Cables & Wires Catalogue

- LT Control & Power Cables
- PVC Lead Wires/Hook up Wires
- Instrumentation Signal Cables
- Thermocouple Extension & Compensating Cables
- Fire Survival Cables
- High Temperature Cables
- DC Solar Photovoltaic Cables
- Automotive Wires & Cables
- Mineral Insulated Metal Sheathed Cables
- Special Cables & Sleeves
TEMPSENS Instruments (I) Pvt. Ltd is a part of Pyrotech group which was established by four technocrats in 1976 at Udaipur, with its first product as Thermocouples and RTD’s.

Today Tempsens is one of the largest Thermal and Cable solution provider having world class manufacturing facilities, Operations in India, Germany and Indonesia.

Tempsens is a TUV certified ISO 9001:2008 certified company with NABL Accredited Laboratories.

The company is involved into manufacturing of Thermocouples, RTD’s, Thermowells, Cables, Non-Contact Pyrometers, Heaters and Calibration Equipments, Furnaces etc. with Covered Area of 2,70,000 Sq. Ft.

Tempsens is proud of its technical solution, quick delivery, high technical standards and outstanding quality which have been appreciated and highly valued by its customers worldwide.

Tempsens exports to more than 70 countries worldwide.

Tempsens success is driven by its people and their unrelenting focus on delivering results the right way - by operating responsibly, executing with excellence, applying innovative technologies and capturing new opportunities for profitable growth.
FACILITIES FOR CABLES

MANUFACTURING FACILITIES

PVC Cable Plant
- Wire Drawing Machine
- High Speed Bunchers
- PVC/XLPE/LSZH Extruders
- Laying Machine
- Vertical Almylar Tapping Machine
- High Speed Metal Braiding Machine
- Armouring Machine
- Tinning Machine
- NABL Lab for Calibration & Electrical Testing
- Laser Printer
- UPS Backup

High Temperature Cable Plant
- High Speed Bunchers
- Teflon Tape Plant
- Silicon Extruder
- Fluoro Polymer Extruders
- Laying Machine
- Vertical Tapping Machine
- Horizontal Tapping Machines
- Horizontal Fibre Lapping Machines
- Fibre Braiding Machines
- Metal Braiding Machines
- Varnish / Sintering / Horizontal Dry Oven
- NABL Lab for Calibration & Electrical Testing
- Silver Plating Plant
- UPS Backup

MI Cable Plant
- Draw Bench 50 meters
- Horizontal Reducers
- Annealing Furnaces
- MI Polishing Machines
- MgO Sintering Furnace
- MgO Plant

TESTING & CALIBRATION

NABL Accredited Testing Laboratory
- Routine, Acceptance and Type Tests for Cables and Wires as per IS 1554, IS 694, IS 7098, IS 8130, IS 3975, IS 9968, IS 6380, JSS 51034, JSS 51038, MIL 16878, IEC 60332, IEC 754, IEC 60227, IEC 60811, ASTMD 2863, ASTMD 2843, IS 10810, IEC 60502, BS EN 50288-7 etc.
BASICS OF CABLES & WIRES

Conductor
Conductor Insulation
Screening
Inner Sheath
Armouring
Outer Sheath
Drain Wire

INSULATION

Insulation refers to the layer of plastic, polymer or high temperature compound that is applied directly over the conductor. Temp sens provide variety of insulations along with wide temperature range from -267°C to 1200°C.

Temperature range for various insulations are listed below:

<table>
<thead>
<tr>
<th>Insulation Type</th>
<th>Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina Fibre</td>
<td>-73°C to 1200°C</td>
</tr>
<tr>
<td>Ceramic Fibre/Silica</td>
<td>-73°C to 800°C</td>
</tr>
<tr>
<td>Fibre Glass</td>
<td>-73°C to 550°C</td>
</tr>
<tr>
<td>Polyimide</td>
<td>-267°C to 310°C</td>
</tr>
<tr>
<td>PTFE/PFA</td>
<td>-100°C to 260°C</td>
</tr>
<tr>
<td>PEEK</td>
<td>-60°C to 250°C</td>
</tr>
<tr>
<td>FEP</td>
<td>-80°C to 200°C</td>
</tr>
<tr>
<td>SILICON</td>
<td>-50°C to 180°C</td>
</tr>
<tr>
<td>ETFE</td>
<td>-100°C to 150°C</td>
</tr>
<tr>
<td>PVC</td>
<td>-30°C to 105°C</td>
</tr>
<tr>
<td>XLPE</td>
<td>-40°C to 105°C</td>
</tr>
<tr>
<td>HDPE</td>
<td>-50°C to 80°C</td>
</tr>
<tr>
<td>LDPE</td>
<td>-50°C to 70°C</td>
</tr>
<tr>
<td>PUR</td>
<td>-55°C to 80°C</td>
</tr>
<tr>
<td>XLPO</td>
<td>-40°C to 125°C</td>
</tr>
<tr>
<td>Advance Thermal Polymer</td>
<td>68°C to 105°C</td>
</tr>
<tr>
<td>XL-ETFE</td>
<td>-100°C to 200°C</td>
</tr>
</tbody>
</table>

SCREENING

Screening is applied for magnetic and electrical protection. Generally, two types of Screening are available:

- Aluminum Foil Type: Screening is done by helically applied aluminum foil along with copper drain wire with 100% coverage.
- Mesh Braided Type: Screening is done by Copper wire (Bare Copper, Tinned Copper, Nickel Plated Copper, Silver Plated Copper). It is in mesh braided form with 70% to 95% coverage area.

INNER SHEATH
PVC, Silicon, Teflon, Polyimide, Fibre Glass, ETFE, HDPE, LDPE, XLPO etc. (as listed in insulation)

MECHANICAL PROTECTION

- G.I. Armouring (Round wire / Flat strip as per IS 3975:99)
- Wire Braiding as per JSS 51038, BS 50288-7

OUTER SHEATH
PVC, Silicon, Teflon, Polyimide, Fibre Glass, PUR, ETFE, HDPE, LDPE, XLPO etc. (as listed in insulation)

The center component of any cable is the conductor, which carries the signal or power through that cable. For signal & power transmission copper is the most commonly used conductor.

Copper Conductors
Annealed Bare Copper(ABC), Tinned Plated Copper(TPC), Nickel Plated Copper(NPC), Silver Plated Copper(SPC), NPC 27%

Thermocouple Conductors
Thermocouple grade conductor(TC)
Extension grade conductor(EX)
Compensating grade conductor(C)

Other Conductors
Pure Nickel Conductor(Ni) etc.
LT CONTROL & POWER CABLES

Control Cable used for transmission of low voltage signal data that have to control equipment whereas, power cable transfer high array signal from the source to the equipments.

TECHNICAL SPECIFICATION

- **Construction**: Single Core / Multi Core
- **Voltage Grade**: Upto 1.1 KV
- **Conductor**: Electrolytic Grade Bare Copper/Tinned Copper
- **Conductor Size**: 0.50, 0.75, 1.0, 1.5, 2.5, 4.0, 6.0, 10.0, 16.0, 25.0, 35.0 upto 300 Sq. mm
- **Conductor Stranding**: Solid or Multi Strand
- **Core Insulation**: PVC/HR PVC/PE/XLPE/LSZH Polymer/FR PVC/FRLS PVC, XLPO etc.
- **Core Identification**: Upto 5 cores by Different Colours
- **Inner/Outer Sheath**: PVC/HR PVC/PE/LSZH Polymer/FR PVC/FRLS PVC, PUR, XLPO etc.
- **Armouring**: G.I. Round Wire / Flat Strip Armouring(As per IS 3975 : 99) / Wire Braiding
- **Standards**: As per IS 694, IS 1554, IS 7098, IEC 60227, IEC 60502-1, IEC 60332

FEATURES

- Max. Temperature range up to 125°C
- High temperature also available
- Flame Retardant & Low smoke availability
- Fire Resist option available
- Heat resist
- Halogen free Low smoke availability
- Resist to oil, moisture, chemical, whether etc.
- Armoured / Un-Armoured option available
- Screened control Cable option available
- Available with different voltage cable up to 1.1 KV

PVC LEAD WIRES

Tempsens provide wide range of Lead wire or Hook up wires with different PVC insulations

TECHNICAL SPECIFICATION

- **Conductor**: Electrolytic Grade Bare Copper, Tinned Copper
- **Conductor Size**: 0.20, 0.5, 1.0, 1.5, 2.5 upto 240 sq. mm
- **Conductor Stranding**: Solid, Multistrand, Flexible
- **Voltage Rating**: Up to 1.1 KV
- **Insulation**: PVC, HR PVC, FR PVC, FRLS PVC, LSZH Polymer, HFFR Polymer
- **Standards**: IS 694, IS 8130, IS 5831 : 84

FEATURES

- Max. Temp. Up to 90°C
- Good Flexibility
- Excellent Resist to Oil, Moist, Fluids and Chemicals
- Excellent Di-electric Properties
- Excellent Flame Retardant, Low smoke
- Halogen free
- Color as per requirement
- Color lining available(Optional)
Instrumentation Signal Cables minimize external interference during transmitting signals, deliver clear signals, in harsh environments and general manufacturing operations. These cables are specially designed for use in communication and instrumentation systems. These cables are available in Shielded/Un-Shielded and Armoured/Un-Armoured options.

TECHNICAL SPECIFICATION

**Construction**: Single / Multi, Pair / Triads  
**Voltage Grade**: Upto 1.1 KV  
**Conductor**: Electrolytic Grade Bare Copper/Tinned Copper  
**Conductor Size**: 0.50, 0.75, 1.0, 1.5, 2.5 Sq. mm upto 48 pair  
**Conductor Stranding**: Solid or Multi Strand  
**Core Insulation**: PVC/HR PVC/PE/XLPE/LSZH Polymer/FR/FRLS PVC, XLPO etc.  
**Screening Method**: Individual and Overall(F type)/Overall Shield (G type)  
**Screening**: Aluminum Foil with Drain Wire/Mesh Braided  
**Inner/Outer Sheath**: PVC/HR PVC/PE/LSZH Polymer/FR PVC, PUR, XLPO etc.  
**Rip Cord**: For easy removal of sheath  
**Armouring**: G.I. Round Wire / Flat Strip Armouring  
**Standards**: As per BS 5308 Part 1 and Part 2, IS 1554, EN 50288-7, IS 7098

FEATURES

- Max. Temp. Range upto 125°C  
- Flexible & Versatile  
- Flame Retardant & Low smoke availability  
- High Temperature option also available  
- Resist to Oil, Corrosion & Moisture  
- High mechanical strength  
- Superior low temperature Properties  
- Screened/Unscreened  
- High Insulation resistance  
- Low dielectric Losses  
- Armoured/Unarmoured  
- Fire resist option available

ELECTRICAL CHARACTERISTICS FOR INSTRUMENTATION CABLES

<table>
<thead>
<tr>
<th>Conductor Size</th>
<th>Resistance at 20°C</th>
<th>Mutual Capacitance (PE)</th>
<th>Mutual Capacitance (PVC)</th>
<th>L/R Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Ω/km)</td>
<td>(nF/km)</td>
<td>(nF/km)</td>
<td>(nF/km)</td>
</tr>
<tr>
<td>(mm²)</td>
<td></td>
<td>Overall Screen</td>
<td>Individual Screen</td>
<td>Pair adjacent core</td>
</tr>
<tr>
<td>0.50</td>
<td>36.8</td>
<td>75</td>
<td>115</td>
<td>250</td>
</tr>
<tr>
<td>0.75</td>
<td>25.0</td>
<td>75</td>
<td>115</td>
<td>250</td>
</tr>
<tr>
<td>1.00</td>
<td>18.4</td>
<td>75</td>
<td>115</td>
<td>250</td>
</tr>
<tr>
<td>1.50</td>
<td>12.3</td>
<td>85</td>
<td>120</td>
<td>250</td>
</tr>
</tbody>
</table>
**FEATURES**

- Available in Thermocouple extension and compensating grades.
- Available with special limit of tolerance as per ANSI MC 96.1/IEC 60584.3
- Available in all colour codes.
- Complying with IS 8784, IEC 60584 & ANSI 96.1
- Flame retardant
- Fire Resist option available
- Halogen free option available
- Available with Chemical resist, Water resist, Abrasion resist & Heat resist option
- Optional NABL Calibration report

**TECHNICAL SPECIFICATION**

- Construction: Single or Multi pair
- Voltage Grade: Up to 1.1 KV
- Conductor: TC, EX, C (Refer Table No.-1)
- Type of Conductor: K, T, J, E, N, R, S, B, D, C
- Conductor Size: AWG 12 to AWG 32 upto 48 pair
- Conductor Stranding: Solid or Multi strand
- Core Insulation: PVC, PTFE, FEP, PFA, Silicon, PEEK, Polymide, Fibre Glass, Ceramic Fibre, XLPO, XL-ETF etc.
- Screening: Aluminum Foil with drain wire / Mesh Braided
- Inner/Outer Sheath: PVC, Teflon, Polymide, Fibre Glass, Ceramic Fibre, PUR, XLPO, XLETF etc.
- Rip Cord: For easy removal of sheath
- Armouring: G.I. Round Wire/Flat Strip Armouring/Wire Braiding
- Color Code: Refer Table No. 1
- Standards: ANSI MC 96.1, IS 8784, IEC 60584.3

**Colour Code & Accuracy of Thermocouple, Extension & Compensating Cables (Table No. 1)**

<table>
<thead>
<tr>
<th>T/C</th>
<th>CONDUCTOR</th>
<th>CONDUCTOR COMBINATIONS</th>
<th>COLOR CODE</th>
<th>TOLERANCE CLASS AS PER IEC 584.3</th>
<th>CABLE TEMP. RANGE°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>CHROMEL</td>
<td>ALUMEL</td>
<td>K</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>KCA</td>
<td>IRON</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>KCB</td>
<td>COPPER</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>T</td>
<td>COPPER</td>
<td>CONSTANTAN</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>TX</td>
<td>IRON</td>
<td>TX</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>J</td>
<td>COPPER</td>
<td>CONSTANTAN</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>JX</td>
<td>IRON</td>
<td>JX</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>N</td>
<td>Nicrosil</td>
<td>NISIL</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>NX</td>
<td>Nicrosil</td>
<td>NX</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>E</td>
<td>CHROMEL</td>
<td>CONSTANTAN</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>CHROMEL</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>R</td>
<td>COPPER</td>
<td>COPPER LOW VALUE NICKEL</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>S</td>
<td>COPPER</td>
<td>COPPER LOW VALUE NICKEL</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>B</td>
<td>COPPER</td>
<td>-</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>D</td>
<td>ALLOY 308°</td>
<td>ALLOY 320°</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
<tr>
<td>C</td>
<td>ALLOY 406°</td>
<td>ALLOY 420°</td>
<td>-</td>
<td>±0.5°C or 0.4% of T</td>
<td>±2.5°C or 0.75% of T</td>
</tr>
</tbody>
</table>
RTD TRIAD CABLES

RTD triad cables are used to carry the RTD signals to the control room or field mounted instruments.

**TECHNICAL SPECIFICATION**

- **Construction**: Single / Multi Triads
- **Voltage Grade**: Upto 1.1 KV
- **Conductor**: Electrolytic Grade Bare Copper/Tinned Copper
- **Conductor Size**: 0.50, 0.75, 1.0, 1.5 Sq. mm upto 36 triad
- **Conductor Stranding**: Solid or Multi Strand
- **Core Insulation**: PVC/HR, PVC/XLPE/XLPO/LSZH Polymer/FR/FRLS, PVC, XLPO etc.
- **Screening Method**: Individual and Overall/Overall Shield
- **Screening**: Aluminum Foil with Drain Wire/Mesh Braided
- **Inner/Outer Sheath**: PVC/HR, PVC/LSZH Polymer/FR, PVC/FRLS, PVC, PUR, XLPO etc.
- **Rip Cord**: For easy removal of sheath
- **Armouring**: G.I. Round Wire / Flat Strip Armouring
- **Standards**: As per BS 5308 Part 1 and Part 2, IS 1554, EN 50288-7, IS 7098, DIN 43760

FIRE SURVIVAL CABLES

Fire Survival Cables are used in the installations where vital circuits are required to continue operation under fire conditions. In all disaster, fire smoke head & toxic fumes are the main obstacles to safe evacuation of a building area. A major contribution towards overcoming these hazards is the use of fire survival cables & halogen free cables.

**TECHNICAL SPECIFICATION**

- **Conductor**: Electrolytic Grade Bare Copper/Tinned Copper
- **Fire Resist Heat Barrier**: Mica Heat Barrier Tape
- **Insulation**: XLPE/SILICON
- **Screening**: Al-myler/Metal braided
- **Inner/Outer Sheath**: Halogen Free Low Smoke Polymeric compound
- **Armouring**: G.I. Round Wire / G.I. Flat Strip
- **Standard**: IEC 60331, IEC 60332, IEC 60754, BS 6387, EN 50290-2-27, BS 7655, BS 7629-1, IS 7098, IS9968
High temperature cables are used in areas where both working temperature and ambient temperature are too high. We offer a variety of high temperature insulations such as alumina yarn, ceramic yarn, fibre glass, fluoroplastic polymers and elastomer to perform in continuos temperature up to 1200°C.

**TECHNICAL SPECIFICATION**

- **Construction**: Single / Multi Cores, Single / Multi Pairs.
- **Voltage Grade**: 250/600/1100 V
- **Conductor Type**: Annealed Bare Copper/Tinned Copper, Silver Plated Copper, Nickel Plated Copper, Pure Nickel, NPC 27%
- **Conductor Size**: From 0.22 Sq. mm to 240 Sq. mm
- **Heat Barrier Tape (Optional)**: Mica Tape, Polymide Tape
- **Core Insulation**: FEP, PTFE, PFA, Silicon, Polyimide, Fibre Glass, Ceramic Fibre, Alumina Fibre, PEEK, XL-ETFE
- **Screening Method**: Individual and / or Overall
- **Screening**: Aluminum mylar with drain wire / Mesh Braided
- **Inner Sheath**: FEP, PTFE, ETFE, PFA, Silicon Polyimide, Fibre Glass, Ceramic Fibre
- **Outer Sheath**: FEP PTFE, ETFE, PFA, Silicon, Polyimide, Fibre Glass, Ceramic Fibre, Alumina Fibre, XL-ETFE
- **Armouring**: Stainless Steel Wire Braiding
- **Generally Confirm to**: JSS 51034, JSS 51038, JSS 51037, ASTM B298, ASTM B355, MIL 81381, MIL-DTL-27500H, MIL 16878, IS 9968, VDE 207 Part 6

**FEATURES**

- Available in multiple insulations having different properties.
- Suitable up to 1200°C.
- Low Di-electric Constant.
- Excellent Flame Retardant & Heat Resist Properties.
- Halogen Free Insulation available with Silicon, FEP, PTFE, ETFE & PFA materials
- Excellent Flexibility
- High Thermal Stability.
- Resist to Chemical, Acid, Weather etc.
- Radiation Resistant
- LCSO Approved

**Insulation Temperature Range Characteristics**

<table>
<thead>
<tr>
<th>Insulation</th>
<th>Temperature Range</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina Fibre</td>
<td>-73°C to 1200°C</td>
<td>Excellent Temperature Resistance</td>
</tr>
<tr>
<td>Ceramic Fibre</td>
<td>-73°C to 800°C</td>
<td>Excellent Temperature Resistance</td>
</tr>
<tr>
<td>Fibre Glass</td>
<td>-73°C to 550°C</td>
<td>High Temperature Resistance</td>
</tr>
<tr>
<td>Polyimide</td>
<td>-267°C to 310°C</td>
<td>Thin insulation, Flame retardant, Different colors available</td>
</tr>
<tr>
<td>PFA</td>
<td>-100°C to 260°C</td>
<td>Chemical Resistance, High Dielectric strength, Thin Insulation</td>
</tr>
<tr>
<td>PTFE</td>
<td>-100°C to 260°C</td>
<td>Excellent chemical resistance</td>
</tr>
<tr>
<td>PEEK</td>
<td>-60°C to 250°C</td>
<td>High Mechanical Strength, Radiation resistance</td>
</tr>
<tr>
<td>FEP</td>
<td>-80°C to 200°C</td>
<td>Chemical Resistance, High Dielectric strength, Thin Insulation</td>
</tr>
<tr>
<td>ETFE</td>
<td>-100°C to 150°C</td>
<td>Good Mechanical Strength</td>
</tr>
<tr>
<td>Silicon Rubber</td>
<td>-40°C to 180°C</td>
<td>Flexible, Abrasion &amp; Radiation resistance</td>
</tr>
<tr>
<td>XL-ETFE</td>
<td>-100°C to 200°C</td>
<td>High radiation resistance, improved mechanical &amp; thermal properties</td>
</tr>
</tbody>
</table>
We provide a range of single & multi core heat resistance cable for temperature range upto 800°C. Our Heat Resistance Power Cables are suitable to resist in chemical, fire and flame atmosphere.

**TECHNICAL SPECIFICATION**

- **Construction**: Single / Multi Cores
- **Voltage Grade**: Up to 1.1 KV Grade
- **Conductor**: ABC, NPC, Pure Nickel, NPC 27%
- **Conductor Size**: 1.5, 2.5, 4.0, 6.0, 10.0, 16.0, 25.0, 35.0 Sq mm upto 240 sq. mm
- **Heat Barrier Tape**: Polyimide Tape
- **Conductor Stranding**: Multistrand as per IS 8130:84/IEC60228
- **Core Insulation**: PTFE, FEP, PFA, Silicon, Fibre Glass, Ceramic Fibre etc.
- **Isolator**: Polyimide, Sintered PTFE Foil
- **Fire Barrier Tape**: Glass Mica Tape
- **Screening**: Mesh Braided(Overall)
- **Inner/Outer Sheath**: Teflon, Fibre Glass, Ceramic Fibre etc.
- **Outer Breading**: Asbestos
- **Armouring**: SS Braiding
- **Standards**: As per IS 8130:84, JSS 51038, JSS 51037

**FEATURES**
- Max. Temp. Up to 800°C
- Excellent Heat Resistant
- Excellent Abrasion Resistance
- Excellent Flame Retardant
- Good Thermal Stability
- Good Chemical Resistivity

**APPLICATIONS**
- Steel
- Glass
- Ceramic Metal Industries
- Chemical & Fertilizers
- Refractories
- Power
- Oil & Gas
- Cement
DC SOLAR PHOTOVOLTAIC CABLES

DC Solar Cable are single core copper cables each for +ve and -ve, They are insulated with cross linkable polyolefin compound and sheathed with halogen free polyolefin compound. (Generally conforming to BS EN 50618:2014 Standard)

### SPECIAL PROPERTIES OF SOLAR CABLES

- Lasts up to 30 years even under tough external conditions.
- Annealed Tinned Copper Conductor (Class 5 as per IEC-60228)
- Resists extreme temperatures (-40°C to 120°C maximum at the core) and ozone resistant.
- Full protection against ultraviolet rays.
- Low smoke emission & low toxicity / corrosivity during fire.
- Flame retardant, fire retardant.
- Fast & Easy installation with color identification.
- In accordance with new environmental regulations.
- Suitable to common connector types.
- Electron-Beam & Silane Cross Linked

### CHEMICAL PROPERTIES

- Weather resistant & UV resistant
- Resistant to mineral oils & chemicals
- Resistant to acids & alkaline
- Ammonia Resistance

### THERMAL PROPERTIES

- Maximum Conductor temperature of operation at 120°C during 20000 hours
- Ambient temperature: -40°C to +90°C
- Generally conforming to National/International standards

### ELECTRICAL PROPERTIES

- Voltage rating: 1.5 (1.8) KV DC / 0.6 / 1.0 (1.2) KV AC
- High voltage test 6.5KV AC/15KV DC for 5 minutes.
- Min. Insulation resistance @ 90°C = 0.20MΩ/km
- Spark test - 6000 V AC(8000 V DC)

### MECHANICAL PROPERTIES

- Resistant to Impact, tear & abrasion
- Minimum bending radius - 4 times of overall diameter.
- Safe pulling force -50 N/sqmm.

### OTHER AVAILABLE DESIGNS

**Design I** : Insulated and sheathed with cross linkable LSHZ which has UV as well as ozone protection properties (generally conforming to BS EN 50618:2014).

**Design II** : Insulated with HR105°C PVC Compound and sheathed with UV Stabilized HR 105°C PVC Compound (generally conforming to IS-694 and IS-1554).

**Design III** : Insulated with XPLE compound and Sheathed with UV Stabilized PVC ST2 Compound (generally confirming to IS 7098 Part 1 Guidelines)

### SIZE

<table>
<thead>
<tr>
<th>Max. Conductor</th>
<th>Average Diameter</th>
<th>Approx. Overall Diameter</th>
<th>Approximate Overall weight</th>
<th>Minimum Bending radius</th>
<th>Current rating under continuous operation at 90°C and ambient temperature 40°C</th>
<th>Short circuit current rating for 1 sec. duration</th>
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<tbody>
<tr>
<td>Cross-sectional area in (sqmm)</td>
<td>D.C. Resistance at 20°C in ohm/km</td>
<td>of Conductor (in mm)</td>
<td>of cable (in mm)</td>
<td>(in kg/km)</td>
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AUTOMOTIVE WIRES AND CABLES

We are a leading manufacturer of automotive wire and cable. Automotive wiring to be used at 60 V DC or less in surface vehicles electrical system in various applications. We provide Automotive wires in a variety of gauge sizes and colors premium-grade PVC insulation. Automotive wires and cables are used in wiring harness assemblies for cars, light, medium, heavy and industrial trucks, motorcycles, buses, agricultural equipment, recreational vehicles, construction equipment, Train equipment, and off-road vehicles etc.

GERMAN STANDARD

Standard Compliance : ISO 6722 (Class B, C, D,F, H, E)
Multi-Core Cables : FLYY, FLYZ, FLRYB11Y, FLR2X11Y, FL6Y2G
Code Designation : FL – Automotive Wire, FLZ – Automotive Ignition Wire, Y=soft-PVC (polyvinyl chloride) YW=soft-PVC, heat-resistant, hot-pressure resistant, 4Y=PA (polyamide) 6Y=FEP, 7Y=ETFE, 2X=XLPE, 4, 2G=SiR(Silicone rubber), 14Y= PFA, R=Reduced insulation trickiness, U=Ultra thin Insulation, C=Copper braiding, B=Screen(film/foil shield)

JAPANESE STANDARD

Standard Compliance : JASO D611-94, JASO D611-09, JASO D611-92, JASO D608 JIS 3406
Cables : AV, AV-V, AVS, AVSS, AVSSH, AEX, AEXF, AEXSF, AEXHSF, ATW-FEP, AHFX, HAEHX, HFSSF-T3, AVSSX/AESSX, CAVS, EB/HDEB, AEX-BS, AEXHF-BS, AESSXF/ALS, AVSS-BS, APEX-BS, AVSSXF
Code Designation : A= automotive low tension cable, V=polyvinyl chloride insulation, S=thin wall insulation, SS=extreme thin wall insulation, XX=cross linked insulation, T=twisted

AMERICAN STANDARD

Standard Compliance : SAE J1127 – Automotive Wire, SAE J1128 – Battery Cable
Cables : TWP=thin wall, thermoplastic insulation low-tension cable for accumulator. GPT=thermoplastic insulation low-tension cable. TXL=thin-wall low-tension cables for automobiles. GXL=cross linked polyolefin insulation low-tension cables for automobiles. SXL=cross linked polyolefin insulation special purpose low-tension cables for automobiles. HDT=heavy duty, thermoplastic insulation low-tension cable for automobiles. SGT=starter or ground, general purpose thermoplastic insulated. STX=APC conductor, thin wall XLPO insulation. SGX=APC conductor, general purpose XLPO insulation. WTA=soft annealed copper conductor ultra thin wall PVC insulation. WTC=soft annealed copper conductor ultra thin wall PVC insulation.
Linear Heat Detection Cable consist of a twisted pair of extremely low resistance tri metallic conductors, coated in advanced temperature sensitive thermal polymers which is chemically engineered to breakdown at particular fixed temperatures allowing the twisted conductors to make contact and initiate an alarm at the control panel. This linear cable can detect a fire anywhere along its entire length.

The proper temperature model must be chosen to provide the fastest alarm response to a potential fire conditions without creating false alarm conditions as it’s a co-axial cable which exerts a defined change in electrical resistance of internal polymer when subjected to changes in surface temperatures. Fault indication of open and short circuit condition on the sensor cable can be provided by system monitoring through an associated electronic interface unit.

**TECHNICAL SPECIFICATION**

- **Construction**: Dual Insulated, twisted pair tri-matellic cores
- **Insulation**: 1.1 Kv tested Advance Thermal Polymers
- **Wire Overall Diameter**: 3.60 mm (Approx)
- **Minimum Bending Radius**: 50 mm > 0°C
  - 100 mm < 0°C
- **Ambient Temperature**: 68°C to 78°C version
  - 88°C to 105°C version
- **Maximum Rated Voltage**: 30 Vac /42 Vdc
- **Resistance**: 100 Ohm/Km
- **Maximum Zone Length**: 3000 mtr
- **Capacitance**: 88-150 pF/mtr
- **Inductance**: 540-1050 H/mtr
- **Outer Color**: Red for 68°C
  - Yellow for 78°C
  - Light Green for 88°C
  - Dark Green for 105°C
- **Available**: 200 / 300 / 500 Mtr Length

**INDUSTRY SECTOR**

- Tunnels
- Mining
- Manufacturing
- Warehousing
- Cold Stores
- Communications & General Industries

**INDUSTRY APPLICATION**

- Cable Trays
- Conveyor Belts
- Rack Storage
- Floating Roof Storage Tanks
- Refrigerated storage
- Pipelines
- Power equipments Switchgear, transformer, motors and fans
RS-485 Cable

Electrically radiated noise frequently present in factory floor environments can interfere with device to device communication circuit, causing delayed signals & data loss. So to keep away from these problems RS 485 cable with low capacitance, high quality & specific impedance are used for RS-232/RS-422 and RS 485 communication application in industrial networking field.

Construction
- Design: 1 Pair, 2 Pair, 3 Pair
- Conductor Size: 24 AWG/22 AWG
- Insulation: PE
- Screening: Aluminium Myler with Drain Wire.
- Braiding: Annealed Tinned Copper with more than 65% coverage
- Outer Sheath: PVC
- Armouring (Optional): GI Armouring (IS 3975)

Load Cell Cable

Tempsens provide Load cell cables generally of 6 cores and 7 cores. In industries multiple load cells are need to be connected together by Parallel or serial connection for that Load cell cables are required. A six wire load cell cable, besides having +/- excitation and +/- signal lines also has +/- sense lines.
- Conductor Type: Electrolytic Stranded Annealed Bare Copper Conductor, Tinned Plated Copper and other on request
- Conductor Size: AWG 24, 22, 20, 18
- Insulation Material: PVC / PTFE / PE
- Isolator: Polyimide Tape / Polyester Tape
- Foil Shield (Optional): Aluminum foil with drain wire
- Overall Metal Shielding: Tinned Plated Copper Shielding / Bare Copper Shielding
- Armouring (Optional): G.I. Round Wire/G.I. Flat Strip/SS Wire Braiding
- Outer Sheath: PVC/PTFE/FEP etc.

SLEEVES

Tempsens offer variety of Sleeves suitable for wide temperature range with various insulation such as PTFE, FEP, Silicon, Fibre Glass, S.S. braided, Polyimide & PVC.

- Inner Diameter: 0.50 mm to 30 mm or as per requirement
- Color: As per Customer requirement

FEATURES
- Max. Temp. Up to 500°C
- Excellent Heat Resistant
- Excellent Dielectric Strength
- Excellent Chemical Resistant
- Non Stick Property
- Weather Resistant
- Flame Retardant
- Good Thermal Stability
Mineral insulated cables are designed for high-temperature applications and particularly strict requirements with regard to mechanical, chemical and electrical stability.

Mineral insulated thermocouple cables have inner conductors of Thermocouple base material as per standard ASTM E 585/585M and ASTM E 839.

Mineral insulated RTD cables have inner conductors of copper, copper-nickel alloys, nickel etc. metals.

**OTHER SPECIAL TYPE OF MI CABLES**

**Mineral Insulated Heating Cables**

Mineral Insulated Heating Cables are constructed with a solid resistor element embedded in highly compacted mineral insulation. MI cables are built to handle high temperature, high wattage applications.

**Mineral Insulated Copper Cables (MI Power Cables)**

Mineral Insulated Copper cable is used as an electric cable for critical areas of plant and follows standard of IEC/EN 60702 Part 1. It has two voltage grade 500V & 750V

**Coaxial Cables/Triaxial Cables**

Triaxial cable is a type of electrical cable similar to coaxial cable, but with the addition of an extra layer of insulation and a second conducting sheath. It provides greater bandwidth and rejection of interference than coaxial cable.

**SPND**

Self-Powered Neutron Detectors are in-core flux monitors in nuclear power reactors. The typical SPND is a coaxial cable consisting of an inner electrode (the emitter), surrounded by insulation and an outer electrode (the collector).

**LINEAR HEAT DETECTOR CABLE**

- Semiconductor insulation
- Double Metallic Sheathed
- Negative Temperature Gradient
- Male - Female Edison Connectors

**Application**: To detect fire in Ship Engine area and provide alarm to take necessary action