



Jeddah^{cables}
COMPANY

A Company of Energya Cables Saudi Arabia

INDOOR CABLES



Introduction

Building Wires are used for fixed indoor installations inside conduits and within walls.

Building Wires with multi-cores can be used to connect a power supply to large loads such as air conditioning systems. Examples include: copper conductors with PVC insulation (NYA) and copper with PVC insulation and nylon jacketing (THHN).

In this catalogue, we cover all technical aspects of Jeddah Cable Company Indoor Cables. We included design considerations such as type of insulation material, insulation thicknesses, sheath material, and sheath thicknesses. Cables electrical parameters such as conductor DC resistance and current ratings are included as well.

Jeddah Cable Company Indoor Cables are manufactured based on international standards such as IEC 60227, BS 6004, and UL 83. We are also capable of manufacturing according to client requirements and needs.



Standards

The indoor cables described in this catalogue are all standard types, and their performances has been proved in operation.

Construction and tests are in accordance with the recommendation of IEC publications where applicable. indoor cables in accordance to other standards (e.g. BS, VDE, NEMA) can be manufactured upon customer's request.

Variation in Production and Delivery Options

- The provided data is approximate and subject to manufacturing tolerance
- Delivery length tolerance is $\pm 5\%$
- Other product sizes are available upon customer's request

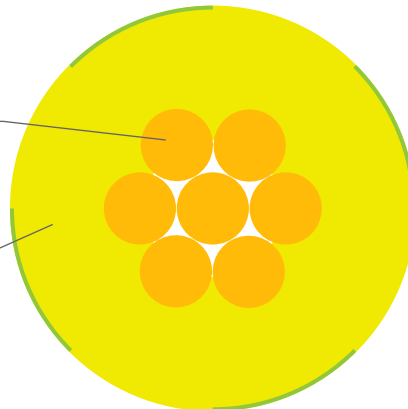
Jacket Marking

Standard embossed outer jacket marking consisting of:

1. Name of manufacturer
2. Type designation, size of conductor, rated voltage and standard
3. Continuous length marking every meter (if applicable)
4. Year of manufacture

Conductor

PVC Sheath



Conductor

PVC Sheath



Laying Information

Minimum Bending Radius During Installation

During laying, the bending radius should not be smaller than values given below.
The radius depends on the outer diameter (D_o) of the cable.

Cable for Fixed Wiring

Insulation	Conductor	Outer diameter (mm)	Min. Radius (mm)
PVC or (LSHF)	Copper (solid strand or flexible)	Up to 10 10 - 25 Above 25	3 D_o 4 D_o 6 D_o

Electrical Parameters Of The Cables

DC Resistance of Conductor

The Maximum DC resistance values of conductors at 20°C are as per “IEC 60228” standard.

DC resistance per unit length of the conductor at other conductor temperature θ is given by:

$$R = R_0 [1 + \alpha_{20^\circ\text{C}} (t - 20^\circ\text{C})]$$

Where:

R = DC resistance at temperature t °C Ω/km

R_0 = D.C resistance at temperature 20°C Ω/km (given in the relative tables for each type of (cable))

t = Conductor temperature °C

α_{20} = Temperature coefficient at 20°C 1/°C

For copper conductor $\alpha_{20^\circ\text{C}} = 0.00393$

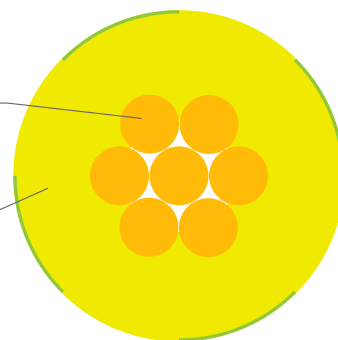
Single Core

For indoor fixed installation in dry location

- Type : CU / PVC
 Standard : IEC 60227
 Nominal Voltage: 450/750 volt
 Conductor : Soft annealed solid or stranded copper wires
 Insulation : PVC compound rated 85°C (or LSHF)
 Packing : Plastic spools-coils or non returnable wood drums as per customer requirement

Conductor

PVC Insulation



TECHNICAL INFORMATION

Nominal Cross Section	Nominal Insulation Thickness	Approx Overall Diameter	Approx Cable Weight	Max DC Resistance at 20°C	CURRENT RATING	
					Laid in Conduits	Laid in Free Air
mm ²	mm	mm	kg/km	ohm/km	A	A
Copper Solid Conductors						
1.5	0.7	2.8	20	12.1	21	28
2.5	0.8	3.4	35	7.41	27	38
4	0.8	3.84	46	4.61	34	50
6	0.8	4.31	65	3.08	43	66
10	1.0	5.6	109	1.83	60	89
Copper Stranded Conductors						
1.5	0.7	2.96	20	12.1	21	28
2.5	0.8	3.58	32	7.41	27	38
4	0.8	4.12	50	4.61	34	50
6	0.8	4.7	70	3.08	43	66
10	1.0	6.0	115	1.83	60	89
16	1.0	7.0	170	1.15	78	115
25	1.2	8.7	270	0.727	103	152
35	1.2	9.8	360	0.524	126	189
50	1.4	11.0	475	0.387	157	235
70	1.4	12.7	665	0.268	196	291
95	1.6	14.7	925	0.193	239	350
120	1.6	16.2	1145	0.153	280	410
150	1.8	18.1	1425	0.124	316	473
185	2.0	20.1	1765	0.0991	364	545
240	2.2	23.0	2325	0.0754	431	650
300	2.4	25.4	2900	0.0601	494	690
400	2.6	28.6	3700	0.0470	566	916



Single Core

For fixed installation where particular flexibility is required

Type	: CU / PVC
Standard	: IEC 60227
Nominal Voltage	: 300/500 & 450/750 volt
Conductor	: Soft annealed copper fine wires
Insulation	: PVC compound rated 85°C (or LSHF)
Packing	: Plastic spools-coils or non returnable wood drums as per customer requirements



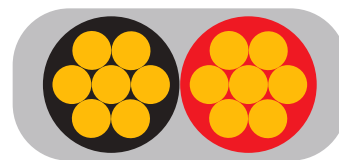
TECHNICAL INFORMATION

Nominal Cross Section	Nominal Insulation Thickness	Approx Overall Diameter	Approx Cable Weight	Max DC Resistance at 20°C	CURRENT RATING	
					Laid in Conduits	Laid in Free Air
mm ²	mm	mm	kg/km	ohm/km	A	A
0.50	0.6	2.1	8.5	39.0	8	11
0.75	0.6	2.2	10	26.0	11	17
1.0	0.6	2.5	15	19.5	14	22
1.5	0.7	3	20	13.3	21	28
2.5	0.8	3.6	35	7.98	27	38
4	0.8	4.5	50	4.95	34	50
6	0.8	5.2	70	3.30	43	66
10	1.0	6.6	115	1.91	60	89
16	1.0	7.1	170	1.21	78	115
25	1.2	9.5	245	0.780	103	152
35	1.2	10.9	365	0.554	126	189
50	1.4	13	515	0.386	157	235
70	1.4	15.1	700	0.272	196	291
95	1.6	17.3	925	0.206	239	350
120	1.6	17.7	1150	0.161	280	410
150	1.6	19	1390	0.129	316	473
185	2.0	24	1825	0.106	364	545
240	2.2	27.4	2330	0.0801	430	566



Multicore Cables

For indoor fixed installation in dry location



Type	: CU / PVC/PVC
Standard	: BS 6004
Nominal Voltage	: 300/500 volt
Conductor	: Soft annealed solid or stranded copper wires
Insulation	: PVC compound rated 70°C or 85°C
Jacketing	: PVC compound(or LSHF)
Packing	: Plastic spools-coils or non returnable wood drums as per customer requirements

TECHNICAL INFORMATION

Nominal Cross Section	No. of Wires in Cord	Nominal Insu. Thick	No. of Wires in Earth Cond.	Nominal Sheath Thick	Approx Overall Diameter	Approx Cable Weight	Max DC Resistance at 20°C		CURRENT RATING	
							Ins. cond	earth cond	Laid in Conduit	Laid in Free Air
n x mm ²	NR	mm	NR	mm	mm	KG/KM			A	A
I-Twin and Three Core Flat Cables without Earth Continuity Conductor										
2*1.5	1			0.9	7.4*4.6	65	11.9		14	17
2*2.5	1			1.0	8.7*5.36	95	7.14		20	23
2*4	7			1.0	11.4*7.2	140	4.52		26	30
2*6	7			1.1	12.7*8.0	190	3.02		33	38
2*10	7			1.2	15.6*9.4	310	1.79		44	53
2*16	7			1.3	18*10.8	450	1.13		58	70
3*1.5	1	0.7		0.9	10.15*4.6	95	11.9		14	17
3*2.5	1	0.8		1.0	12.1*5.36	140	7.14		20	23
3*4	7	0.8		1.1	15.6*7.4	215	4.52		26	30
3*6	7	0.8		1.1	17.5*8.5	285	3.02		33	38
3*10	7	1.0		1.2	22.0*9.8	460	1.79		44	53
3*16	7	1.0		1.3	25.4*11	670	1.13		58	70
II-Twin and Three Core Flat Cables with Earth Continuity Conductor										
2*1.5+1	1	0.7	1	0.9	8.9*5.2	75	11.9	17.7	13	14
2*2.5+1	1	0.8	1	1.0	10.2*6.0	110	7.14	17.7	18	20
2*4+1.5	7	0.8	1	1.0	12.6*7.2	165	4.52	11.9	24	26
2*6+2.5	7	0.8	1	1.0	14.4*8.0	230	3.02	7.41	30	33
2*10+4	7	1.0	7	1.2	18.2*9.6	370	1.79	4.52	40	44
2*16+6	7	1.0	7	1.3	21.4*11	535	1.13	3.0	51	59
3*1.5+1	1	0.7	1	0.9	11.8*5.4	105	11.9	17.7	13	14
3*2.5+1	1	0.8	1	1.0	13.8*6.2	150	7.14	17.7	18	20
3*4+1.5	7	0.8	1	1.1	17.27*7.4	245	4.52	11.9	24	26
3*6+2.5	7	0.8	1	1.1	19.4*8.0	320	3.02	7.14	30	33
3*10+4	7	1.0	7	1.2	24.8*9.8	520	1.79	4.52	40	44
3*16+6	7	1.0	7	1.3	28.6*10	755	1.13	3.02	51	59



Conversion Table

Multiply by to obtain			Multiply by to obtain		
WEIGHT - Imperial			LENGTH - Imperial		
Ounces _____	28.3495	grams	Mils _____	0.001	inches
Pounds (Av) _____	453.59	grams	Mils _____	0.0254	millimeters
Pounds (Av) _____	0.45359	kilograms	Inches _____	1000	mils
Tons (short) _____	907.19	kilograms	Inches _____	25.40	millimeters
Tons (long) _____	1016.05	kilograms	Inches _____	2.54	centimeters
			Feet _____	30.48	centimeters
			Feet _____	0.3048	meters
			Feet (thousands of) _____	0.3048	kilometers
			Yards _____	0.9144	meters
			Mils _____	1.6093	kilometers
WEIGHT - Metric			LENGTH - Imperial		
Grams _____	0.03527	ounces	Millimeters _____	39.37	mils
Grams _____	0.002205	pounds	Millimeters _____	0.03937	inches
Kilograms _____	35.274	ounces	Centimeters _____	0.3937	inches
Kilograms _____	2.2046	pounds	Centimeters _____	0.032808	feet
Kilograms _____	0.001102	tons (short)	Meters _____	39.37	inches
Kilograms _____	0.0009842	tons (long)	Meters _____	3.2808	feet
			Meters _____	1.0936	yards
			Kilometers _____	3280.83	feet
			Kilometers _____	0.62137	mils
MISCELLANEOUS - Imperial			AREA - Imperial		
Pounds per 1000 feet _____	1.48816	kilograms per kilometer	Square mils _____	1.2732	circular mills
Pounds per mile _____	0.28185	kilograms per kilometer	Square mils _____	0.000001	square inches
Pounds per square inch _____	0.0007031	kilograms per square millimeter	Circular mils _____	0.7854	square mils
		kilograms per square centimeter	Circular mils _____	0.0000007854	square inches
Pounds per square inch _____	0.07031	meters per minute	Circular mils _____	0.00050657	square millimeters
Feet per second _____	18.288	kilometers per hour	Square inches _____	1000000	square mils
Feet per second _____	1.09728	kilometers per hour	Square inches _____	1273240	circular mils
Mils per hour _____	1.60935	ohms per kilometer	Square inches _____	645.16	square millimeters
Ohms per 1000 feet _____	3.28083	ohms per kilometer	Square inches _____	6.4516	square centimeters
Ohms per mile _____	0.62137	decibels per kilometer	Square inches _____	0.09290	square meters
Decibels per 1000 feet _____	3.28083	decibels per kilometer	Square inches _____	0.8361	square meters
Decibels per mile _____	0.62137	neper			
Decibels _____	0.1153				
MISCELLANEOUS - Metric			AREA - Metric		
Kilograms per kilometer _____	0.67197	pounds per 1000 feet	Square millimeters _____	1973.52	circular mills
Kilograms per kilometer _____	3.54795	pounds per mile	Square millimeters _____	0.00155	square inches
Kilograms per square millimeter _____	1422.34	pounds per square inch	Square centimeters _____	0.155	square inches
Kilograms per square centimeter _____	14.2234	pounds per square inch	Square meters _____	10.7638	square feet
Grams per cubic cm _____	0.03613	pounds per cubic inch	Square meters _____	1.19599	square yards
Meters per minute _____	0.05468	feet per second			
Kilometer per hour _____	0.91134	feet per second			
Kilometer per hour _____	0.62137	miles per hour			
Ohms per kilometer _____	0.3048	ohms per 1000 feet			
Ohms per kilometer _____	1.6093	ohms per mile			
Decibels per kilometer _____	0.3048	decibels per 1000 feet			
Decibels per kilometer _____	1.6093	decibels per mile			
TEMPERATURE			VOLUME - Imperial		
°Fahrenheit _____	5/9 (°F)-32	°Celsius	Cubic inches _____	16.38716	cubic centimeters
°Celsius _____	9/5 (°C) + 32	°Fahrenheit	Cubic feet _____	0.028317	cubic meters
			VOLUME - U.S.		
			Quarts (liquid) _____	0.9463	cubic centimeters
			Gallons _____	3.7854	cubic meters
			VOLUME - Metric		
			Cubic centimeters _____	0.06102	cubic inches
			Cubic meters _____	35.3145	cubic feet
			Litres _____	1.05668	quarts (Liquid U.S.)
			Litres _____	0.26417	gallons

Selection form: Indoor Cables

This form needs to be filled in order to help Jeddah Cables Company prepare the right quotation

Standard & Specification

- ☐ IEC
- ☐ BS
- ☐ UL
- ☐ Others _____

Cu Conductor

- Size (mm²) _____
- Temper
 - ☐ Solid
 - ☐ Stranded
 - ☐ Flexible Stranded
- Number of Cores _____

Insulation Type

- ☐ PVC
- ☐ Low Smoke Halogen Free (LSHF)

Jacket Type (if Any)

- ☐ PVC
- ☐ Low Smoke Halogen Free (LSHF)
- ☐ Nylon (THHN)

Special Requirements _____

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