/01/2018 - 04048

Supplied Unstayed CRD Cables have been successfully installed. Transfer CRD August 2017 to July 2018. The performance of the cable satisfactory to all aspects.

Cable manufactured & delivered to site as per the Purchase order within the delivery schedule & quality requirements. Their performance for our Projects has been satisfactory as on date.

For JSW Steel Ltd/Head,


Signature
(Seal)

CC To:
Thyssen Cables Limited
28, Neelganga Bldg,
Hyderabad - 501 082

Head Office : 1st Floor,
Steel House Complex,
Basant Vihar, New Delhi - 110044
Phone : +91 11 2606 1000



Hitachi Energy India Limited
560058 Bangalore, IN

TO:
THERMO CABLES LIMITED
 Metrobroadband (Data)
 Plot No. G1, G2(A), Green Industrial
 JALCHERLA
 TELANGANA - 509031
 India

BUSINESS
 Grid automation

FROM
 Angathirana Near
PHONE DIRECT
 +91 8078107234

E-MAIL
 angathirana.near@hitachienergy.com

DOCUMENT ID
 1

DATE
 2022-09-30

REFERENCE NO.
 PGGA/Sept1

Sub : REF PO Number: 5191308340 dated 27-09-2021

Dear Sir/Madam,

With reference to above subject we have procured following PO material from M/S Thermo Cables Ltd, Hyderabad for KPLCL-CRP project for Kadra, Kodasalli, Almalai dam power house.

Type of Cable	Item	Qty (Meters)	PO No	PO Date	Invoice Number & Date
ZHFRLS (Zero Hakistan FRLS Shafted)	4CKN 0.95SQ M	11,000	5191308340	27-09-2021	11/000111592
	7CKK1 3.0SQ M	10,000			21-10-2021
	7CKX1 3.0SQ M	8,200			21/000101140
	4CKX1 3.0SQ M	1,500			29-10-2021
Armored Cable	27CKX1 3.0SQ M	2,000			31/000011411
	7WCK2 3.0SQ M	7,000			29-10-2021

M/s Thermo Cables Limited, Hyderabad supplied all the above material with necessary approval & Performance of supplied cables are satisfactory to date.

Yours sincerely,


Angathirana Near
 SCM MANAGER PGGA (Systems, Communication and Services)

Hitachi Energy India Limited
 (Formerly known as M&P Power Products and Systems India Limited)

Registered and Corporate Office:
 8th Floor, Regency Plaza, 19/1A/2
 Kodagathur Main Road, Bengaluru - 560 002
 Phone: 080 6845720, 080 22541800
 CN: 1159842409PLC/171007
www.hitachienergy.com/in

Local Address:
 8& 8 1/2nd Floor Peenya Industrial Estate,
 560095 Bangalore



Infrastructure

Machinery

Name of the Machine	Name of the Machine	Name of the Machine - Range/LC
Rod Break Down Machine (9 Die) Rod Break Down Machine (11 Die) Rod Break Down Machine (13 Die) Skip Stranding Machine - 2 Nos Electroplating Tinning Machine - 2 Nos Multi Wire Drawing Machine 30 mm Multi Wire Drawing Machine 8 Wire - 2 Nos Fine Wire Drawing Machine - 4 Nos Mixing Machine 75 mm - 3 Nos Kneader Line - 2 Nos 75 L Kneader Ring Marker High Speed Core Rewinding - 4 Nos Taping Machine - 7 Nos Vertical Taping Machine - 6 Nos Horizontal Taping Machine - 12 Nos Single Twist Bunching Machine 400 Single Twist Bunching Machine Tandem Extrusion Line (Ø50 + 65/35 mm) Tandem Extruder Line (Ø80+ Ø100/Ø35) Tandem Extruder Line (Ø35+ Ø50/Ø35) Extruder Machine 20 mm Bi Color Extruder Machine 45 mm Extruder Machine 45 mm Bi Color Extruder Machine 65 mm - 9 Nos Extruder Machine 70 mm Extruder Machine 70/35 mm Extruder Machine 75 mm - 3 Nos Extruder Machine 80 mm - 4 Nos Extruder Machine 100 mm Core Rewinding Machine - 7 Nos Cooling Tower - 6 Nos GI Rewinding Machine - 20 Nos Ceramic Butt Welding Machine Butt Welding Machine - 15 Nos Electron Beam Accelerator Pairing Machine - 4 Nos Pairing Back Twist Machine Laying Machine (7 Bobbins) Laying Machine (7 Bobbins) - Single Twist Laying Machine (13 Bobbins) Laying Machine (19 Bobbins) - 4 Nos Laying Machine (37 Bobbins) - 3 Nos Laying (42 Bobbin) Armouring Machine (30 Bobbin) - 2 Nos Armouring Machine (40 Bobbin) Armouring Machine (48 Bobbin) - 4 Nos Armouring Machine (72 Bobbin) Armouring Machine (96 Bobbin) Extruder Sheathing Machine 80 mm - 2 Nos Extruder Sheathing Machine 100 mm Cable Rewinding Machine - 5 Nos GI Rewinding Strip Machine - 2 Nos Off Line Annealer Nickel Plating - 2 Nos Pointing Machine - 2 Nos Fork Lift - 2 Nos Auto Clave HOIST 'A' - Skip HOIST 'B' - 54 Stranding HOIST 'P' - Stores HOIST 'C' - 7 B Laying HOIST 'E' - 13 Laying HOIST 'E' - 19 Laying - 2 Nos	HOIST 'E' - 19 B Laying - 2 Nos HOIST 'G' - 30 Armouring - 2 Nos HOIST 'G' - 30 B Armouring HOIST 'F' - 37 Laying HOIST 'F' - 37 B Laying - 2 Nos HOIST 'K' - 40 Armouring HOIST 'H' - 48 Armouring - 2 Nos HOIST 'H' - 48 B Armouring - 2 Nos HOIST 'J' - 72 B Armouring HOIST 'F' - 96 Armouring HOIST 'K' - HV Area HOIST 'L' - Drum Twister Area HOIST 'O' - RBD Area HOIST 'I' - Despatch - 2 Nos Chain Hoist 'A' - G I Rewinding - 2 Nos Chain Hoist 'C' - Simon Taping - 4 Nos High Speed Bunching Machine - 10 Nos Chiller - 2 Nos Chiller 5 TR Chiller 10 TR - 2 Nos Chiller 20 TR PVC Mixer High Speed Mixer 60 kg High Speed Mixer 120 kg High Speed Mixer 200 kg 16 A High Speed Braiding - 3 Nos 16 F High Speed Braiding - 2 Nos 24 High Speed Braiding - 2 Nos 24 A High Speed Braiding - 5 Nos 24 E High Speed Braiding - 4 Nos 24 F High Speed Braiding 48 High Speed Braiding 3 HP Air Compressor 10 HP Air Compressor - 3 Nos 15 HP Air Compressor 20 HP Air Compressor - 2 Nos 25 HP Air Compressor 100 HP Air Compressor - 3 Nos Brazing Machine - 4 Nos H V Testing - 3 Nos Drum Twister Machine 630 Single Twister Machine 7 Bobbin 800 Single Twister Machine 12 Bobbin 1250 Single Twister Machine 19 Bobbin DT 500 Buncher Machine Scissor Lift 2 ton Steam Boiler PVC Grinder Hydraulic Press PT Stranding & Taping Machine Silicone Rubber Mixing Machine 65/150 Two Stage Extruder (Compounding Line) 60 KVA UPS 80 KVA UPS - 2 Nos 100 KVA UPS 120 KVA UPS 160 KVA UPS 200 KVA UPS 250 KVA UPS - 2 Nos 320 KVA DG Set 365 KVA DG Set 600 KVA DG Set Inkjet Printers - 36 Nos Laser Printers - 4 Nos	Fourier Transmission infrared Spectrometer (FTIR) Profile Projector Digital Thermometer With Sensor - 2 Nos Hot Air Ageing Oven Hot Air Oven 6 Nos - Up to 250° C & 300° C Hot Set Oven Ozone Resistance Test Equipment Smoke Density Apparatus - 3 Nos Oxygen & Temperature index Apparatus - 2 Nos Flammability Tester - 3 Nos Cold Chamber - 2 Nos Cold Bend Cold Impact Test Set - 20° C to +25° 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 Resistatnce 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 4 Nos - 1 MΩ to 100 GΩ Million Mega Ohm Meter 2 Nos - 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 - Up to 100° C 4 Cell Ageing Oven with Data Scanning Logger 2 Nos - 16 Channels Heating Oven - Up to 200° C Thermal Stability Test Apparatus Water Absorption Test Apparatus Gravimetric Electronic Balance 2 Nos - 0 to 180 gms Electronic Weighing Machine - 10 gms to 3 kgs Kelvin Bridge - 0-11 Ω Torsion Testing Machine (Digital Control Meter - Up to 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 - 0 to 1 Metre Steel Test Mandrel Set Condition Chamber 2 Nos - 20° C 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 - Up to 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° C to +50° C Glass Thermometer 05 Nos - 10° C to + 110° C & - 10° C to 250° C Thermometer 02 Nos - 195° C to 205° C Digital Anemo Meter - 0 - 45 m/s Digital Thermo Hygrometer 02 Nos - 0 to 95° C / 20 to 99% RH Senior Double Kelvin Bridge UV Radiation Test Apparatus Notch Propagation Tester (Analog) Water Bath (Size 120 cm X 90 cm X 60 cm) H V Probe Milimeter Abrasion Resistance Tester Dynamic Cut Through Tester Cable Analyzer Universal Testing Machine PC Based Crosstalk Attenuation & Impedance Meter Attenuation 0,1 to 20 dB, Cross talk (- 40 to 100 dB), Impedance 199.9Ω to 1.999kΩ

Testing Equipment



OUR CUSTOMERS



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Plant - II

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