PRODUCT PROFILE

Rolliflex™

Engineered Cables.

State of the art manufacturing facility at VAPI

4 Decades of Trust

1,20,000 sq ft. mfg space

3,000 sq ft. laboratory

Rolliflex™ Engineered Cables.

Rolliflex Cables is a 4 Decade Old Company. It was established in the year 1979 and has it's state of the art manufacturing unit in Vapi.

With complete backward integration, and possessing a highly skilled and technical team, it is deemed to have the most number of approvals of both domestic and international standards. It specialises in making customised cables as per client's requirements.

Contents

Certifications Available

TÜVRheinland® IS: 694 c US IRCLASS Indian Register of shipping CE Approved Lloyd's Register IS: 1554 Part (I) TÜV CERT ISO 9001 : 2015

IS:694

01 Single Core & Multi Core Cables

FEATURES

Voltage Grade: 1.1KV AC/ 1.5KV DC

Temperature Rating: 70°C and 85°C (HR)

Minimum Temperature Rating: -20°C

RoHS Norms: Available on request acc to Directive 2011/65/EU

Short Circuit Rating: 160°C

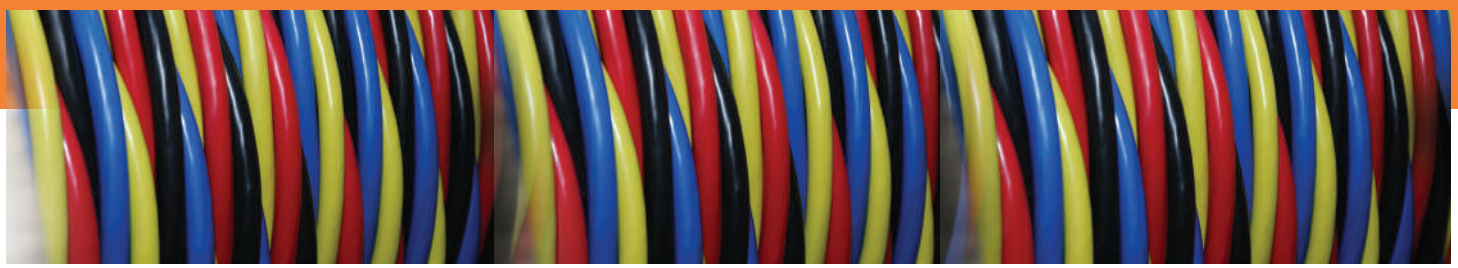
CATEGORY:

- 01 category: General purpose 70°C or 85°C rated intended for indoor use
- 02 category: General Purpose 70°C or 85°C rated intended for outdoor use & Low temperature applications (OU SZ) including Submersible Flat cables
- FR- Cables: Intended for Open & constrained area: Flame retardant, self extingushing, does not propagate flame even when installed in vertical ducts with 70°C or 85°C Rating.

  ** 85°C rated FR Cable: FR-HR85
- FR-LSH Category: Cables for Open & constrained area with limited human activity and/or presence of sophisticated systems: Flame retardant self extinguishing, does not propagate flame even when installed in vertical duct & reduced halogen evaluation & smoke with 70°C or 85°C Rating.

INSTALLATION FEATURES:

Suitable for Fixed or protected installation, on or inside lighting appliances and inside switching and control gears. Suitable for installation inside surface or embedded conduits or inside railing.



CONSTRUCTION

Conductor: Bright Plain Annealed High conductivity (>99.90%) copper wires bunched together as per class 1/2/5 of IS:8130 (Tin coated copper also available on request)

Insulation: Type A/C PVC as per IS:5831-1984 applied by Extrusion over conductor (Additional FR/FR-LSH Properties for respective cables)

Laying of multicore Round Cables: Insulated Cores laid up together with suitable lay as per IS:694 & IS:1554-1

Laying of multicore Flat Cables: Insulated Cores laid up side by side as per IS:694.

Sheath: Overall Sheathed by Type ST-1(FR) PVC applied by extrusion over laid up cores.

Single Core Cable Insulation Colour: Any colour or by colour (i.e. Green & Yellow)

Core colours: 2C: Red & Black, 3C:Red, Blk & Y/G (For Flat: Red, Yellow, blue) 4C:Red, Ylw, Blue, Y/G 5C:Red, Ylw,Blue, Black & Y/G; 6C to 25C: White with nos. & 1 Y/G core for earthing

Sheath Colour: Generally Grey or Black, For 02 Category Cables only Black.

Insulation Resistance (Room Temp.): > 36.70 MΩ/Km

Insulation Resistance (Rated Temp. 70°C/85): > 0.0370 MΩ/Km

Resistant to: Water, Abrasion, Flame

HV Test Voltage: Passed 6KV online & 3KVAC for 5 minutes.

Flammability: Confirmed as per IS 694/ IS 10810 P-53.

Additional FR Property: (For FR/FR-LSH cables)

Oxygen Index: Min 29%

Temperature Index: Min 250*C

LSH Property: For FR-LSH cables

Smoke Density Index: Max 60%

HCL Gas evoluation: Max 20% by wt.

UV Property: For 02 category Cables

UV resistant

Cold Bend & Cold Impact at -15*C

Additional ageing

Minimum Bending Radius: 3xD for D<5mm; 4xD for D:5to7; 6xD for D=7to16; 8xD for D<16mm

Identification: Throughout surface print as per IS:694 Norms & label over coils (Drum stenciled)

Available in coils of: Generally 100/200/500 mtrs or drum length as required by customer.

CE Certified

02 Single Core & Multi Core Cables

FEATURES

CE Complied acc. to LVD:2014/35/EU

RoHS Complied ac. to Directive 2011/65/EU

Voltage Rating: 450/750V

Temperature Rating: -25 to 70˚C (90˚C for HR)

Harmonized Norms:
Multicore Sheathed Cable (Unscreened/screened): H05VV-F,
H05V2V2-F (HR) as per EN 50525-2-11 & IEC 60227-4/5 & 6

Certifications Available

ADDITIONAL PROPERTIES:

If FR according to IEC/EN 60332-1-2

If FRLS norms to IEC 61034-2, ASTM D 2843

Test Voltage: 2.5KV AC- 15 Minutes

Bending Radius: For ø<6.0mm: 4xø; ø6 to 12mm:5xø, ø 12 to 20mm:6xø, ø >20mm:8xø

Identification: Throughout surface print as per IEC 60227/EN 50525 Norms & label over coils

Packing: Bundled in Coil/wooden Drum. Available in Length of 100mtrs or as per agreement between Rolliflex & Customer

APPLICATION RANGE

Plant engineering | Industrial machinery | Heating and air-conditioning systems | Machine tools

- Mainly used in dry, damp and wet interiors (including water-oil mixtures).
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, no continuously recurring movement without tensile load or compulsory guidance
- Shielded Cables are recommended whenever electrical interference distorts signal transmission, or when EMI emissions need to be suppressed.

CONSTRUCTION

Conductor: Cl-5 IEC 60228 Plain or Tin coated Copper

Insulation: Type TI2 PVC acc to EN 50363-3

Sheath (Outer Jacket): Type TM2 PVC acc to EN 50363-4-1

Shield (shielded Cables) - Type 1: Myler - Wrapped helically by Aluminium backed myler tape with 25% min. overlap followed by Polyester tape alongwith ATC drain wire applied longitudinally.

Type 2: Metal - Plain/Tinned Copper Cross helical braiding (Screen) with minimum 80% coverage density

Core identification: 2C: Brown & Blue, 3C: Brown, Blue & Y/G, 4C: Brown, Blue, Black & Y/G 5C & More: White or Black colour insulation marked with consequent numerals with last most core Yellow/ Green.

Sheath Colour: Generally Grey (Black for UV resistant)

Fillers (Optional): PVC/synthetic materials

Goods Resistant To

Rolliflex PVC insulated single core for internal wiring

CONSTRUCTION:

Conductors: annealed copper conductor acc. to EN 60228:(Plain or Tinned), class 1 solid -H07V2-U, H05V2-U, class 2 stranded H07V2-R, class 5 flexible H07V2-K

Insulation: PVC compound type TI3 (Heat Resistant & Flame Retardant)

Colour of insulation: Grey, White, green/yellow, Red, Yellow, blue, black, brown or other colours

FEATURES:

Maximum conductor operating temperature: +105°C

Lowest ambient temperature for fixed installation: -30°C

Lowest installation temperature: -5°C

Maximum short-circuit conductor temperature: +160°C

Test voltage: 3500V

Flame retardant: IEC 60332-1

Resistant to: Abrasion, Heat, Water, most of chemicals & solvents

Suitable for: Single phase AC/DC & 3Phase Ac circuits

Minimum bending radius: For cable diameter D (mm)

	D ≤ 8	8 < D ≤ 12	12 < D ≤ 20	D > 20
Normal use	4 D	5 D	6 D	6 D
Careful bending at termination	2 D	3 D	4 D	4 D

APPLICATIONS:

For internal wiring and fixed protected installation inside appliances and in lighting fittings. Suitable for fixed protected installation in, or on, lighting or control gear for voltages up to 1000V a.c. or, up to 750V d.c. to earth.

PACKAGING:

Standard length cable packing 50 m of 100 m in rings or on spools, or 500 m on drums. Other forms of packing and delivery are available on request.

CERTIFICATIONS AVAILABLE

APPROVALS:

CE (LVD 2014/35/EU), RoHS (2011/65/EU)

ZHLS/HFFR/LS0H

03 Single Core Flexible Wires

PRODUCT FEATURES

- Non-Toxic, Non-Corrosive, Anti Rodent /Anti Termite/Anti Fungus
- Flame Retardant as per IEC 60332-1-2,
- Negligible Transparent Smoke (Transparency more than 80% as per IEC 61034-2/ASTMD2843)
- Halogen Free, Corrosive gases acc. To IEC 60754-1
- pH: >4.3, Conductivity: <10µS/mm as per IEC 60754-2
- Limiting O2 Index: Min 29% acc to ASTMD 2863
- Temperature Index: Min 250*C acc to ASTMD 2863
- UV, Oil, Chemicals & solvents Resistant
- Good flexibility
- RoHS & REACH, Compliant

TECHNICAL DATA

Categories: Available in 2 Categories, Thermoplastic LSZH & Thermoset (crosslinked) LSZH

Category	Thermoplastic	Thermoset
Certification	BIS, CE	BIS, CE, LR, IRclass
Ref Standard	IS 17048, EN 50525-3-31	IS 17048, EN 50525-3-41, BS 7211, IEC 60092-353
IS 17048 Norms	Z (01 Category)	XZ-90 (04 Category)
CENLEC Codes	H07Z1-K, H05Z1-K	H07Z-K, H05Z-K
Voltage Rating	IS:1100V, EN:450/750V	IS:1100V, BS/EN:450/750V, IEC:0.6/1kV
Temperature Rating	-25 to +70°C	-35 to +90°C

CONSTRUCTION

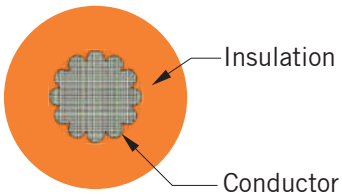
- IS 8130/ IEC 60228 Class 5 multi stranded Flexible Electrolytic Grade, Tin or plain Cu wires
- Special Halogen Free Thermoplastic Insulation with additives of Anti Rodent/Anti termite/Anti Fungus (on request)
- Flame Retardant & Low smoke
- Available in different insulation colours single or dual.
- Standard coil length: 100 meters

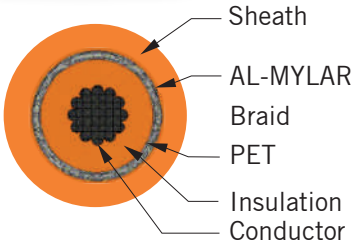
04 | Electric Vehicle Cables

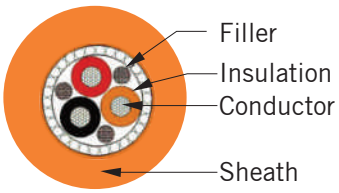
Rolliflex™ Electric Vehicle Cables offers a solution suitable for every application.

Our specially formulated insulation and jacketing compounds provide a full range of performance characteristics. The insulation and jacket compounds provide long term reliable service in the harshest environments, superior durability in heavy use applications and in extreme temperatures. Our compounds are RoHS compliant.

Rolliflex™ cables can be customized to suit customer's exact requirements including power, limited data, signal and communications conductors.







PRODUCT FEATURES

- **Cores:** Both SINGLE & MULTICORE options are available, in various sizes - to meet customer's requirements
- **Conductors:** Annealed Bare/Tinned Soft drawn Copper wires, with different stranding configurations and classes are available.
- **Insulation:** Specially designed Heat and moisture resistant polyvinyl chloride (PVC) / other compounds are used to meet the customer's requirements
- **Screen/Braiding:** Fine drawn Annealed Bare/Tinned Soft drawn Copper wires are used for braiding. Aluminium mylar tape with ATC drain wire type shielding can be given – as per customers requirements.
- **Jacket:** Specially designed Heat / moisture / fire resistant polyvinyl chloride (PVC) / other compounds are used to meet the customer's requirements
- **Voltage:** Various options of 300/600 Volt Ratings , OR Customized cables can be made available
- **Temperature:** We are amongst the first Indian Manufacturer to give a PVC insulated cable that can withstand temperatures from -20*C to +125*C with our specially developed PVC compounds. Higher temperatures can also be achieved using other materials – depending on customer's requirements
- **Flexibility:** With our specially formulated PVC compounds – we can offer great flexibility in our cables (up to 3D) – which is extremely crucial in the EV segment

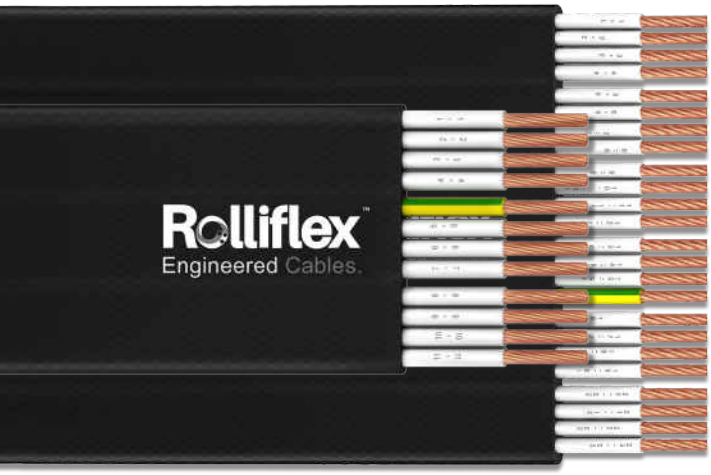
APPLICATIONS

Our Screened cables are used in High Temperature Motor Application & Digital Speedometers

05 Elevator Cables

FLAT CABLE RANGE

CE CERTIFIED



Available in:

4/8/12/16 & 24core
in 0.50sqmm & 0.75sqmm

Available in:

- 20core x 0.75sqmm + 2pair x 0.75sqmm with/without Steel Rope
- 29core x 0.75sqmm + 2P x 0.50sqmm + 1core x 1.50sqmm Cable

Available in:

36core x 0.75sqmm + 2pair x 0.75sqmm with/without Steel Rope

COMPENSATING CHAINS

PVC Coated Chains

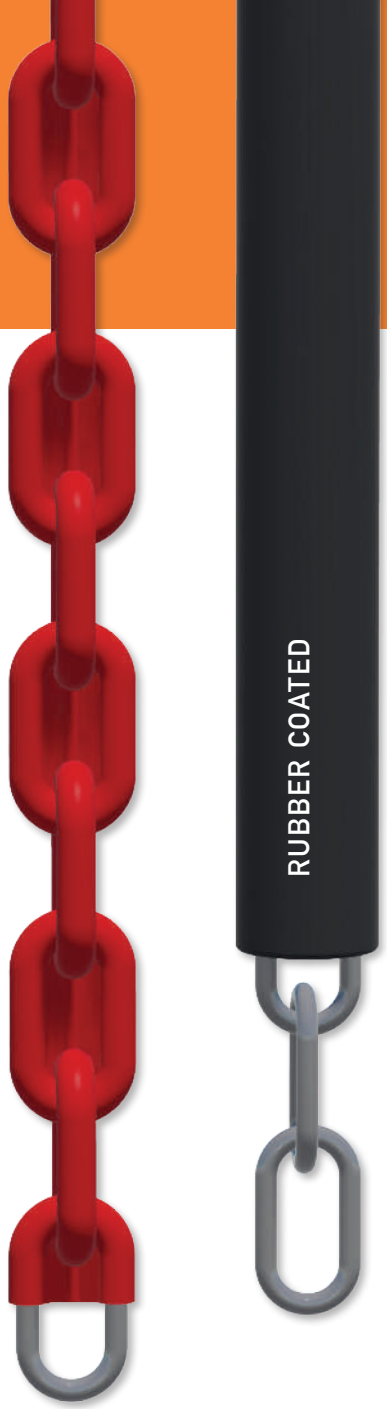
8.00mm
1.50kgs/meter

9.50mm
2.50kgs/meter

11.50mm
3.20kgs/meter
3.50 kgs/meter

Rubber Coated chains

8.00mm
2.00kgs/meter



PVC TRUFFING

- 30x35mm (HxW) - 2mtr length
- 40x50mm (HxW) - 2mtr length
- Make Roly-Tray®

ALSO AVAILABLE

- 2Pair Serial Communication Cable
- Orange Colour Display Cable
- CCTV IP Camera Flat Cables

06 | UL Cables

UL- CSA STYLE 1007 (AWM) 1569 (AWM)

Working Temperature Range:	80˚C	80˚C,90˚C or105˚C
Nominal Voltage Grade :	300V	300V
Conductor : (solid/stranded)	22-16AWG	22-16AWG
Test Voltage :	2000V	2000V

Part #	Sizes in AWG	Apprx.Dia.in MM (+/- 0.20mm)
33324	24	1.50
33322	22	1.60
33320	20	1.70
33318	18	2.00
33316	16	2.40
(Any other size on request)		

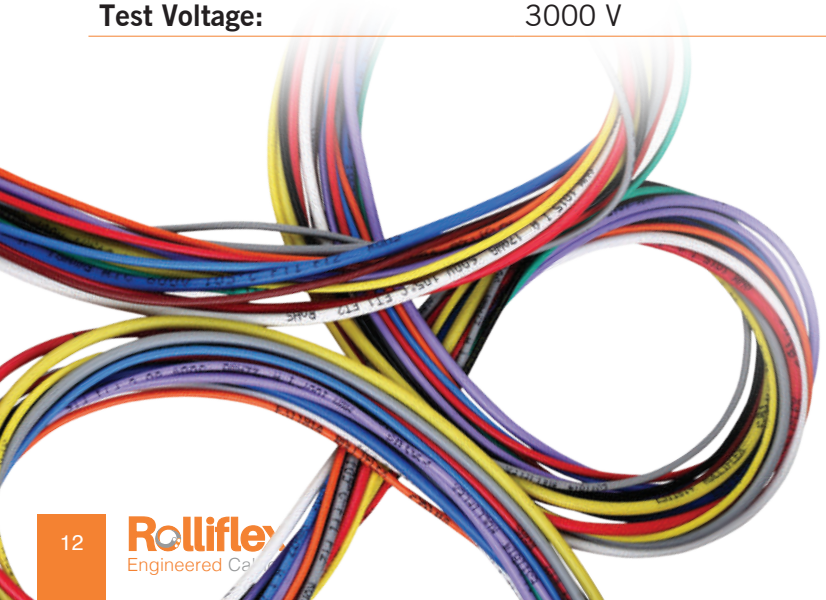
UL- CSA STYLE: 1015 (AWM)

Working Temperature Range:	80˚C,90˚C or 105˚C
Nominal Voltage Grade:	600AC, 750DC
Conductor:	22 AWG to 1/0 AWG Multi stranded in combination to get nearest AWG cross section
Test Voltage:	upto 2 AWG 2 KV 1 to 4/0AWG 2.50KV
Use:	Appliance Wiring & Panel Wiring

Part #	Sizes in AWG	Apprx.Dia.in MM (+/- 0.20mm)
33324	24	2.20
33322	22	2.30
33320	20	2.50
33318	18	2.70
33316	16	3.00
33314	14	3.40
33312	12	3.90
33310	10	4.50
33308	8	6.00
33306	6	7.80
33304	4	9.00
33302	2	10.50
33301	1	12.70
3331/0	1/0	14.00
(Any other size on request)		

UL- CSA STYLE: 1032 (AWM)

Scope: PVC Insulated Wire **Working Temperature Range:**	90˚C
Nominal Voltage Grade:	1000 VAC or 1200 VDC
Conductor:	Solid / Multistrands
Test Voltage:	3000 V

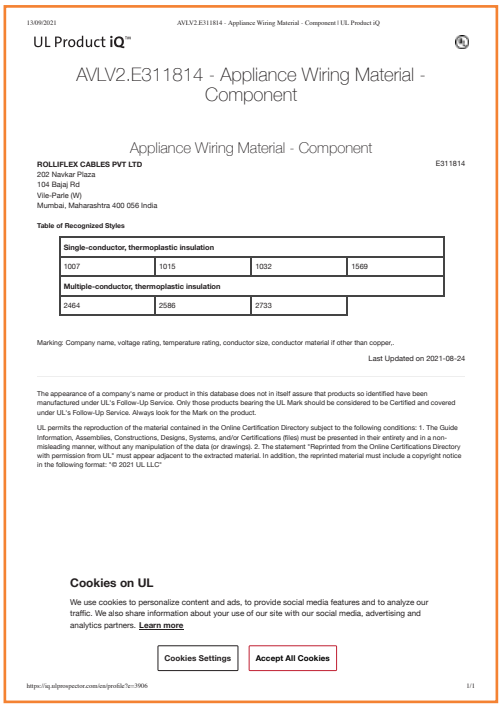


Part #	Sizes in AWG	Apprx.Dia.in MM (-0.50mm +0.20mm)
33320	20	2.50
33318	18	2.70
33316	16	3.00
33314	14	3.40
33312	12	3.90
33310	10	4.50
33308	8	6.00
33306	6	7.80
33304	4	9.00
33302	2	10.50
33301	1	12.80
3331/0	1/0	14.00
3332/0	2/0	15.00
3333/0	3/0	16.50
3334/0	4/0	18.00
333250	250kcmil	20.00
333300	300kcmil	21.30
(Any other size on request)		

UL- CSA STYLE: 2464 (AWM)

Scope: PVC Insulated & Jacketed Multicore with or without shield

Working Temperature Range:	80˚C
Conductor:	Solid / Flexible
Voltage Rating:	300V
Color:	White with Black printed numbers. One core Yellow/Green for use as earth conductor.
Jacket:	Grey or Black
Conductor Size:	24 AWG to 16AWG (solid/flexible) (Any other size on request)
Core test:	Ref. to Style No: 1007 80˚C. Style No: 1569 80˚C
Number of cores:	upto 24 core (Any other size on request)



13/09/2021 AVLV2.E311814 - Appliance Wiring Material - Component | UL Product iQ

UL Product iQ™

AVLV2.E311814 - Appliance Wiring Material - Component

Appliance Wiring Material - Component

ROLLIFLEX CABLES PVT LTD E311814
202 Navkar Plaza
104 Bajaj Rd
Vile-Parle (W)
Mumbai, Maharashtra 400 056 India

Table of Recognized Styles

Single-conductor, thermoplastic insulation			
1007	1015	1032	1569
Multiple-conductor, thermoplastic insulation			
2464	2586	2733	

Marking: Company name, voltage rating, temperature rating, conductor size, conductor material if other than copper..

Last Updated on 2021-08-24

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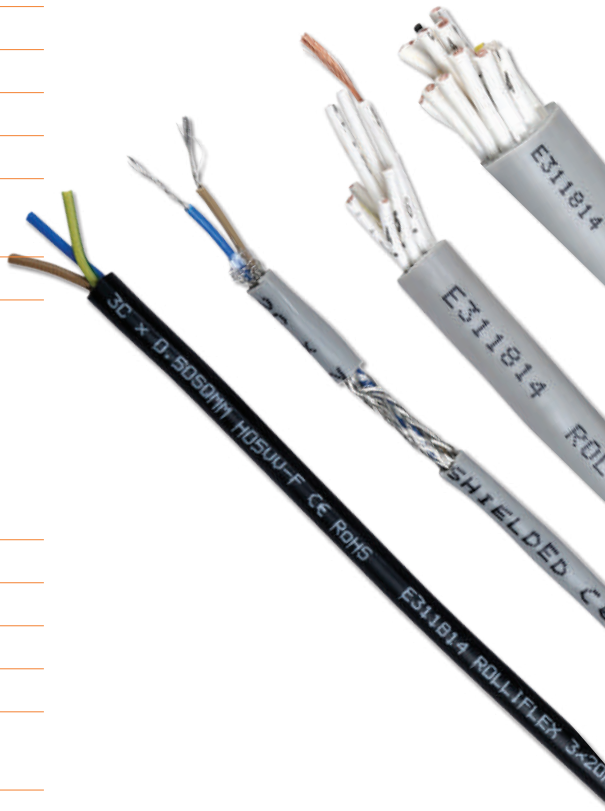
https://iq.ulprospector.com/en/profile?e=3906 1/1

UL- CSA STYLE: 2586 (AWM)

Scope: PVC Insulated & Jacketed Multicore with or without shield

Working Temperature Range:	-20˚C to +105˚C
Conductor:	Solid / Flexible
Voltage Rating:	600V & 1000V
Jacket:	Grey or Black
Conductor Size:	26 AWG to 2/0AWG
Core test:	Ref. to Style No: 1007 80˚C. Style No: 1569 80˚C
Number of cores:	upto 24 core (Any other size on request)



UL- CSA STYLE: 2733 (AWM)

Scope: PVC Insulated & Jacketed Multicore with or without shield

Working Temperature Range:	-20˚C to +105˚C
Conductor:	Solid / Flexible
Voltage Rating:	600V
Jacket:	Grey or Black
Conductor Size:	26 AWG to 2/0AWG
Core test:	Ref. to Style No: 1007 80˚C. Style No: 1569 80˚C
Number of cores:	upto 24 core (Any other size on request)

07 Ship & Offshore Cables

SPECIAL FEATURES:

- Certified from IRS Class and Lloyd's register (LR)
- Heat Resistant upto 90°C. Flame Retardant acc. to IEC 60332-1-2.Fire Retardant acc. to IEC 60332-3-22 Cat. A
- Smoke emission properties acc. to IEC 61034-1/2
- Halogen Free acc. to IEC 60754-1/2
- RoHS Compliance according to directive 2011/65/EU
- CE Certified as per Low Voltage directive 2014/35/EU
- High Insulation Resistance
- Resistant to Water/saltwater, Moisture, UV/sunlight, Ozone, Weather, Oil, Most of chemicals, fumes & solvants

Indian Register of Shipping

Works Approval Certificate for Manufacture of Electrical Cables

M/s. Rolliflex Cables Pvt. Ltd.
45-46, Somnath Co-Op. Indl. Society, Somnath Road, Dabhel, Daman, UT of Daman & Diu 396210

PREMJIT PANIGRAHI
PRINCIPAL SURVEYOR

Lloyd's Register Classification Society (China) Co., Ltd.
Shanghai Technical Support Office

DESIGN APPRAISAL DOCUMENT

LLOYD'S REGISTER TYPE APPROVAL SYSTEM, TA14.

Types of Marine Cables

TYPE 1 Single Core Power Cable

Single Core unarmoured (Halogen Free) accd. to IEC 60092-353

CONSTRUCTION:

Conductor: Annealed Plain/Tin Coated Copper according to IEC 60228 Cl. 2/5

Insulation: Halogen free crosslinked HF-90 Insulation according to IEC 60092-360

Binder tape: Polyester Tape between Conductor & Insulation (Optional)

Nominal Voltage: 0.6/1KV

Sizes Covered: 1C x 0.50mm^2, 1C x 0.75mm^2, 1C x 1.00mm^2, 1C x 1.50mm^2, 1C x 2.50mm^2, 1C x 4.00mm^2, 1C x 6.00mm^2, 1C x 10.0mm^2, 1C x 16.0mm^2, 1C x 25.0mm^2, 1C x 35.0mm^2, 1C x 50.0mm^2, 1C x 70.0mm^2, 1C x 95.0mm^2, 1C x 120mm^2, 1C x 150mm^2, 1C x 185mm^2, 1C x 240mm^2, 1C x 300mm^2.

Available in Colour: Generally black (Other colours available on demand)

TYPE 2 Instrumentation & Control Cables

(Shipboard&Offshore) Multicore Cable Screened/ Unarmoured 150/250V according to IEC 60092-376

CONSTRUCTION:

Conductor: Annealed Plain/Tin Coated Copper according to IEC 60228 Cl. 2/5

Insulation: Halogen free crosslinked HF-90 Insulation according to IEC 60092-360

Cable Core assembly: Generally Black with nos. (other colours on demand) laid up together to form a rope.

Screen: Overall Screen of Alluminium backed myler tape applied helically over cable core assembly with Tinned copper drain wire at metallic side of tape, followed by polyester binder tape.

Outer Sheath: Halogen free polyolefin base SHF-1 Sheath according to IEC 60092-360 (Generally Black)

TYPE 3 Instrumentation Signal Cables

(Shipboard&Offshore) Single/Multi Pairs/Triad Twisted, Overall Screened Unarmoured 150/250V according to IEC 60092-376

CONSTRUCTION:

Conductor: Annealed Plain/Tin Coated Copper according to IEC 60228 Cl. 2/5

Insulation: Halogen free crosslinked HF-90 Insulation according to IEC 60092-360

Cable assembly: Cores twisted together to form a Pair/triad. All Pair/Triad laid up to form a rope assembly (Pair: Black & White with nos; Triad: Red, Black & White with nos)

Screen: Overall Screen of Alluminium backed myler tape applied helically over cable Pair/traid assembly with Tinned copper drain wire at metallic side of tape, followed by polyester binder tape.

Outer Sheath: Halogen free polyolefin based SHF-1 Sheath according to IEC 60092-360 (Generally Black)

TYPE 4 Shipboard & Offshore Power Cable 0.6/1KV

(Shipboard & Offshore) Multicore Cable Screened/ Unscreened Armoured/Unarmoured 1000 V (1.2 kV) according to IEC 60092-353

CONSTRUCTION:

Conductor: Annealed Plain/Tin Coated Copper according to IEC 60228 Cl. 2/5

Insulation: Halogen free crosslinked HF-90 Insulation according to IEC 60092-360

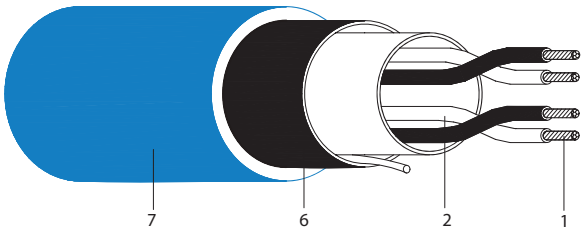
Cable assembly: Generally Black with nos. (other colours on demand) laid up together to form a rope. (Pair: Black & White with nos; Triad: Red, Black & White with nos)

Screen/Armoured: Overall Screen / Armoured of Annealed Tinned Copper (ATC) Braiding over cable core assembly

Outer Sheath: Halogen free polyolefin base SHF-1 Sheath according to IEC 60092-360 (Generally Black)

08 Instrumentation Cables

Rolliflex Overall Screened Instrument Cable



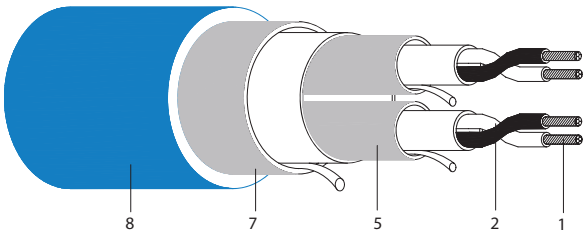
Single pair and multi-pair cables with copper conductor, PVC insulated, overall screened and PVC sheathed Voltage rated at 300/500V.

Manufactured as per BS 5308, EN 50288, IS 1554

CONSTRUCTION

1 Conductor: Plain annealed/tinned circular stranded copper conductor, conform to BS 6360 / IS:8130
2 Insulation: PVC (Polyvinyl Chloride) / PE
3 Pairing: Two insulated cores shall be uniformly twisted together to form a pair with maximum lay length of 100 mm. Note :Two pair cables with overall screen shall have four cores laid in quad formation.
4 Pair identification: Colour code as per Appendix B or as per customer specification
5 Cabling: Twisted pairs are laid up together, if necessary filled with nonhygroscopic material compatible with the insulation.
6 Overall Screening: Accumulated pairs screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a multistrand tinned 2 annealed copper drain wire of 0.5 sq. mm.
7 Sheath: PVC (Polyvinyl Chloride).

Rolliflex Individual & Overall Screened Instrument Cable



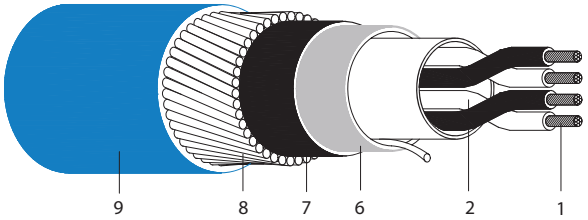
Multi-pair cables with copper conductor, PVC / XLPE insulated, individual & overall screened and PVC sheathed.

Manufactured as per BS 5308, EN 50288, IS 1554

CONSTRUCTION

1 Conductor: Plain annealed/tinned circular stranded copper conductor, conform to BS 6360 / IS:8130
2 Insulation: PVC (Polyvinyl Chloride) / PE
3 Pairing: Two insulated cores shall be uniformly twisted together to form a pair with maximum lay length of 100 mm.
Note :Two pair cables with overall screen shall have four cores laid in quad formation.
4 Pair identification: Colour code as per Appendix B or as per customer specification.
5 Individual Screening: Each pair screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a multistrand tinned annealed 2 copper drain wire of 0.5 sq. mm.
6 Cabling: Twisted pairs are laid up together, if necessary filled with nonhygroscopic material compatible with the insulation
7 Overall Screening: Accumulated pairs screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a multistrand tinned 2 annealed copper drain wire of 0.5 sq. mm.
7 Sheath: PVC (Polyvinyl Chloride).

Rolliflex Overall Screened Armoured Instrument Cable



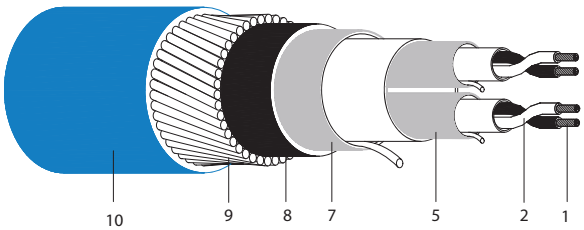
Single pair and multi-pair cables with copper conductor, PVC / XLPE insulated, overall screened, PVC bedding, Steel Wire / Flat Strip armoured and PVC sheathed.

Manufactured as per BS 5308, EN 50288, IS 1554

CONSTRUCTION

1 **Conductor:** Plain annealed/tinned circular stranded copper conductor, conform to BS 6360 / IS:8130
2 **Insulation:** PVC (Polyvinyl Chloride) / PE
3 **Pairing:** Two insulated cores shall be uniformly twisted together to form a pair with maximum lay length of 100 mm.
Note :Two pair cables with overall screen shall have four cores laid in quad formation.
4 **Pair identification:** Colour code as per Appendix B or as per customer specification
5 **Cabling:** Twisted pairs are laid up together, if necessary filled with nonhygroscopic material compatible with the insulation
6 **Overall Screening:** Accumulated pairs screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a multistrand tinned 2 annealed copper drain wire of 0.5 sq. mm.
7 **Bedding:** PVC (Polyvinyl Chloride).
8 **Armouring:** Galvanized steel round wire over the bedding.
9 **Sheath:** PVC (Polyvinyl Chloride).

Rolliflex Individual & Overall Screened Armoured Instrument Cable



Multi-pair cables with copper conductor, PVC / XLPE insulated, individual & overall screened, PVC bedding, Steel Wire / Flat Strip armoured and PVC sheathed.

Manufactured as per BS 5308, EN 50288, IS 1554

CONSTRUCTION

1 **Conductor:** Plain annealed/tinned circular stranded copper conductor, conform to BS 6360 / IS:8130
2 **Insulation:** PVC (Polyvinyl Chloride) / PE
3 **Pairing;** Two insulated cores shall be uniformly twisted together to form a pair with maximum lay length of 100 mm.
4 **Pair identification:** Colour code as per Appendix B or as per customer specification
5 **Individual Screening:** Each pair screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a multistrand tinned annealed 2 copper drain wire of 0.5 sq. mm.
6 **Cabling:** Twisted pairs are laid up together, if necessary filled with nonhygroscopic material compatible with the insulation
7 **Overall Screening:** Accumulated pairs screened with aluminium/mylar tape, helically applied with the metallic side down, in electrical contact with a tinned 2 annealed copper drain wire of 0.5 mm .
8 **Bedding:** PVC (Polyvinyl Chloride).
9 **Armouring:** Galvanized steel round wire over the bedding.
10 **Sheath:** PVC (Polyvinyl Chloride).

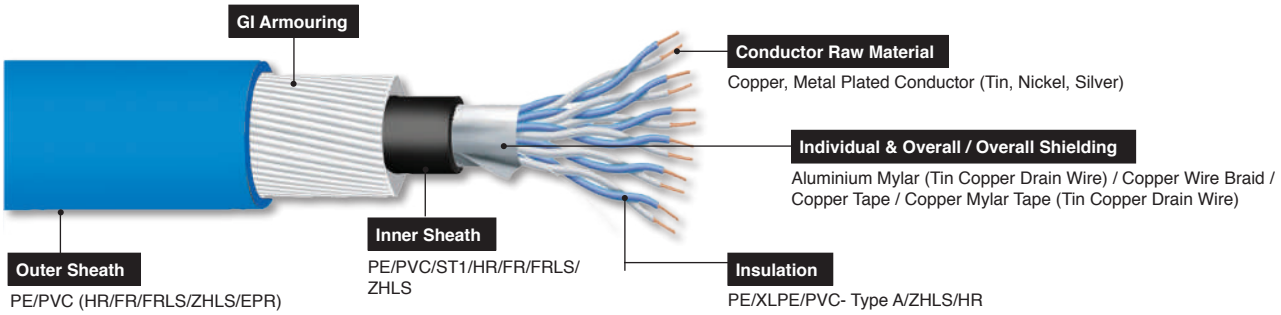
SCREENS

Screens (Shields) are often used in Instrumentation and signal cables to prevent or decrease possible interference/ noise in cables that can be caused by following reasons :

1. Cross- talk from adjacent pairs or triads
2. Interference induced by external source such as electrical equipment's machineries and powerlines.

SCREEN TYPES

- Aluminum/ polyester tape with a tinned copper drain wire, the most common construction
- Copper/ polyester tape with a tinned copper drain wire, for a superior screen effect.
- Bare copper braid, for electromagnetic interference/ noise or when the cable is subject to movements.
- Tinned copper braid for electromagnetic interference in existence of corrosive atmosphere.



Rolliflex Thermocouple Extension & Compensating Cables

ROLLIFLEX THERMOCOUPLE EXTENSION and Compensating Cables have guaranteed identification characteristics to their basic thermocouples in the restricted temperature span. The Element Conductor can be extended to a position where a stable temperature is maintained, transferring the effective cold junction to the remote end of the extension or compensating cable. Each batch of cable is tested for Thermo-EMF performance and the electrical & Mechanical properties as per international standard ANSI MC 96.1.

Special Customer requirements are catered for, through our research & development wing.

SPECIFICATIONS

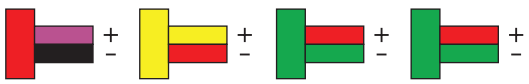
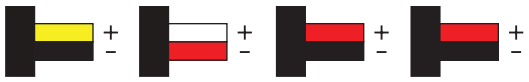
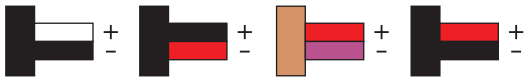
Cable Type	Conductor Material		Ext/Comp.	Maximum Inductance microH/mtr
	+ve	-ve		
KX	Ni Cr	Ni Al	Extension Cable	4.00
WX	Fe	Cu Ni	Compensating Cable	8.00
VX	Cu	Constantan	Compensating Cable	1.20
JX	Fe	Constantan	Extension Cable	8.00
TX	Cu	Constantan	Extension Cable	1.20
SX	Cu	Cu Ni	Compensating Cable	1.20
EX	Ni Cr	Constantan	Extension Cable	4.00
XK	Ni Cr	Cu Ni	Extension Cable	4.00
Copper Conductor Cable			...	1.00

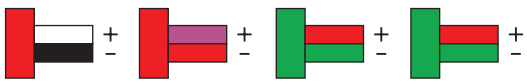
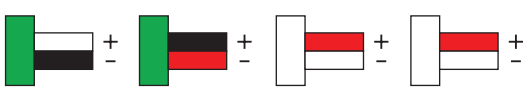
LOOP RESISTANCE

Thermocouple Extension/Compensating Cable									
Conductor details			Loop Resistance (ohm/mtr) +/-10%@20*C						
AWG	Dia (mm)	C.S. Area (sq. mm)	Cable Type						
			KX	VX/KX(A)	JX	TX	SX/RX	EX	XK
	1.381	1.50	0.66	0.31	0.40	0.31	0.086	0.83	0.83
16	1.29	1.31	0.76	0.39	0.46	0.39	0.104	0.97	0.97
18	1.02	0.823	1.21	0.62	0.76	0.62	0.169	1.52	1.52
20	0.81	0.50	1.98	0.97	1.20	0.97	0.266	2.50	2.50
20	7x0.31	0.50	1.98	0.97	1.20	0.97	0.266	2.50	2.50

INTERNATIONAL COLOUR CODES FOR THERMOCOUPLE CABLES INSULATION

Thermocouple Type	British	AMERICAN	GERMAN	INDIAN	Material of extension cable	MV Output
						
	BS:1843	BS:1843	BS:1843	BS:1843		

EXTENSION			(+) Lead	(-ve) Lead	100°C	200°C
K	Chromel / Alumel		Ni/Cr	NiAl	4.0	8.13
J	Iron/Constantan		Iron	Constan-tan	5.26	10.77
T	Copper/ Constantan		Copper	Constan-tan	4.24	9.77
E	Chromel/Constantan		Ni/Cr	Constan-tan	6.31	13.42

COMPENSATING						
V X	Copper/Constantan (Com for Type K)		Copper	Constantan	4.10	
R X S X	Copper Constantan (com for Type R/S)					

09 Fire Survival Cables

Rolliflex brand fire survival cable (low smoke zero halogen – LSZH) are suitable for use in various indoor & outdoor applications where continuity of power supply during the event of fire, is highly essential and corrosive gas evaluation could be a cause of hazard to the people or the precision instruments in high rise building , schools, hospitals, hotels, Malls, Subways etc..

Rolliflex Fire Survival cable are made as per various IEC and BS specifications.

The performance of the cable under fire condition is specified in several international standard as follows:

- Flame Propagation Test: IEC 60332-1, BS EN 60332-1
- Flame spread test: IEC 60332-1, BS EN 60332-3
- Fire Resistance test: IEC60331, BS 6387
- Resistant to Fire with water: BS 6387
- Acid Gas emission test: IEC 60754, BS EN 50267
- Determination of Acidity: IEC 50754, BS EN 50267
- Smoke emission test: IEC 61034, BS EN 61034
- Limiting Oxygen Index(LOI): BS EN ISO 4589, ASTM D 2863

Also, BS 6387 specifies that Cables shall be designated by category according to their fire resistance characteristics as follows:

A. **Category F2.** Resistance to fire, resistance to fire with water, resistance to fire with mechanical shock, assessed separately, when tested in accordance with 17.6.2 of BS 7846;

B. **Category F30.** Resistance to fire with direct mechanical impact and water jet assessed in combination, when tested in accordance with BS 8491 for 30 min;

C. **Category F60.** Resistance to fire with direct mechanical impact and water jet assessed in combination, when tested in accordance with BS 8491 for 60 min;

D. **Category F120.** Resistance to fire with direct mechanical impact and water jet assessed in combination, when tested in accordance with BS 8491 for 120 min.

Rolliflex multicore Fire Survival cables can be made in the below colored core combimation, or, as per customer's requirements.

Core Identification

2 cores:	● Brown ● Blue
3 cores:	● Brown ● Black ● Grey
4 cores:	● Brown ● Black ● Grey ● Blue
5 cores:	● Brown ● Black ● Grey ● Blue ● Black
7 cores and above	● Black with ○ White numbers

Sheath Colour

● Orange

Rolliflex Multicore Armoured Fire Survival Cable, 600/1000 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape

Insulation: Extruded XLPE insulation.

Pairing: Insulated Cores assembled together.

Inner Sheath: Extruded LSZH Inner Sheath

Armour: Galvanised Steel Round Wire Armoured (Also available with Galvanised Steel Flat Strip Armour)

Outer Sheath: Extruded LSZH Outer Sheath, Colour as per customer requirement.

Rolliflex Multicore Unarmoured Fire Survival Cable, 300/500 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2

Fire Barrier: Mica Glass flame barrier tape

Insulation: Extruded XLPE insulation.

Pairing: Insulated Cores assembled together.

Overall Screening: Al.Mylar Tape Overall Shielded along with Drain wire

Outer Sheath: Extruded LSZH Outer Sheath, Colour as per customer requirement.

Rolliflex Multipair, Shielded, Unarmoured Fire Survival Cable, 300/500 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape

Insulation: Extruded XLPE insulation.

Pairing: Insulated Cores twisted to form pairs and assembled together

Overall Screening: Al.Mylar Tape Overall Shielded in contact with Drain wire

Outer Sheath: Extruded LSZH Outer Sheath, Colour as per customer requirement.

Rolliflex Multipair, Shielded, Armoured Fire Survival Cable, 300/500 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape.

Insulation: Extruded XLPE insulation.

Pairing: Insulated Cores twisted to form pairs

Individual Screening: Al.Mylar Tape Individual Shielded in contact with Drain wire

Laying: Pairs assembled together

Overall Screening: Al.Mylar Tape Overall Shielded in contact with Drain wire

Inner Sheath: Extruded LSZH Inner Sheath

Armour: Galvanised Steel Round Wire Armoured (Also available with Galvanised Steel Flat Strip Armour)

Outer Sheath: Extruded LSZH Outer Sheath, Colour as per customer requirement.

Rolliflex Single Core Fire Survival Cable, 450/750 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape.

Insulation: Extruded LSZH Free Flame Retardant Insulation. Colour as per customer requirement.

Rolliflex Single Core, Double Insulated Fire Survival Cable, 450/750 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape.

Insulation: Extruded LSZH Flame Retardant Insulation

Outer Sheath: Extruded LSZH Flame Retardant Outer Sheath. Colour as per customer requirement.

Rolliflex Single Core, Armoured Fire Survival Cable, 600/1000 V AC

CONSTRUCTION

Conductor: Annealed plain stranded copper conductor as per IEC 60228, Class-2.

Fire Barrier: Mica Glass flame barrier tape.

Insulation: Extruded LSZH Flame Retardant Insulation

Armour: Galvanised Steel Round Wire Armoured (Also available with Galvanised Steel Flat Strip Armour)

Outer Sheath: Extruded LSZH Outer Sheath, Colour as per customer requirement.

10 Armoured Cables

SPECIFICATION & CONSTRUCTION:

1kv Cables are designed and manufacured based on the national (IS) & international (IEC,BS) standards and project based customer specifications. Following are the standard stages of cable design & manufacturing.

ELEMENT	XLPE	PVC / HR PVC
CONDUCTOR	THE CURRENT CARRYING COMPONENT: Cables with Elecrolytic Copper (Plain or Tinned) & Aluminium conductor in form of Solid, Stranded Circular, Compacted Circular and shaped as per IS 8130, IEC 60228 & BS EN 60228. The sector shaped conductor are manufactured with pre-spiral lay which gives compact shape to the cable with reduced dia at laid up stage.	
INSULATION	XLPE, the 90 deg.C thermoset dielectric, is applied as insulation over the conductor by extrusion process Cross Linked Polyethyelene (XLPE) as per IS 7098-1,IEC 60502-1,BS 7655	Thermoplastic dielectic, is applied as insulation over the conductor by extrusion process. We offer both general purpose PVC of 70 deg C (Type A) and Heat Resistant PVC of 85 deg C (Type C). Poly- Vinyl Chloride (PVC) as per IS 5831,IEC 60502-1,BS 7655. Low Smoke Zero Halogen (LSZH) as per IEC 60502
LAYING UP OF CORES	The Multi-cores are laid up with appropriate tooling to form a compact circular shape, pvc fillers can be applied (whereever necessary) to provide circular shape.	
INNER SHEATH	THE BEDDING FOR ARMOUR : PVC/LSZH innersheath is applied as a protection over the laid up cores,innersheath can be offered in 2 forms Extruded or Taped. Extruded PVC bedding of ST2/LSZH PVC as per IS 5831,IEC 60502-1,BS 7655. Taped Bedding of Thermoplastic tape to be compatible with temperature rating of the cable as per IS 7098-1, IEC 60502-1	PVC/LSZH innersheath is applied as a protection over the laid up cores, innersheath can be offered in 2 forms Extruded or Taped. Extruded PVC bedding os ST2/LSZH PVC as per IS 5831,IEC 60502-1, BS 7655. Taped Bedding of Thermoplastic tape to be compatible with temperature rating of the cable as per IS 7098-1, IEC 60502-1
ARMOUR	Galvanised Steel Round wire as per IS 3975,IEC 60502-1, BS 10257. Galvanised Steel Flat Strip as per IS 3975,IEC 60502-1 For Single Core cables to be used in AC circuits Aluminium Round Wire or Flat Strip armour is provided to avoid magnetic hysteresis losses. For cables to be used in mines, required armour conductance (may be 75% to 40%) can be achieved by Double wire armour or by incorporating Tinned Copper wires with Galvanised steel wires.	
OUTER SHEATH	PVC/LSZH outersheath is applied by extrusion process generally Black in colour with sequential length maring and required details printed with non-contact ink jet printer. Poly-Vinly Chloride (PVC) as per IS 5831, IEC 60502-1, BS 7655. Low Smoke Zero Halogen (LSZH) as per IEC 60502-1	

11 Servo Cables

PRODUCT FEATURES

- Flame retardant according to EN 60332-1-2.
- Low mutual capacitance.
- Screening over each control pair offers mutual EMI protection.
- Optimal braid screen over the complete unit further offers external EMI protection and aids interference-free operations of frequency converters.
- Bending Radius: Flexing 20 x cable ø, Fixed installation 6 x cable ø

CONSTRUCTION

Conductor: EC Grade Annealed Bare Copper Fine wire according to EN 60228, cl. 5

Supply cores: black with white numbers according to VDE 0293 and GN-YE protective conductor Control pairs 0.34 sq mm, color coded - WH/BR, GN/YE (Optional)

Control pairs: 0.5 sq mm and above - Black colored with white numbers to VDE 0293 (Optional) Control pair with laminated aluminium film and tinned copper braiding. (Optional)

Inner Sheath: PVC Inner Sheath (Optional)

Overall Unit screened with tinned copper braiding (>85%) PVC outer sheath

TECHNICAL DATA

Standard : Adapted to VDE 0812 / 0250 / 0281

Nominal Voltage : Supply cores : 600 / 1000V

Test Voltage : Supply cores : C/C 4000V & C/S : 2000V

Control cores : C/C : 1500V, C/S : 750V

Insulation Resistance: > 20 GΩ x cm

Temperature Range : Flexing -5°C to +70°C

Fixed installation -30°C to +70°C Minimum

12 High Temperature Cables

FEP: FLUORINATED ETHYLENE PROPYLENE

- FEP is the softest Fluorocarbon Co-Polymers.
- Excellent insulation material, Non-ageing Characteristics, Chemical inertness.
- Highly corrosion resistant
- Broad useful Temperature range from -200°C to + 205°C continuous.
- FEP passes several Flame test as per IEEE 383
- FEP dissipation is around six times that of PFA and ETFE

PFA: PER FLUORO ALKOXY

- PFA is very similar in composition to PTFE and FEP.
- PFA have useful properties of low co efficient of friction and non-reactivity
- PFA is similar to FEP in terms of its mechanical properties.
- The material has excellent dielectric constant of 2.1, a high dielectric strength, excellent resistivity and an excellent dissipation factor of magnitude 0.0002.
- Broad useful temperature range from -200°C to + 260°C.

PTFE: POLY TETRA FLUORO ETHYLENE

- PTFE is synthetic Fluoro Polymer of Tetrafluoroethylene
- BThe most well known for High Temperature Cable insulating material
- PTFE is as Fluorocarbon solid, high molecular weight compound consisting of carbon and fluorine
- It is hydrophobic.
- It has the lowest coefficient of friction against any solid.

ETFE: ETHYLENE TETRA FLUORO ETHYLENE:

- ETFE Fluoro-Polymer is melt processible Thermoplastics.
- It is distinguished from Perfluo-Polymers (Totally Fluorinated polymers) as a partially fluorinated copolymer of ethylene and TFE.
- This chemical modification provides significantly higher strength relative to PTFE, FAP or PFA.
- It is less flexible than FEP of PFA.
- Superior impact strength, abrasion and cut through resistance.
- Higher Break down voltage, but very low operating temperature only 150°C.
- Highest mechanical abrasion except PEEK i.e. very rigid material.

PEEK: POLY ETHER- ETHER KETONES

- This is the most expensive and one of the best insulating material.
- This is generally used in Nuclear plant and research purpose.
- PEEK is exceptional outstanding properties of Radiation resistance of 10000 Mega Rad and the highest mechanical abrasion properties.

Nominal dia of insulated wires in MM

Sr No	No.of Strand with Dia of each-Strand (AWG)	Size in MM	Dia in MM	Cross Section Area	Resist-ance Ohm/Km at 20°C	Current Rating In Amp	EE-1000 V Grade	E-600 V Grade	ET-250 V Grade
1	32/7/40	7/0.08	0.24	0.034	570.9	0.7	1	0.74	0.56
2	30/1	1/0.25	0.25	0.0507	356.4	1	1	0.75	0.56
3	30/7/38	7/0.1	0.3	0.0568	332.3	1	1.07	0.81	0.61
4	28/1	1/0.32	0.32	0.0806	224.4	2.1	1.09	0.84	0.63
5	28/7/36	7/0.13	0.38	0.0887	210.5	2.1	1.14	0.89	0.69
6	26/1	1/0.4	0.4	140.9	140.9	3	1.15	0.9	0.71
7	26/7/34	7/0.16	0.48	0.1409	133.7	3	1.24	0.99	0.79
8	26/19/38	19/0.1	0.5	0.154	126.7	3	1.24	0.99	0.79
9	24/1	1/0.5	0.5	0.2047	88.4	4	1.25	1	0.81
10	24/7/32	7/0.2	0.6	0.227	83.2	4	1.37	1.12	0.91
11	24/19/36	19/0.13	0.63	0.2407	80.2	4	1.37	1.12	0.91
12	22/1	1/0.65	0.65	0.3243	56.1	7.3	1.4	1.15	0.95
13	22/7/30	7/0.25	0.75	0.3547	52.5	7.3	1.52	1.27	1.07
14	22/19/34	19/0.16	0.8	0.382	49.8	7.3	1.52	1.27	1.07
15	20/1	1/0.8	0.8	0.5168	37.7	11	1.53	1.3	1.1
16	20/07/28	7/0.32	0.97	0.563	33	11	1.73	1.47	1.27
17	20/19/32	19/0.2	1	0.6162	30.3	11	1.73	1.47	1.27
18	18/7/26	7/0.4	1.2	0.8969	20.7	16	2	1.75	-
19	18/19/30	19/0.25	1.25	0.9627	19.1	16	2	1.75	-
20	16/19/29	19/0.29	1.45	1.2293	14.9	22	2.25	2.03	-
21	16/37/32	37/0.2	1.4	1.2	15	22	2.2	2	-
22	15/19/28	19/0.32	1.6	1.5272	12.5	26	2.4	2.15	-
23	14/19/27	19/0.36	1.83	1.9412	9.5	32	2.69	2.42	-
24	14/37/30	37/0.5	1.75	1.8886	10	32	2.6	2.35	-
25	13/19/26	19/0.4	2	2.3864	7.8	35	2.85	2.6	-
26	12/19/25	19/0.45	2.25	3.0848	6	41	3.17	2.9	-
27	12/37/28	37/0.32	2.24	2.9742	6.5	41	3.12	2.85	-
28	11/19/24	19/0.5	2.5	3.7287	5	45	3.4	3.15	-
29	10/19/22	19/0.65	3.2	6.3015	3	50	4.1	3.8	-
30	10/37/26	37/0.4	2.82	4.7394	3.9	55	3.68	3.7	-
31	8/133/29	133/0.29	4.29	8.6054	2.2	75	5.31		-
32	6/133/27	133/0.36	5.41	13.5889	1.4	100	6.68		-

SINGLE CORE - EQUIPMENT WIRES & MULTICORE CABLES SPECIFICATIONS:

Conductor	:	TPC/SPC/ NPC
Insulation	:	FEP/PFA/PTFE/ETFE/ PEEK
Properties	:	Resistance to Fire, Chemical, Acids, Sunlight, Moisture & Corona
Type	:	Single Core & Multicore with or without Screen or Shielding
Voltage Grade	:	250 / 600/ 1000 Volt or As per customer requirements
Temperature	:	200°C to 260°C
Standard Applicable	:	JSS51034 & MIL 16878-D & CE
Sizes	:	as per customer requirements

Rolliflex™
Engineered Cables.

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Taluka: Vapi , Dist: Valsad ,
Gujarat - 396191.

www.rolliflex.in