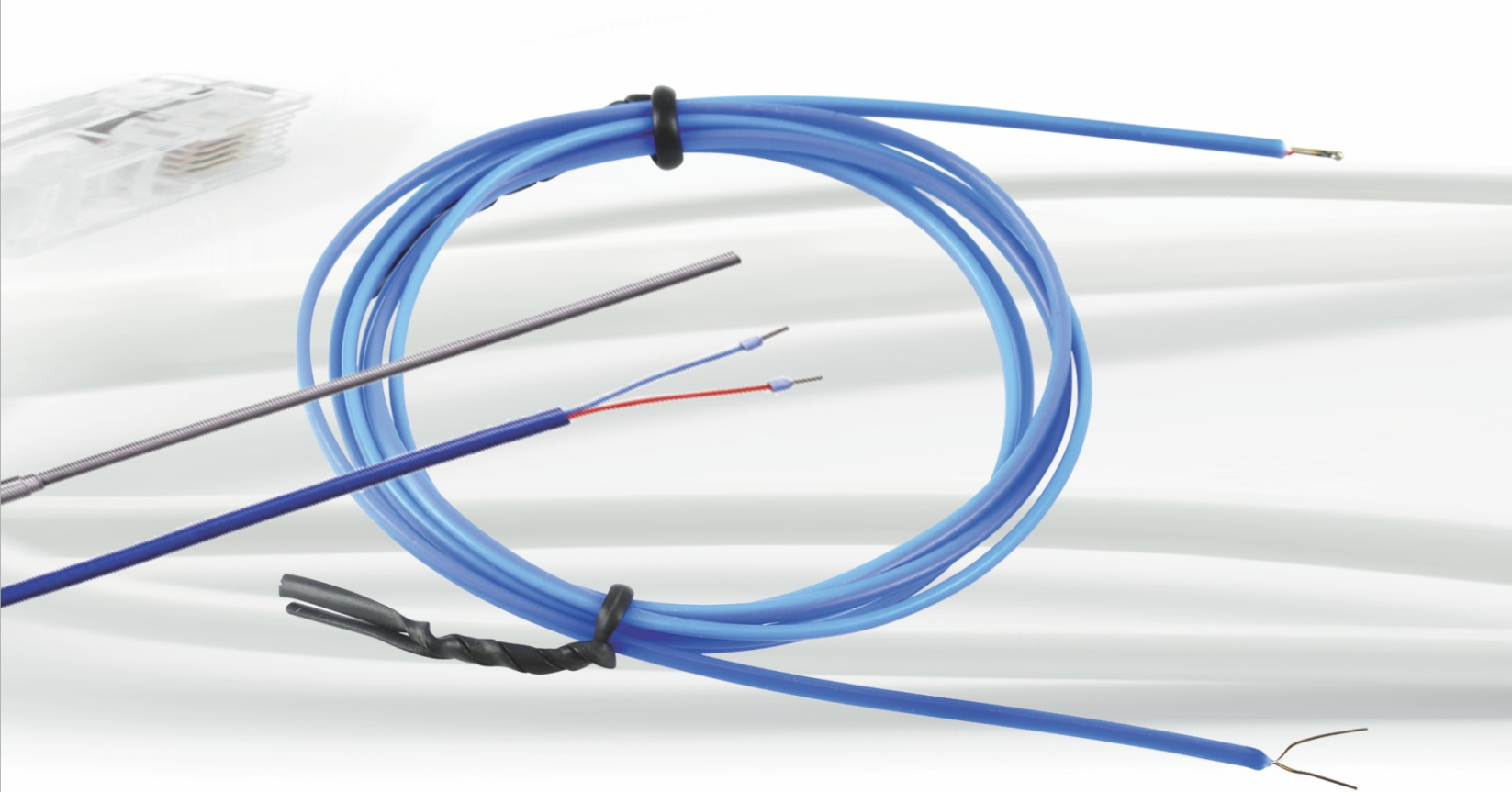




Empowering Process Management

RTD, THERMOCOUPLE AND HIGH TEMPERATURE CABLE



ELTEC CABLES & INSTRUMENTS

RTD AND THERMOCOUPLE CABLE

RTD CABLE

RTD CABLE are used to transmit Signal from RTD SENSOR to control Unit and are available in 2,3,4,6,8,9. core as per requirement in SPC. TPC. NPC. or bare copper conductor.

Screening & Braiding as per the client's requirement. Insulation and sheathing as per table 02

THERMOCOUPLE ORIGINAL CABLE

Original Thermocouple Wire are used directly as THERMOCOUPLE or for THERMOCOUPLE ASSEMBLIES manufacturing. Available Thermocouple calibration : J, K, T, E & N in ORIGINAL GRADE as per table 01.

TABLE 01 :

Type of TC	Metal Alloy +ve Irg	Metal Alloy-ve Irg	Temp. Range
J	Iron, Fe	Constantan - Cu Ni	-210 °C - 760 °C
K	Nickel Chromium	Nickel Aluminum	-270 °C - 1372 °C
T	Copper, Cu	Constantan - Cu Ni	-270 °C - 400 °C
E	Chromal, Ni - Cr	Constantan - Cu Ni	-270 °C - 1000 °C
N	Ni Cr Si	Ni Si Mg	-270 °C - 1300 °C

THERMOCOUPLE COMPENSATING / EXTENSION CABLE

Eltec manufacture wide range of THERMOCOUPLE EXTENSION / COMPENSATING CABLE used for carrying data signals generated by THERMOCOUPLE to the control panel.

Available Thermocouple Calibration in EXTENSION & COMPENSATING Grade are J, K, T, E, N, R, S, B etc.

Insulation and sheathing as per table 02

TABLE 02

CORE INSULATION	SHEATH INSULATION	MAX. TEMP.	INSULATING MATERIAL CHARACTERISTICS
PTFE TAPPED	PTFE	250 °C	Resistance to Abrasion, oil, moisture etc with high electrical properties.
FIBER GLASS BRAIDED	FIBER GLASS	400 °C	Good temperature resistant
CERAMIC YARN BRAIDED	CERAMIC YARN	800 °C	High temperature resistant
SILICA YARN BRAIDED	SILICA YARN	1200 °C	High temperature resistant
SILICONE EXTRUDED	SILICONE EXTRUDED	200 °C	Excellent flexibility with good temperature resistant
KAPTON TAPPED	KAPTON TAPPED	310 °C	Thin Insulation, temperature resistant
PVC	PVC	70 °C	Versatile for normal application



CONSTRUCTIONAL DETAILS

Conductor	Electrolytic grade SPC, NPC, TPC
Core Insulation	PTFE / FIBER GLASS / CERAMIC / SILICA YARN / KAPTON
Core Laying	Cores twisted together
No. of Pair/ Triad	1, 2, 3 or more
Screening	Silver plated copper wire, Tin plated copper, Bare Copper or SS.
Outer Sheath	PTFE / FIBER GLASS / CERAMIC / SILICA YARN / KAPTON
Braiding	Fine annealed soft mirror finished SS WIRE
Armoring	GI Round Wire / strip for PVC
Color Coding	As per DIN 43760 or as per client's requirement

Conductor	Original TC GRADE as per table 01
Core Insulation	PTFE / FIBER GLASS / CERAMIC / SILICA YARN / KAPTON
Core Laying	Parallel or twisted
No. of Pair	1, 2, or more
Outer Sheath	PTFE / FIBER GLASS / CERAMIC / SILICA YARN / KAPTON
Braiding	Fine annealed soft mirror finished SS WIRE
Color Coding	As per IEC, ANSI, DIN etc. Refer Table 04

Conductor	THERMOCOUPLE COMPENSATING GRADE
Core Insulation	PTFE / FIBER GLASS / PVC etc. As per the table 02
Core Laying	Parallel or twisted
No. of Pair	1, 2, or more
Screening	Braided Copper wires / SPC or TPC wire / Alu. Mylar with drain wire
Outer Sheath	PTFE / FIBER GLASS / CERAMIC / SILICA YARN / KAPTON
Braiding	Fine annealed soft mirror finished SS WIRE
Armoring	GI Round Wire / strip for PVC
Color Coding	As per IEC. ANSI, DIN etc. Refer Table 04.

TABLE No. 03 : CHARACTERISTICS OF VARIOUS INSULATED MATERIAL

Material	Max Temp	Flexibility	Flame Retardness	Abrasion	Acid	Solvent	Base	Moisture
P.V.C.	85 °C	GOOD	GOOD	GOOD	GOOD	FAIR	GOOD	GOOD
FIBER GLASS	400 °C	GOOD	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	GOOD
PTFE TAPE	250 °C	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
FEP	200 °C	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
PFA	260 °C	AVERAGE	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
SILICON	200 °C	EXCELLENT	GOOD	FAIR	POOR	FAIR	GOOD	GOOD



HIGH TEMP PTFE. AND FIBER GLASS CABLE

PTFE INSULATED WIRE & CABLE

PTFE Cables have outstanding mechanical & electrical properties. They are heat resistant and have its application for temperature range from **-65 °C to 260 °C**.

In most adverse industrial conditions, where chemical fumes & other liquids make all other types of cable vulnerable, PTFE polymer becomes an excellent solution as it is chemically inert to most of industrial chemicals. Its outstanding dielectric properties even at high elevated temperatures make it suitable for harsh industrial applications.

The PTFE equipment wires are as per US Military **MIL-W-16878D** and Indian defense specifications **JSS 51034.92** As per these standards, PTFE wires are classified in three main working voltage grades.

ADVANTAGES OF PTFE insulated WIRES & CABLES

- High dielectric values resulting in excellent space & weight saving.
- Wide operating temperature from -65 °C to 260 °C.
- Inert to most chemical & fluids even at elevated temperature & pressure.
- Unaffected by oils, lubricants & hydraulic fluids.
- Non flammable, non toxic, resistant to solder iron damage.
- Suitable for high frequency operation.
- Immune to agene, fungus & water absorption.
- Resistance to UV resistance & stress creaking.
- High strain & abrasion resistance.

HIGH TEMPERATURE FIBER GLASS CABLES

FIBER GLASS CABLE are high temperature cable and has an outstanding and unique combination of electrical, mechanical, thermal & chemical properties. They are manufactured with braided FIBER GLASS yarn of high temperature and varnished.

FIBER GLASS Cables are used for high temperature application in MOTORS, TRANSFORMERS, LED WIRE, HEATERS & FURNACES where conventional PVC wires are not suitable. VARNISHED FIBER GLASS CABLE are recommended for continues use at 130 °C to 180 °C.

HV TEST

GRADE	SPARK TESTING	DIE ELECTRIC TESTING
ET (250 V)	2500 V ACrms	1500 V ACrms
E (600 V)	3400 V ACrms	2000 V ACrms
EE (1000 V)	5000 V ACrms	3000 V ACrms

CONSTRUCTIONAL DETAILS

Conductor	Soft Annealed Silver Plated Copper or Nickel Plated Copper wires.
Available Sizes	Refer Table 05
No. of cores	Single core and Multicore
Core Insulation	Spirally Wrapped PTFE Tape and Sintered
Core Laying	Twisted
Screening	SPC/ TPC /SS braiding
Outer Sheath	Spirally Wrapped PTFE tape and Sintered
Braiding	Fine annealed soft mirror finished SS WIRE

FEW IMPORTANT PTFE WIRE & CABLE APPLICATION




































































- Hook up wires for panels
- Thermocouple & RTD Cables
- High performance motors, transformer & rectifiers
- Wiring for Heaters, Ovens & Furnace
- Equipment for Aircraft, Defense, Satellite & Radar
- Process Instrumentation
- Wire Harness assembly
- Medical & Scientific Instruments
- Electronics & Communication Equipment
- Sensors, Load Cells Pressure Transducers

Conductor	Bare copper wires, nickel plated copper, tin plated copper, Copper SS Mix wires for heaters.
Available Sizes	0.5 sq. mm to 90 sq mm
Core Insulation	Varnished Fiber Glass
Core Laying	Cores parallel for 2 cores & twisted for more
No. of Pair	1.2 or more
Outer Sheath	Varnished Fiber Glass
Braiding	Fine annealed soft mirror finished SS WIRE



International Thermocouple Color Codes - Thermocouple and Extension Grade Wires

Table 04

	United States Color codes  ANSI MC96.1 1982		IEC 60584-3 Color coding 		Redundant national Color coding for insulation of thermocouple cable			
	Thermocouple Grade	Extension Grade	Thermocouple Grade	Intrinsically Safe	British to BS1843 	German to DIN 13711 	French to NFC 42324 	Japanese to JIS C 1610-1981 
Type K Thermocouple	K K 	K X 						
Type T Thermocouple	T T 	T X 						
Type J Thermocouple	J J 	J X 						
Type N Thermocouple	N N 	N X 						
Type E Thermocouple	E E 	E X 						
Type S Thermocouple	None Established	S X 						
Type R Thermocouple	None Established	R X 						
Type B Thermocouple	None Established	B X 						

- Thermal Accuracy
- Thermal Stability
- High Temp. Resistant
- Greater Flexibility
- Super Finish

Table 05 : Available Size Mil-168780 Standards

Size in Awg	No. of Strands dia of each strand in M.M.	Cross Sectional Area of Conductor in M.M.	Conductor Dia (Nom.) in M.M.	Conductor resistance (D.C.) per 1000 Mtr. at 20°C in Ohms (Max.)	Elongation % (Min.)	Over all diameter of Insulated wire in M.M.						Max. Current Rating in Amps.
						For 250 V Acms Grade OR 'E'		For 600 V Acms Grade OR 'E'		For 1000 V Acms Grade OR 'EE'		
						(Min.)	(Max.)	(Min.)	(Max.)	(Min.)	(Max.)	
32(1)	1/0.20	0.0324	0.200	557.7	5.5	-	-	0.64	0.86	0.86	1.07	-
30(1)	1/0.25	0.0507	0.250	356.4	9.0	0.51	0.61	0.67	0.86	0.91	1.12	2.0
28(1)	1/0.32	0.0806	0.320	224.4	9.0	0.58	0.69	0.74	0.94	0.99	1.19	3.0
26(1)	1/0.40	0.1282	0.400	140.9	9.0	0.66	0.76	0.81	1.02	1.07	1.27	4.0
24(1)	1/0.51	0.2047	0.510	88.4	15.0	0.76	0.86	0.91	1.12	1.17	1.37	5.0
22(1)	1/0.64	0.3243	0.640	56.1	20.0	0.86	1.02	1.04	1.27	1.30	1.52	6.0
20(1)	1/0.81	0.5168	0.810	34.7	20.0	1.07	1.17	1.22	1.42	1.47	1.68	8.0
30(7/38)	7/0.10	0.0568	0.310	332.3	5.5	0.56	0.66	0.71	0.91	0.97	1.17	3.0
28(7/36)	7/0.13	0.0887	0.380	210.5	5.5	0.64	0.74	0.79	0.99	1.04	1.25	3.5
26(7/34)	7/0.16	0.1409	0.480	133.7	9.0	0.74	0.84	0.89	1.09	1.14	1.35	4.0
24(7/32)	7/0.20	0.2270	0.610	83.2	9.0	0.86	0.97	1.02	1.22	1.27	1.47	6.0
22(7/30)	7/0.25	0.3547	0.760	52.5	13.5	1.02	1.12	1.17	1.37	1.42	1.63	7.0
20(7/28)	7/0.32	0.5630	0.970	33.0	13.5	1.2	1.32	1.37	1.58	1.63	1.83	9.0
18(7/26)	7/0.40	0.8969	1.220	20.7	13.5	-	-	1.63	1.88	1.88	2.13	15.0
26(19/38)	19/0.10	0.1540	0.510	126.7	5.5	0.74	0.84	0.89	1.09	1.14	1.35	4.0
24(19/36)	19/0.13	0.2407	0.640	80.2	9.0	0.86	0.97	1.02	1.22	1.27	1.47	6.0
22(19/34)	19/0.16	0.3820	0.810	49.8	9.0	1.02	1.12	1.17	1.37	1.42	1.63	7.0
20(19/32)	19/0.20	0.6162	1.020	30.3	9.0	1.22	1.32	1.37	1.58	1.63	1.83	9.0
18(19/30)	19/0.25	0.9627	1.270	19.1	13.5	-	-	1.63	1.88	1.88	2.13	15.0
16(19/28)	19/0.29	0.2293	1.450	14.9	13.5	-	-	1.85	2.21	2.11	2.41	18.0
15(19/28)	19/0.32	1.5272	1.600	12.5	13.5	-	-	2.00	2.23	2.20	2.42	21.0
14(19/27)	19/0.36	1.9412	1.830	9.5	13.5	-	-	2.24	2.59	2.49	2.90	23.0
12(19/25)	19/0.45	3.0848	2.310	6.0	13.5	-	-	2.27	3.07	2.97	3.38	35.0
11(19/24)	19/0.50	3.7320	2.500	5.0	13.5	-	-	2.91	3.26	3.16	3.56	40.0
10(19/22)	19/0.64	6.1147	3.200	3.0	13.5	-	-	-	-	3.86	4.26	45.0
16(37/32)	37/0.20	1.2000	1.400	15.0	13.5	-	-	1.90	1.95	1.90	2.25	18.0
14(37/30)	37/0.25	1.8886	1.750	10.0	13.5	-	-	2.25	2.37	2.35	2.65	25.0
12(37/28)	37/0.32	2.9742	2.240	6.5	13.5	-	-	2.79	2.89	2.84	3.22	33.0
10(37/32)	37/0.40	4.7397	2.820	3.9	13.5	-	-	3.23	3.58	3.48	3.89	43.0
08(133/29)	133/0.29	8.6054	4.290	2.5	13.5	-	-	-	-	5.06	5.56	50.0
06(133/27)	133/0.36	13.5889	5.410	1.4	13.5	-	-	-	-	6.20	6.93	60.0
04(133/25)	133/0.45	21.5900	6.750	1.2	13.0	-	-	-	-	7.75	8.40	75.0
02(133/23)	133/0.57	33.9514	8.550	-	13.0	-	-	-	-	9.75	10.70	100.0
0(133/21)	133/0.71	52.7749	10.650	-	-	-	-	-	-	11.85	12.80	135.0

Other Products

- THERMOCOUPLE & RTD PT 100 ASSEMBLIES
- THERMOCOUPLE CONNECTOR
- UNIVERSAL PID & TEMPERATURE CONTROLLERS
- UNIVERSAL TAIL PROCESS CONTROLLERS
- UNIVERSAL TEMPERATURE TRANSMITTERS
(HEAD MOUNT & DIN RAIL)
- SMART HART PROTOCOL TEMPERATURE
TRANSMITTERS
- PROCESS CONTROL INSTRUMENTS



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