OVERHEAD LINES CONDUCTORS

الرواد
Al Rowad

Introduction

إحدى شركات مجموعة كابلات الرياض
One of Riyadh Cables Group Companies

Pioneering Excellence in Iraq's Electrical Cable Industry

Al Rowad Company proudly leads Iraq's electrical cable industry, specializing in the production of low and medium voltage cables. Strategically located in South Baghdad, our sprawling 75,000-square-meter facility houses state-of-the-art production lines, advanced machinery, and cutting-edge quality testing systems. This relentless pursuit of excellence has earned Al Rowad prestigious certifications such as ISO 14001 ,9001, and 45001, solidifying our position as a regional leader in the Middle East.
As an integral part of the Riyadh Cables Group's global network, Al Rowad embodies the group's commitment to industrial and commercial integration. From raw materials to the finished product, every step of the manufacturing process is completed in-house, ensuring unparalleled quality, efficiency, and innovation.

Riyadh Cables Group

Founded in 1984, Riyadh Cables Group has grown into one of the largest manufacturers and exporters of electrical cables. Our commitment to international quality standards, safety, and continuous innovation has positioned us as a trusted name in the industry. The group's product range includes Low Voltage (LV), Medium Voltage (MV), High Voltage (HV), Extra High Voltage cables, overhead conductors, control cables, low smoke cables, and fire-resistant cables

Supporting Iraq's Growth

With Iraq's rapidly expanding energy sector, the demand for high-quality cables has soared. To meet this growing need, Riyadh Cables Group has made significant investments through Al Rowad, ensuring that Iraq is equipped with the best in electrical cable technology. This investment not only meets the domestic market's needs but also creates valuable job opportunities and facilitates exports.

Our Product Range

- Building Wires
- Specialized Wires and Cables
- Fire-Resistant Cables and Wires
- Control Cables
- Low Voltage Cables
- Medium Voltage Cables
- Overhead Conductors

At Al Rowad, we're not just manufacturing cables; we're powering Iraq's future.

NOTES FOR ELECTRICAL STRANDED CONDUCTORS AS PER IEC 61089

IEC 61089 Standard specifies the electrical and mechanical characteristics of round wire concentric lay overhead electrical stranded conductors made of combinations of any of the following metal wires:

a) Hard-drawn aluminium as per IEC 889 designated A1*.

b) Aluminium alloy type B as per IEC 104 designated A2*.

c) Aaluminium alloy type A as per IEC 104 designated A3* (and when applicable to the following cores, as per IEC 888).

d) Regular strength steel, designated S1A or S1B, where A and B are zinc coating classes, corresponding respectively to classes 1 and 2.

e) high strength steel, designated S2A or S2B.

f) Extra high strength steel, designated S3A.

The conductors designations included in this standard are:

A1, A2, A3,

A1/S1A, A1/S1B, A1/S2A, A1/S2B, A1/S3A, A2/S1A,

A2/S1B, A2/S3A, A3/S1A,

A3/S1B, A3/S3A, A1/A2, A1/A3.

*The resistivity of these metals is as follows (in increasing order):

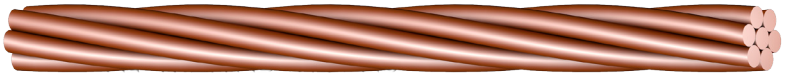
A1: 28,264 nm (corresponding to 61% IACS),

A2: 32,530 nm (corresponding to 53% IACS),

A3: 32,840 nΩm (corresponding to 52,5% IACS).

Testing shall be as per IEC 61089

HDCU	
Hard Drawn Stranded Copper Conductors	DIN 48201



Nominal Area	Calculated Area	Wires		Approx. Overall Diameter	Nominal Breaking Load	Nom. DC Resistance at 20 °C	Approx. Weight	Packing Length
		No.	Dia					
mm^2	mm^2		mm	mm	kN	ohm/Km	kg/km	m+/-5%
10	10.02	7	1.35	4.1	4.02	1.8055	90	2000
16	15.89	7	1.70	5.1	6.37	1.1386	143	2000
25	24.25	7	2.10	6.3	9.72	0.7461	218	2000
35	34.36	7	2.50	7.5	13.77	0.5265	310	1000
50	49.48	7	3.00	9.0	19.84	0.3656	446	1000
50	48.35	19	1.80	9.0	19.38	0.376	437	1000
70	65.81	19	2.10	10.5	26.38	0.2762	596	1000
95	93.27	19	2.50	12.5	37.39	0.1949	845	1000
120	116.99	19	2.80	14.0	46.90	0.1554	1060	1000
150	147.11	37	2.25	15.8	58.98	0.1238	1337	1000
185	181.62	37	2.50	17.5	72.81	0.1003	1649	1000
240	242.54	61	2.25	20.3	97.23	0.0753	2209	1000
300	299.43	61	2.50	22.5	120.04	0.061	2725	1000
400	400.14	61	2.89	26.0	160.42	0.0456	3640	500
500	499.83	61	3.23	29.1	200.38	0.0356	4545	500

HD CU / PVC	
Hard Drawn Stranded Copper Conductors	DIN 48201
Type 8 PVC Insulation	BS 6485

Nominal Area	Calculated Area	Wires		Approx. Overall Diameter	Nominal Breaking Load	Nom. DC Resistance at 20 °C	Approx. Weight	PVC Insulated		Packing Length
		No.	Dia					Approx. Overall Diameter	Approx. Total Weight	
mm^2	mm^2		mm	mm	kN	ohm/Km	kg/km	mm	kg/km	m+/-5%
10	10.02	7	1.35	4.1	4.02	1.8055	90	6.1	115	2000
16	15.89	7	1.70	5.1	6.37	1.1386	143	7.1	174	2000
25	24.25	7	2.10	6.3	9.72	0.7461	218	8.3	256	2000
35	34.36	7	2.50	7.5	13.77	0.5265	310	9.5	355	1000
50	49.48	7	3.00	9.0	19.84	0.3656	446	11.0	501	1000
50	48.35	19	1.80	9.0	19.38	0.376	437	11.0	490	1000
70	65.81	19	2.10	10.5	26.38	0.2762	596	12.5	658	1000
95	93.27	19	2.50	12.5	37.39	0.1949	845	14.5	920	1000
120	116.99	19	2.80	14.0	46.90	0.1554	1060	16.0	1145	1000
150	147.11	37	2.25	15.8	58.98	0.1238	1337	17.8	1430	1000
185	181.62	37	2.50	17.5	72.81	0.1003	1649	19.5	1748	1000
240	242.54	61	2.25	20.3	97.23	0.0753	2209	22.5	2338	1000
300	299.43	61	2.50	22.5	120.04	0.061	2725	24.7	2870	1000
400	400.14	61	2.89	26.0	160.42	0.0456	3640	28.2	3810	500
500	499.83	61	3.23	29.1	200.38	0.0356	4545	31.3	4739	500

AAC	
All Aluminium Conductors (AAC)	DIN 48201: Part 5

Nominal Area	Calculated Area	Wires		Approx. Overall Diameter	Nominal Breaking Load	Nom. DC Resistance at 20 °C	Approx. Weight	Packing Length
		No.	Dia					
mm^2	mm^2		mm	mm	kN	ohm/Km	kg/km	m+/-5%
16	15.89	7	1.7	5.1	2.84	1.802	44	3000
25	24.25	7	2.1	6.3	4.17	1.181	67	3000
35	34.36	7	2.5	7.5	5.78	0.8317	94	3000
50	49.48	7	3.0	9.0	7.94	0.5787	135	3000
50	48.35	19	1.8	9.0	8.45	0.5950	133	3000
70	65.81	19	2.1	10.5	11.32	0.4371	181	2000
95	93.27	19	2.5	12.5	15.68	0.3085	256	2000
120	117.0	19	2.8	14.0	18.78	0.2459	322	2000
150	147.1	37	2.25	15.8	25.30	0.196	406	2000
185	181.6	37	2.5	17.5	30.54	0.1587	501	2000
240	242.5	61	2.25	20.3	39.51	0.1191	670	2000
300	299.4	61	2.5	22.5	47.70	0.0965	827	2000
400	400.1	61	2.89	26.0	60.86	0.0722	1105	2000
500	199.8	61	3.23	29.1	74.67	0.0578	1381	2000

Standard is withdrawn but still required by some utilities .

AAC / HDPE	
All aluminium Conductors (AAC)	DIN 48201: Part 5
HDPE Insulation	IEC 60502-1

Nominal Area	Calculated Area	Wires		Approx. Overall Diameter	Nominal Breaking Load	Nom. DC Resistance at 20 °C	Approx. Weight	HDPE Insulated		Packing Length
		No.	Dia					Approx. Overall Diameter	Approx. Total Weight	
mm^2	mm^2		mm	mm	kN	ohm/Km	kg/km	mm	kg/km	m+/-5%
16	15.89	7	1.7	5.1	2.84	1.802	44	7.3	69	3000
25	24.25	7	2.1	6.3	4.17	1.181	67	8.5	98	3000
35	34.36	7	2.5	7.5	5.78	0.8317	94	9.7	131	3000
50	49.48	7	3.0	9.0	7.94	0.5787	135	11.2	174	3000
50	48.35	19	1.8	9.0	8.45	0.5950	133	11.2	168	3000
70	65.81	19	2.1	10.5	11.32	0.4371	181	12.7	222	2000
95	93.27	19	2.5	12.5	15.68	0.3085	256	14.7	306	2000
120	117.0	19	2.8	14.0	18.78	0.2459	322	16.2	379	2000
150	147.1	37	2.25	15.8	25.30	0.196	406	17.9	465	2000
185	181.6	37	2.5	17.5	30.54	0.1587	501	19.7	569	2000
240	242.5	61	2.25	20.3	39.51	0.1191	670	22.4	746	2000
300	299.4	61	2.5	22.5	47.70	0.0965	827	24.7	913	2000
400	400.1	61	2.89	26.0	60.86	0.0722	1105	28.2	1206	2000
500	199.8	61	3.23	29.1	74.67	0.0578	1381	31.3	1498	2000

Standard is withdrawn but still required by some utilities .

AAAC

All Aluminium Alloy Conductors (AAAC) — **DIN 48201: Part 6***

Nominal Area	Calculated Area	Wires		Approx. Overall Diameter	Nominal Breaking Load	Nom. DC Resistance at 20 °C	Approx. Weight	Packing Length
		No.	Dia					
mm^2	mm^2		mm	mm	kN	ohm/Km	kg/km	m+/-5%
16	15.89	7	1.7	5.1	4.44	2.0936	44	3000
25	24.25	7	2.1	6.3	6.77	1.3720	67	3000
35	34.36	7	2.5	7.5	9.6	0.9681	94	3000
50	49.48	7	3.0	9.0	13.82	0.6723	135	3000
50	48.35	19	1.8	9.0	13.5	0.6913	133	3000
70	65.81	19	2.1	10.5	18.38	0.5079	181	2000
95	93.27	19	2.5	12.5	26.05	0.3584	256	2000
120	117.0	19	2.8	14.0	32.68	0.2857	322	2000
150	147.1	37	2.25	15.8	41.09	0.7378	406	2000
185	181.6	37	2.5	17.5	50.73	50.73	501	2000
240	242.5	61	2.25	20.3	67.74	0.1384	670	2000
300	299.4	61	2.5	22.5	83.63	0.1121	827	2000
400	400.1	61	2.89	26.0	111.76	0.0839	1105	2000
500	199.8	61	3.23	29.1	139.6	0.0672	1381	2000

Standard is withdrawn but still required by some utilities .

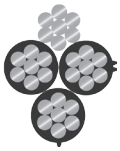
AL / PVC (WP)	
600 V Water Proof Service Drop Cables	IEC 61089
Aluminium Conductors	IEC 60228
PVC Insulation	IEC 60502

DIN 48201: Part 5*

Nominal Cross Sectional Area	Phase		Neutral		Approx. Overall Diameter	Nominal Conductor Resistance at 20 °C	Approx. Weight	Packing Length
	Number & Nominal Diameter of Wires	Nominal Thickness of Insulation	Nominal Cross Sectional Area	Number & Nominal Diameter of Wires				
mm^2	mm	mm	mm^2	mm	mm	ohm/Km	kg/km	m+/-10%
Duplex								
16	7 x 1.70	1.2	16	7 x 1.70	12.8	1.820	129	1000
25	7 x 2.10	1.2	25	7 x 2.10	15.2	1.193	184	1000
35	7 x 2.50	1.2	35	7 x 2.50	17.6	0.084	248	1000
50	19 x 1.80	1.5	50	19 x 1.80	21.2	0.601	353	1000
70	19 x 2.10	1.5	70	19 x 2.10	24.2	0.441	463	1000
95	19 x 2.50	1.5	95	19 x 2.50	28.2	0.311	636	500
120	19 x 2.80	1.5	120	19 x 2.80	31.3	0.248	782	500
Triplex								
16	7 x 1.70	1.2	16	7 x 1.70	15.4	1.820	212	1000
25	7 x 2.10	1.2	25	7 x 2.10	17.8	1.193	299	1000
35	7 x 2.50	1.2	35	7 x 2.50	20.4	0.084	400	1000
50	19 x 1.80	1.5	50	19 x 1.80	24.4	0.601	570	1000
70	19 x 2.10	1.5	70	19 x 2.10	27.5	0.441	742	500
95	19 x 2.50	1.5	95	19 x 2.50	31.6	0.311	1010	500
120	19 x 2.80	1.5	120	19 x 2.80	34.4	0.248	1236	500
Quadruplex								
16	7 x 1.70	1.2	16	7 x 1.70	18.5	1.820	296	1000
25	7 x 2.10	1.2	25	7 x 2.10	21.4	1.193	414	1000
35	7 x 2.50	1.2	35	7 x 2.50	24.3	0.084	551	1000
50	19 x 1.80	1.5	50	19 x 1.80	29.4	0.601	787	500
70	19 x 2.10	1.5	70	19 x 2.10	33	0.441	1020	500
95	19 x 2.50	1.5	95	19 x 2.50	37.9	0.311	1385	500
120	19 x 2.80	1.5	120	19 x 2.80	41.6	0.248	1690	500

Standard is withdrawn but still required by some utilities .

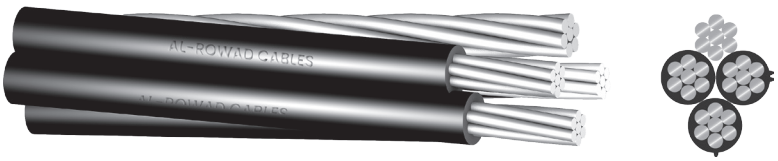
AL / XLPE (WP)	
600 V Water Proof Service Drop Cables	IEC 61089
Aluminium Conductors	IEC 60228
XLPE Insulation	ICEA-S-76-474
	DIN 48201: Part 5*



Nominal Cross Sectional Area	Phase		Neutral		Approx. Overall Diameter	Nominal Conductor Resistance at 20 °C	Approx. Weight	Packing Length
	Number & Nominal Diameter of Wires	Nominal Thickness of Insulation	Nominal Cross Sectional Area	Number & Nominal Diameter of Wires				
mm^2	mm	mm	mm^2	mm	mm	ohm/Km	kg/km	m+/-10%
Duplex								
16	7 x 1.70	1.2	16	7 x 1.70	12.8	1.820	115	1000
25	7 x 2.10	1.2	25	7 x 2.10	15.2	1.193	167	1000
35	7 x 2.50	1.2	35	7 x 2.50	17.6	0.084	227	1000
50	19 x 1.80	1.5	50	19 x 1.80	21.2	0.601	323	1000
70	19 x 2.10	1.5	70	19 x 2.10	24.2	0.441	429	1000
95	19 x 2.50	1.5	95	19 x 2.50	28.2	0.311	595	500
120	19 x 2.80	1.5	120	19 x 2.80	31.3	0.248	737	500
Triplex								
16	7 x 1.70	1.2	16	7 x 1.70	15.4	1.820	184	1000
25	7 x 2.10	1.2	25	7 x 2.10	17.8	1.193	264	1000
35	7 x 2.50	1.2	35	7 x 2.50	20.4	0.084	357	1000
50	19 x 1.80	1.5	50	19 x 1.80	24.4	0.601	509	1000
70	19 x 2.10	1.5	70	19 x 2.10	27.5	0.441	672	500
95	19 x 2.50	1.5	95	19 x 2.50	31.6	0.311	927	500
120	19 x 2.80	1.5	120	19 x 2.80	34.4	0.248	1145	500
Quadruplex								
16	7 x 1.70	1.2	16	7 x 1.70	18.5	1.820	253	1000
25	7 x 2.10	1.2	25	7 x 2.10	21.4	1.193	362	1000
35	7 x 2.50	1.2	35	7 x 2.50	24.3	0.084	488	1000
50	19 x 1.80	1.5	50	19 x 1.80	29.4	0.601	696	500
70	19 x 2.10	1.5	70	19 x 2.10	33	0.441	916	500
95	19 x 2.50	1.5	95	19 x 2.50	37.9	0.311	1260	500
120	19 x 2.80	1.5	120	19 x 2.80	41.6	0.248	1553	500

Standard is withdrawn but still required by some utilities .

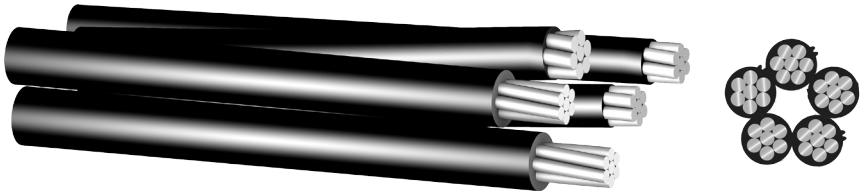
AL / HDPE (WP)	
600 V Water Proof Service Drop Cables	IEC 61089
Aluminium Conductors	IEC 60228
HDPE Insulation	IEC 60502-1
	DIN 48201: Part 5*



Nominal Cross Sectional Area	Phase		Neutral		Approx. Overall Diameter	Nominal Conductor Resistance at 20 °C	Approx. Weight	Packing Length
	Number & Nominal Diameter of Wires	Nominal Thickness of Insulation	Nominal Cross Sectional Area	Number & Nominal Diameter of Wires				
mm^2	mm	mm	mm^2	mm	mm	ohm/Km	kg/km	m+/-10%
Duplex								
16	7 x 1.70	1.2	16	7 x 1.70	12.8	1.820	116	1000
25	7 x 2.10	1.2	25	7 x 2.10	15.2	1.193	168	1000
35	7 x 2.50	1.2	35	7 x 2.50	17.6	0.084	229	1000
50	19 x 1.80	1.5	50	19 x 1.80	21.2	0.601	230	1000
70	19 x 2.10	1.5	70	19 x 2.10	24.2	0.441	432	1000
95	19 x 2.50	1.5	95	19 x 2.50	28.2	0.311	598	500
120	19 x 2.80	1.5	120	19 x 2.80	31.3	0.248	741	500
Triplex								
16	7 x 1.70	1.2	16	7 x 1.70	15.4	1.820	186	1000
25	7 x 2.10	1.2	25	7 x 2.10	17.8	1.193	267	1000
35	7 x 2.50	1.2	35	7 x 2.50	20.4	0.084	360	1000
50	19 x 1.80	1.5	50	19 x 1.80	24.4	0.601	514	1000
70	19 x 2.10	1.5	70	19 x 2.10	27.5	0.441	630	500
95	19 x 2.50	1.5	95	19 x 2.50	31.6	0.311	934	500
120	19 x 2.80	1.5	120	19 x 2.80	34.4	0.248	1153	500
Quadruplex								
16	7 x 1.70	1.2	16	7 x 1.70	18.5	1.820	256	1000
25	7 x 2.10	1.2	25	7 x 2.10	21.4	1.193	366	1000
35	7 x 2.50	1.2	35	7 x 2.50	24.3	0.084	493	1000
50	19 x 1.80	1.5	50	19 x 1.80	29.4	0.601	703	500
70	19 x 2.10	1.5	70	19 x 2.10	33	0.441	924	500
95	19 x 2.50	1.5	95	19 x 2.50	37.9	0.311	1270	500
120	19 x 2.80	1.5	120	19 x 2.80	41.6	0.248	1564	500

Standard is withdrawn but still required by some utilities .

AL / HDPE (WP) + AAAC / HDPE	
Aluminium Conductors	IEC 60228
Aluminium Alloy Conductors	IEC 61089
HDPE Insulation	IEC 60502-1



Characteristics of the Conductor Cores and of the Insulated Conductors

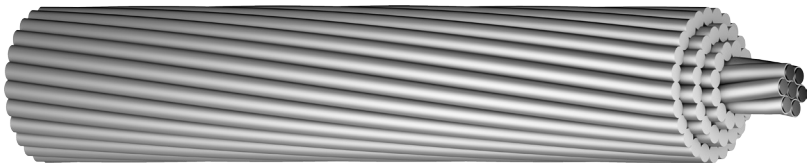
Designation		Conductor Core				Average Thickness of the Insulating Sheath (Specified Value)	Approx. Insulated Conductor External Diameter
Function	Nominal Sectional Area	Number of Strands	Linear Resistance Max at 20 °C	Approx. Diameter of cross	Breaking Load		
	mm^2	No.	ohm/Km	mm^2	daN	mm	mm
Phase or Public Lighting	16	7	1.91	5.0	290	1.2	8.0
	35	7	0.868	7.4	585	1.4	9.9
	50	7	0.641	8.8	810	1.4	11.1
	70	19	0.443	10.5	1150	1.4	12.5
	95	19	0.320	12.4	1595	1.6	14.8
	120	19	0.253	13.0	2020	1.6	16.2
Neutral	50	7	0.6647	9.0	1460	1.4	11.8
	70	19	0.5026	10.5	1941	1.4	13.3

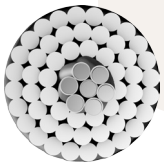
Characteristics of Bundled Conductors

Designation		Approx. Diameter Spiralled	Approx. Mass	Permissible Current Rating (Amp)		Voltage Drop P.F=0.8 V/A km	
Aluminium Phase and Public Lighting	Neutral Messenger AGS/L			Phase Conductor	Public Lighting Conductor	Phase Conductor	Public Lighting Conductor
	mm^2	mm	kg/km				
3 x 35+16	50	29	640	138	93	1.56	3.41
3 x 50+16	50	32	760	168	93	1.09	3.41
3 x 70+16	50	34	940	213	93	0.78	3.41
3 x 95+16	70	39	1235	258	93	0.58	3.41
3 x 120+16	70	42	1500	293	93	0.46	3.41

ACSR

Aluminium Conductors Steel Reinforced — **ASTM B 232**





Code Name	Area				Stranding & Wire Diameter		Approx. Overall Diameter	Weight			Nominal Breaking Load	Nominal DC Resistance at 20 °C	Standard Lenghth
	Nominal	Aluminium	Steel	Total	Aluminium	Steel		Aluminium	Steel	Total			
	AWGorMCM	mm^2	mm^2	mm^2	mm	mm	mm	kg/km	kg/km	kg/km	kN	ohm/Km	m+/-5%
Turkey	6	13.29	2.19	15.48	6/1.68	1/1.68	5.04	37	17	54	5.24	2.1586	3000
Swan	4	21.16	3.55	24.71	6/2.12	1/2.12	6.36	58	27	85	8.32	1.3557	3000
Swanate	4	21.16	5.35	26.51	7/1.96	1/2.61	6.53	58	42	100	10.53	1.3557	3000
Sparrow	2	33.61	5.61	39.22	6/2.67	1/2.67	8.01	92	44	136	12.7	0.8535	3000
Sparate	2	33.61	8.52	42.13	7/2.47	1/3.30	8.24	92	67	159	16.11	0.8535	2500
Robin	1	42.39	7.10	49.49	6/3.00	1/3.00	9.00	116	55	171	15.85	0.6767	2500
Raven	1/0	53.48	8.90	62.38	6/3.37	1/3.37	10.11	147	69	216	19.32	0.5364	2000
Quail	2/0	67.42	11.23	78.65	6/3.78	1/3.78	11.34	185	88	273	23.62	0.4255	3000
Pigeon	3/0	85.03	14.19	99.22	6/4.25	1/4.25	12.75	233	110	343	29.41	0.3373	2500
Penguin	4/0	107.23	17.87	125.1	6/4.77	1/4.77	14.31	294	139	433	37.06	0.2675	2000
Waxwing	266.8	135.16	7.48	142.64	18/3.09	1/3.09	15.45	373	58	431	30.27	0.2133	3500
Partridge	266.8	135.16	22.00	157.16	26/2.57	1/3.78	16.28	374	172	546	50.29	0.2143	2500
Ostrich	300	152.00	24.71	176.71	26/2.73	7/2.12	17.28	421	193	614	56.52	0.1906	3000
Merlin	336.4	170.45	9.48	179.93	18/3.47	1/3.47	17.35	470	74	544	38.23	0.1691	2000
Linnet	336.4	170.45	27.81	198.26	26/2.89	7/2.25	18.31	472	217	689	62.71	0.1691	2500
Oriole	336.4	170.45	39.81	210.26	30/2.69	7/2.69	18.83	473	311	784	77.27	0.1704	3000
Chichadee	397.5	201.42	11.16	212.58	18/3.77	1/3.77	18.85	555	87	642	43.99	0.1431	2500
Brant	397.5	201.42	26.13	227.55	24/3.27	7/2.18	19.61	558	204	762	64.69	0.1438	2000
Ibis	397.5	201.42	32.77	234.19	26/3.14	7/2.44	19.88	558	256	814	72.11	0.1438	2500
Lark	397.5	201.42	46.97	248.39	30/2.92	7/2.92	20.44	560	367	927	88.69	0.1442	2500
pelican	477	241.68	13.42	255.10	18/4.14	1/4.14	20.7	666	105	771	52.16	0.1193	2000
Flicker	477	241.68	31.3	272.97	24/3.58	7/2.39	21.49	670	245	915	76.66	0.1199	3000

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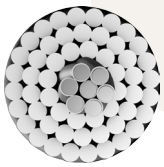
Aluminium Conductors Steel Reinforced — **ASTM B 232**



Code Name	Area				Stranding & Wire Diameter		Approx. Overall Diameter	Weight			Nominal Breaking Load	Nominal DC Resistance at 20 °C	Standard Lenghth
	Nominal	Aluminium	Steel	Total	Aluminium	Steel		Aluminium	Steel	Total			
	AWGorMCM	mm^2	mm^2	mm^2	mm	mm	mm	kg/km	kg/km	kg/km	kN	ohm/Km	m+/-5%
Hawk	477	241.68	39.42	281.1	26/3.44	7/2.67	21.79	670	308	978	86.65	0.1199	2000
Hen	477	241.68	56.39	289.07	30/3.20	7/3.20	22.4	671	441	1112	105.34	0.1201	2000
Osprey	556.5	282.00	15.68	297.68	18/4.47	1/4.47	22.35	777	122	899	60.88	0.1022	2000
Parakeet	556.5	282.00	36.58	318.58	24/3.87	7/2.58	23.22	781	286	1067	88.22	0.1027	3000
Dove	556.5	282.00	45.94	327.94	26/3.72	7/2.89	23.55	781	359	1140	101.03	0.0127	3000
Eagle	556.5	282.00	65.81	347.81	30/3.46	7/3.46	24.21	783	515	1298	122.92	0.103	3500
Peacock	605	306.58	39.74	346.32	24/4.03	7/2.69	24.2	849	311	1160	95.88	0.0945	3000
Squab	605	306.58	49.94	356.52	26/3.87	7/3.01	24.51	850	390	1240	108.14	0.0945	3000
Wood Duck	605	306.58	71.55	378.1	30/3.61	7/3.61	25.25	851	560	1411	128.84	0.0947	3000
Teal	605	306.58	69.87	376.45	30/3.61	19/2.16	25.24	851	548	1399	133.59	0.0947	2000
Kingbrid	636	322.26	17.90	340.16	18/4.78	1/4.78	23.88	889	139	1028	69.55	0.08945	2000
Rook	636	322.26	41.81	364.07	24/4.14	7/2.76	24.84	893	326	1219	100.83	0.08989	2500
Grosbeak	636	322.26	52.45	374.7	26/3.97	7/3.09	25.15	893	409	1302	111.8	0.08989	3000
Scoter	636	322.26	75.22	397.48	30/3.70	7/3.70	25.88	895	589	1484	135.44	0.09011	3000
Egret	636	322.26	73.55	395.81	30/3.70	19/2.22	25.9	894	576	1470	140.30	0.09011	3000
Swift	636	322.26	8.96	331.22	36/3.38	1/3.38	23.62	888	70	958	60.52	0.08945	2000
Flamingo	666.6	337.74	43.81	381.55	24/4.23	7/2.82	25.40	936	342	1278	105.66	0.08577	2500
Gannet	666.6	337.74	55.03	392.77	26/4.07	7/3.16	25.76	936	429	1365	117.33	0.08577	2500
Stilt	715.5	362.58	46.97	409.55	24/4.39	7/2.92	26.31	1005	367	1372	113.35	0.07989	2000
Starling	715.5	362.58	59.03	421.61	26/4.21	7/3.28	26.68	1005	461	1466	125.91	0.07989	2500

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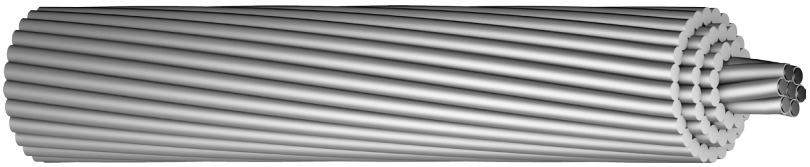
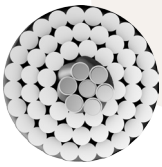
Aluminium Conductors Steel Reinforced — **ASTM B 232**





Code Name	Area				Stranding & Wire Diameter		Approx. Overall Diameter	Weight			Nominal Breaking Load	Nominal DC Resistance at 20 °C	Standard Lenghth
	Nominal	Aluminium	Steel	Total	Aluminium	Steel		Aluminium	Steel	Total			
	AWGorMCM	mm^2	mm^2	mm^2	mm	mm	mm	kg/km	kg/km	kg/km	kN	ohm/Km	m+/-5%
Redwing	715.5	362.58	82.58	445.16	30/3.92	19/2.35	27.43	1006	647	1653	153.94	0.08009	2000
Tern	795	402.84	27.87	430.71	44/3.38	7/2.25	27.03	1116	217	1333	97.37	0.07191	2500
Condor	795	402.84	52.19	455.03	54/3.08	7/3.08	27.72	1116	408	1524	124.45	0.07191	3000
Cuckoo	795	402.84	52.19	455.03	24/4.62	7/3.08	27.74	1116	408	1524	123.94	0.07191	2000
Drake	795	402.84	65.51	468.45	26/4.44	7/3.45	28.11	1116	512	1628	139.92	0.07191	2000
Coot	795	402.84	11.16	414	36/3.77	1/3.77	26.41	1110	88	1198	74.34	0.07156	3000
Mallard	795	402.84	91.87	484.71	30/4.14	19/2.48	28.96	1119	719	1838	171.18	0.07208	25000
Ruddy	900	456.06	31.54	487.60	45/3.59	7/2.40	28.73	1263	247	1510	108.96	0.06351	2000
Canart	900	456.06	59.10	515.2	54/3.28	7/3.28	29.52	1263	461	1724	140.95	0.06351	2000
Rail	954	483.42	33.42	516.84	45/3.70	7/2.47	29.61	1339	262	1601	115.63	0.05992	2000
Catbird	954	483.42	13.42	496.84	36/4.14	1/4.14	28.95	1333	105	1438	87.66	0.05962	2500
Cardinal	954	483.42	62.65	546.07	54/3.38	7/3.38	30.42	1339	490	1829	149.36	0.05992	2500
Ortlan	1033.5	523.68	36.19	559.9	45/3.85	7/2.57	30.81	1451	283	1734	123.10	0.05531	2000
Tanger	1033.5	523.68	14.51	538.19	36/4.30	1/4.30	30.12	1443	113	1556	94.93	0.05504	2000
Curlew	1033.5	523.68	67.87	591.55	54/3.52	7/3.52	31.68	1451	530	1981	161.80	0.05531	2000
Bluejay	1113	563.93	39.03	602.96	45/4.00	7/2.66	31.98	1563	385	1868	132.63	0.05136	2500
Finch	1113	563.93	71.55	635.48	54/3.65	19/2.19	32.85	1570	580	2130	174.41	0.05161	2000
Bunting	1192.5	604.26	41.55	645.81	45/4.14	7/2.76	33.12	1674	327	2001	141.79	0.04793	2000
Crackle	1192.5	604.26	76.58	680.84	54/3.77	19/2.27	33.97	1682	600	2282	186.38	0.04817	2000
Bittern	1272	644.51	44.52	689.03	45/4.27	7/2.85	34.17	1785	349	2134	151.48	0.04494	2500

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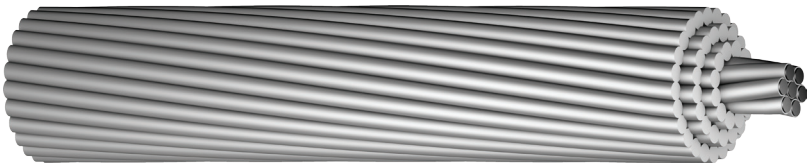
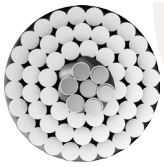
Aluminium Conductors Steel Reinforced — **ASTM B 232**





Code Name	Area				Stranding & Wire Diameter		Approx. Overall Diameter	Weight			Nominal Breaking Load	Nominal DC Resistance at 20 °C	Standard Lenghth
	Nominal	Aluminium	Steel	Total	Aluminium	Steel		Aluminium	Steel	Total			
	AWGorMCM	mm^2	mm^2	mm^2	mm	mm	mm	kg/km	kg/km	kg/km	kN	ohm/Km	m+/-5%
pheasant	1272	644.51	81.63	726.19	54/3.90	19/2.34	35.10	1795	638	2433	194.00	0.04516	2000
Skylark	1272	644.51	17.87	662.38	36/4.78	1/4.78	33.42	1777	140	1917	115.85	0.04472	2000
Dipper	1351.5	684.84	47.10	731.94	45/4.40	7/2.92	35.16	1898	368	2266	160.70	0.0423	2000
Martin	1351.5	684.84	88.71	771.55	54/4.02	19/2.41	36.17	1906	679	2585	206.05	0.0425	2000
Dobolink	1431	725,10	50.32	775.42	45/4.53	7/3.02	36.24	2009	393	2402	170.71	0.03994	2000
Plover	1431	725.10	91.87	816,97	54/4.14	19/2.48	37.24	2019	719	2738	218.24	0.04013	2500
Nuthatch	1510.5	765.35	52,90	818,25	45/4.65	7/3.10	37.2	2120	414	2534	177.89	0.03784	2000
Parrot	1510.5	765.35	96,84	862,19	54/4.25	19/2.55	38.25	2131	759	2890	230.20	0.03802	2000
Lapwing	1590	805.68	55.48	861.16	45/4.77	7/3.18	38.16	2232	435	2667	187.02	0.03595	2000
Falcon	1590	805.68	102.13	907.81	54/4.36	19/2.62	39.26	2243	799	3042	242.55	0.03613	2000
High Strength Strandings													
Grouse	80	40.52	14.13	54.65	8/2.54	1/4.24	9.32	112	110	222	23.60	0.7115	2500
Petrel	101.8	51.61	30.06	81.67	12/2.34	7/2.34	11.71	143	235	378	41.75	0.5613	2000
Minorca	110.8	56.13	32.77	88.9	12/2.44	7/2.44	12.22	156	256	412	51.25	0.5161	2000
Leghorn	134.6	68.19	39.81	108,00	12/2.69	7/2.69	13.46	189	311	500	61.70	0.4248	2000
Guinea	159	80.58	46.97	127.55	12/2.92	7/2.92	14.63	223	367	590	72.55	0.3595	2000
Dotterel	196.9	89.48	52.19	141.67	12/3.08	15.42	248	409	657	78.50	0.3237	0.3237	2000
Dorking	190.8	96.71	56.39	153.1	12/3.20	16.03	268	441	709	84.80	0.2995	0.2995	3000
Brahma	203.2	102.97	91.87	194.84	16/2.86	18.14	285	722	1007	128.80	0.2813	0.2813	2500
Cochin	211.8	107.1	62.45	169.55	12/3.37	16.84	297	488	785	93.90	0.2705	0.2705	3000

ACSR

Aluminium Conductors Steel Reinforced — **DIN 48204**

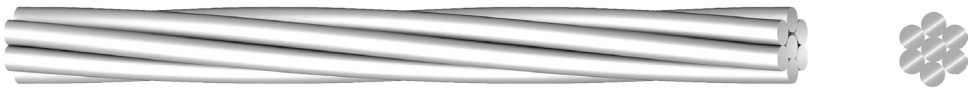
Size	Area			Stranding & Wire Diameter		Approx. Overall Diameter	Weight			Nominal Breaking Load	Nominal DC Resistance at 20 °C
	Aluminium	Steel	Total	Aluminium	Steel		Aluminium	Steel	Total		
mm^2	mm^2	mm^2	mm^2	mm	mm	mm	kg/km	kg/km	kg/km	kN	ohm/Km
16/2.5	15.27	2.54	17.81	6/1.8	1/1.8	5.4	42	20	62	5.81	1.8793
25/4	23.86	3.98	27.83	6/2.25	1/2.25	6.8	65	31	96	9.02	1.2028
35/6	34.35	5.73	40.08	6/2.7	1/2.7	8.1	94	45	139	12.7	0.8353
44/32	43.98	31.67	75.65	14/2	7/2.4	11.2	122	247	369	45.46	0.6573
50/8	48.25	8.04	56.3	6/3.2	1/3.2	9.6	132	63	195	17.18	0.5946
50/30	51.17	29.85	81.01	12/2.33	7/2.33	11.7	141	233	375	44.28	0.5644
70/12	69.89	11.4	81.29	26/1.85	7/1.44	11.7	193	89	282	26.31	0.0413
95/15	94.39	15.33	109.73	26/ 2.15	7/1.67	13.6	261	120	380	35.17	0.3058
95/55	96.51	56.3	152.81	12/3.2	7/3.2	16	267	440	707	80.2	0.2992
105/75	105.67	75.55	181.21	14/3.1	19/2.25	17.5	292	592	885	106.69	0.2736
120/20	121.57	19.85	141.42	26/2.44	7/1.9	15.5	336	155	491	44.94	0.2374
120/70	122.15	71.25	193.4	12/3.6	7/3.6	18	337	557	894	98.16	0.2364
125/30	127.92	29.85	157.76	30/2.33	7/2.33	16.3	353	233	587	57.86	0.2259
150/25	148.86	24.25	173.11	26/2.7	7/2.1	17.1	411	189	601	54.37	0.1939
170/40	171.77	40.08	211.85	30/2.7	7/2.7	18.9	475	313	788	77.01	0.1682
185/30	183.78	29.85	213.63	26/3	7/2.33	19	507	233	741	66.28	0.1571
210/35	209.1	34.09	243.19	26 / 3.2	7/2.49	20.3	577	266	844	74.94	0.138
210/50	212.06	49.48	261.54	30/3	7/3.0	21	586	387	973	92.25	0.1363
230/30	230.91	29.85	260.75	24/3.5	7/2.33	21	637	233	870	73.09	0.1249
240/40	243.05	39.49	282.54	26/3.45	7/2.68	21.8	671	309	980	86.46	0.1188
265/35	263.66	34.09	297.75	24/3.74	7/2.49	22.4	728	266	994	82.94	0.1094
300/50	304.26	49.48	353.74	26/3.86	7/3.0	24.5	840	387	1227	105.09	0.0949
305/40	304.62	39.49	344.1	54/2.68	7/2.68	24.1	842	309	1151	99.3	0.0949
340/30	339.29	29.85	369.14	48/3	7/2.33	25	937	233	1171	92.56	0.0851
380/50	381.7	49.48	431.18	54/3	7/3.0	27	1055	387	1442	120.91	0.0757
385/35	386.04	34.09	420.13	48/3.2	7/2.49	26.7	1067	266	1333	104.31	0.0748
435/55	434.29	56.3	490.59	54/3.2	7/3.2	28.8	1201	440	1641	136.27	0.0666
450/40	448.71	39.49	488.2	48/3.45	7/2.68	28.7	1240	309	1548	120.19	0.0644
490/65	490.28	63.55	553.83	54/3.4	7/3.4	30.6	1355	497	1852	152.85	0.059
495/35	494.36	34.09	528.45	45/3.74	7/2.49	29.9	1365	266	1632	120.31	0.0584
510/45	510.54	45.28	555.82	48/3.68	7/2.87	30.7	1410	354	1764	134.33	0.0566
550/70	549.65	71.25	620.9	54/3.6	7/3.6	32.4	1520	557	2076	167.42	0.0526
560/50	561.7	49.48	611.18	48/3.86	7/3.0	32.2	1552	387	1939	146.28	0.0514
570/40	571.16	39.49	610.64	45 / 4.02	7/2.68	32.2	1577	309	1886	137.98	0.0506
650/45	653.49	45.28	698.78	45/4.3	7/2.87	34.4	1805	354	2159	155.52	0.0442
680/85	678.58	85.95	764.54	54/4	19/2.4	36	1876	674	2550	209.99	0.0426

Standard is withdrawn but still required by some utilities .

AW	
Alumoweld Wires	ASTM B 415
Alumoweld Earthwires	ASTM B 416

Alumoweld Wires

SIZE AWG	AREA	DIAMETER	BREAKING LOAD	NOMINAL DC RESISTANCE AT 20 °C	WEIGHT
	mm^2	mm	daN	Ohm/km	kg/km.
5 Awg	16.77	4.62	1909	5,055	110.5
6 Awg	13.3	4.11	1596	6.3746	87.62
7 Awg	10,55	3,67	1346	8,038	69,48
8 Awg	8.368	3.26	1125	10.134	55.11
9 Awg	6.632	2.91	892	12,782	43.71
10 Awg	5.261	2.59	707	16.115	34,66
11 Awg	4.172	2.30	560	20.321	27.49



Alumoweld Earthwires

NUMBER AND SIZE OF WIRES	AREA	DIAMETER	Stranding		BREAKING LOAD	Nominal DC Resistance at 20 °C	WEIGHT	STANDARD LENGTH
	mm^2	mm	No.	Ø	daN	ohm/Km	kg/km.	m. ± 5%
No. 7-5 Awg	117.42	13.97	7	4.62	12028	0.7427	781.1	2000
No. 7-6 Awg	93.1	12.34	7	4.11	10114	0.9196	619.5	3000
No. 7-7 Awg	73.87	11	7	3.67	8481	1.1597	491.1	3000
No. 7-8 Awg	58,56	9.78	7	3.26	7089	1.4626	389,6	3000
No. 7-9 Awg	46.44	8.71	7	2.91	5620	1.8441	308,9	3000
No. 7-10 Awg	36.83	7.77	7	2,59	4459	23,254	245.1	3000
No. 7-11 Awg	29.18	6.91	7	2,30	3535	29,324	194.4	3000
No. 19-5 Awg	318.7	23.11	19	4.62	32639	0.2698	2128	2000
No. 19-6 Awg	252.7	20,57	19	4.11	27455	0.3402	1688	2000
No. 19-7 Awg	200.45	18.31	19	3.67	23019	0.4291	1339	2000
No. 19-8 Awg	158.96	16.3	19	3.26	19241	0.541	1062	2000
No. 19-9 Awg	126.1	14.53	19	2.91	12258	0.682	842	2000
No. 19-10 Awg	99.93	12.93	19	2.59	12099	0.8602	668	2000

MODULUS OF ELASTICITY AND COEFFICIENT OF LINEAR EXPANSION FOR VARIOUS TYPE OF CONDUCTORS

AAC & AAAC CONDUCTORS		
CONSTRUCTION NO. OF WIRES	FINAL MODULUS OF ELASTICITY	COEFFICIENT OF LINEAR EXPANSION
No.	kg/mm^2	$x\ 10^{-6}/c°$
7	6000	23
19	5700	23
37	5700	23
61	5500	23

ALUMOWELD EARTH WIRES		
CONSTRUCTION NO. OF WIRES	FINAL MODULUS OF ELASTICITY	COEFFICIENT OF LINEAR EXPANSION
No.	kg/mm^2	$x\ 10^{-6}/c°$
1	16500	13
3	16200	13
7	16200	13
19	16200	13
37	16200	13

MODULUS OF ELASTICITY AND COEFFICIENTS OF LINEAR EXPANSION FOR COMMON CONSTRUCTIONS OF ALUMINIUM CONDUCTORS, STEEL - REINFORCED (AS PER IEC 1597)

(These values are given for information purposes only and are not to be regarded as test requirements)

Number of Wire		Final modulus of elasticity[1]	Coefficient of linear expansion[2]
Aluminium	Steel	MPa x 10^3	x10^{-6}/k
6	1	76.7	18.6
18	1	63.1	21
22	7	67.1	20.1
26	7	73.9	18.9
45	7	63,7	20,8
54	7	70.5	19.4
54	19	70.2	19.5
72	7	60.6	21.5
72	19	60.5	21.5
84	7	65.4	20.4
84	19	65.2	20,5

1) Final modulus of elasticity calculated with E_A = 55 000 MPa and E_s = 190 000 MPa (Except for single-wire steel core where E_s = 207 000 MPa)

2) This figure is applicable to 7-wire and 19-wire cores. For larger cores, different values may have to be used.

CONDUCTOR PULLING AND HANDLING INSTRUCTIONS

I. DRUM HANDLING

1) Unloading the drum should be by forklift or crane, rolling should be avoided.

2) If the above equipment is not available, rolling as per direction on specially constructed ramps is allowed with a slope of 1/4 (0=14 degrees)

3) When the reels are lifted by an axle supported from above, a separator bar must be employed to prevent damage to the conductor or reel, or both, by inward pressure on the reel flange.

4) Drum should not be dropped on the ground under any circumstances even on soft material.

5) Drums should be kept in the-up right position.

6) Be sure that the end tightener is still in place.

7) Drums should be covered all the time.

8) Avoid moving the drum from one place to another as this may help in loosening the conductor windings.

9) Remember always that conductor is a high commodity value, and it is very sensitive to damage and must be handled with necessary care.

II. PREPARATION AND CONDUCTOR PULLING

1) Drum flange bolts should be inspected and tightened as they may get loose during drum transportation and frequent handling.

2) Conductor should be inspected before erection to ensure that it is damage free.

3) Location of drum prior to pulling can be decided based on minimum pulling tension which can be achieved.

4) Drums should be normally mounted so that the conductor is pulled from the top of the drum.

CONDUCTOR PULLING AND HANDLING INSTRUCTIONS

5) Minimum permissible bending radius shall be as recommended by the manufacturer.

6) Conductor pulling tension should not exceed 70% of conductor sagging tension, or 15% of the conductor breaking strength.

7) Bearing pressure on the conductor at the bend should not be exceeded as to avoid strand notching.

8) Care should be taken at all times to ensure that conductors do not become kinked, twisted, abraded or damaged and that foreign matter does not become deposited on them.

9) It is preferable to use sheaves that line up with a conductive type of neoprene or urethane to protect the conductor.

10) Sheaves should be clean and smooth to avoid any damage to the conductor.

11) Sheaves diameter should be minimum 20 times and 40 times conductor diameter for OHL and OPGW respectively.

12) Conductor tensioner (capstan) should be used for conductor pulling and not direct from the conductor drum.

13) Conductor tensioner should have a minimum of five turns of the conductor.

14) Wheels of the "bull-wheel" tensioner and "bull-wheel" puller should have multiple groove lines with neoprene or other approved non-metallic resilient material so that conductor will cushion into the lining to prevent flattening otherwise conductor may be damaged.

15) V-groove type bull-wheels should be avoided.

16) Groove diameter should be at least 1.25 conductor diameter, while "bull-wheel" should have a minimum bottom groove diameter of 40 times and 70 times the conductor diameter for OHL and OPGW respectively

17) Tandem bull-wheels should be so aligned that the offset will be approximately one-half of the groove spacing. For normal conductors having a right-hand direction of lay for the outer wires, bull wheels should be arranged so that, when facing in the direction of pull, the conductor will enter the bull wheel on the left and pull off from the right side. For any conductors having a left-hand direction of lay for the outer wires, the conductor should enter on the right and pull off from the left. This arrangement is necessary to avoid any tendency to loosen the outer layer of strands as the conductor passes over the bull wheels.

CONDUCTOR PULLING AND HANDLING INSTRUCTIONS

18) Possibility of breaking the drum anytime should be prepared as in sudden stoppage of conductor pulling. Continuation of drum rotation can cause sharp bending of the conductor.

19) The pulling and braking systems should operate smoothly and should not cause any sudden jerking or bouncing of the conductor. Each system should be readily controllable and capable of maintaining a constant tension.

20) Pullers should be equipment with load-indicating and load-limiting devices. The load-limiting device should automatically stop the puller from acting further if a preset maximum load has been exceeded. Tensioners should be equipped with tension-indicating devices

21) Tensioner bull wheels must be retarded so that conductor tension may be maintained a various pulling speeds.

22) During pulling the inner end of the conductor might be projected more and more, then it is necessary to interrupt the pulling from time to time in such cases for re-securing the said end.

23) The conductor should preferably be drawn in a continuous manner. During stops, it may settle between sheaves and sheaves suspension holder and may cause high strain on conductors during re-starting.

24) To avoid bird caging allow enough distance between the reel and tensioner to permit the strand looseness to distribute along the intervening length of conductor and simultaneously maintaining enough back tension on the reel to stretch the core and inner strands to sufficiently tighten the outer strands. It is recommended that the back tension or braking tension of the conductor reel does not exceed 4.5 kN, since drawing down of the conductor into the lower layers on the reel may cause surface damage. For smaller diameter and wooden reels, the back tension should be considerably less. Excessive back tension on the reel can,

a) Deform the reel flanges leading to tangles in the conductor,
b) Scratch or damage to the adjacent conductor layers and/or
c) Crush the reel drum.

25) Brake at pay-off should be lowered to the minimum to avoid conductor insertion in case windings are loose due to long time storage or any other reason.

26) In case of difficulty use motorized pay-off so tension at the conductor on the drum shall be approximately nil.

CONDUCTOR PULLING AND HANDLING INSTRUCTIONS

27) Dependable communication shall be maintained between the line - men operating the pulling equipment and the tensioning equipment and observing at intermediate locations at all times during the conductor stringing operation. Conductor over pulling or conductor loosening and sudden tension shall be avoided as this may damage the conductor.

28) Avoid conductor twisting by using swivel on the pulling line followed by anti - rotation device as this may cause bird caging.

29) Conductor end should be always tightened so stranding loosening can be avoided.

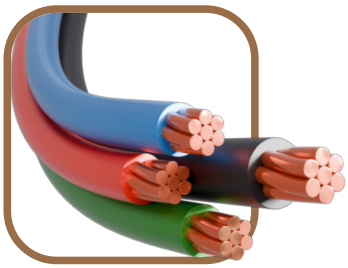
30) At the bend, conductor shall be guided by sheaves. Direct touch with tower side shall be completely avoided.

31) The conductor should be grounded while it is being installed; the grounding conductor must be large enough to adequately conduct fault current to ground without fusing.

32) Immediately after cutting, the conductor end must be suitably secured.

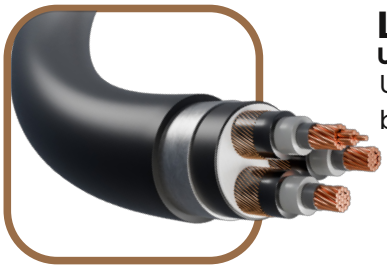
33) It is recommended to inspect the conductor after pulling to ensure that it has not been damaged.

PROCUCTS PANORAMA



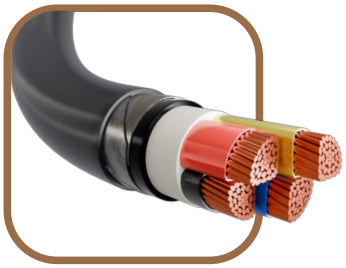
Wires
Up to 600 V

Used in the supply of electric power, lighting and internal wiring for residences and offices, and similar non- industrial.



Low Voltage Cables
Up to 1000 V

Used to supply power to large motors and industrial equipment in both residential and industrial settings.

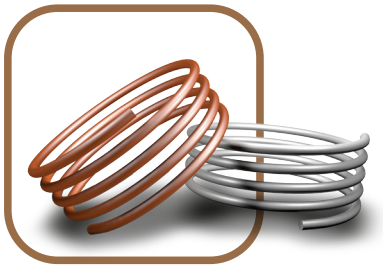


Medium Voltage Cables
Up to 36 kV

Distribution and transmission of power in infrastructure projects.

Overhead Lines

Used for long distance power transmission and inter-city connections.



Copper Rods

Al Rowad Cables manufactures 8 mm high-purity copper rods for cable conductors and metallic screens.

Aluminium Rods

Al Rowad Cables produces 9.5 mm high-purity aluminum rods for power cable conductors, overhead lines, and armouring.

PVC Granules

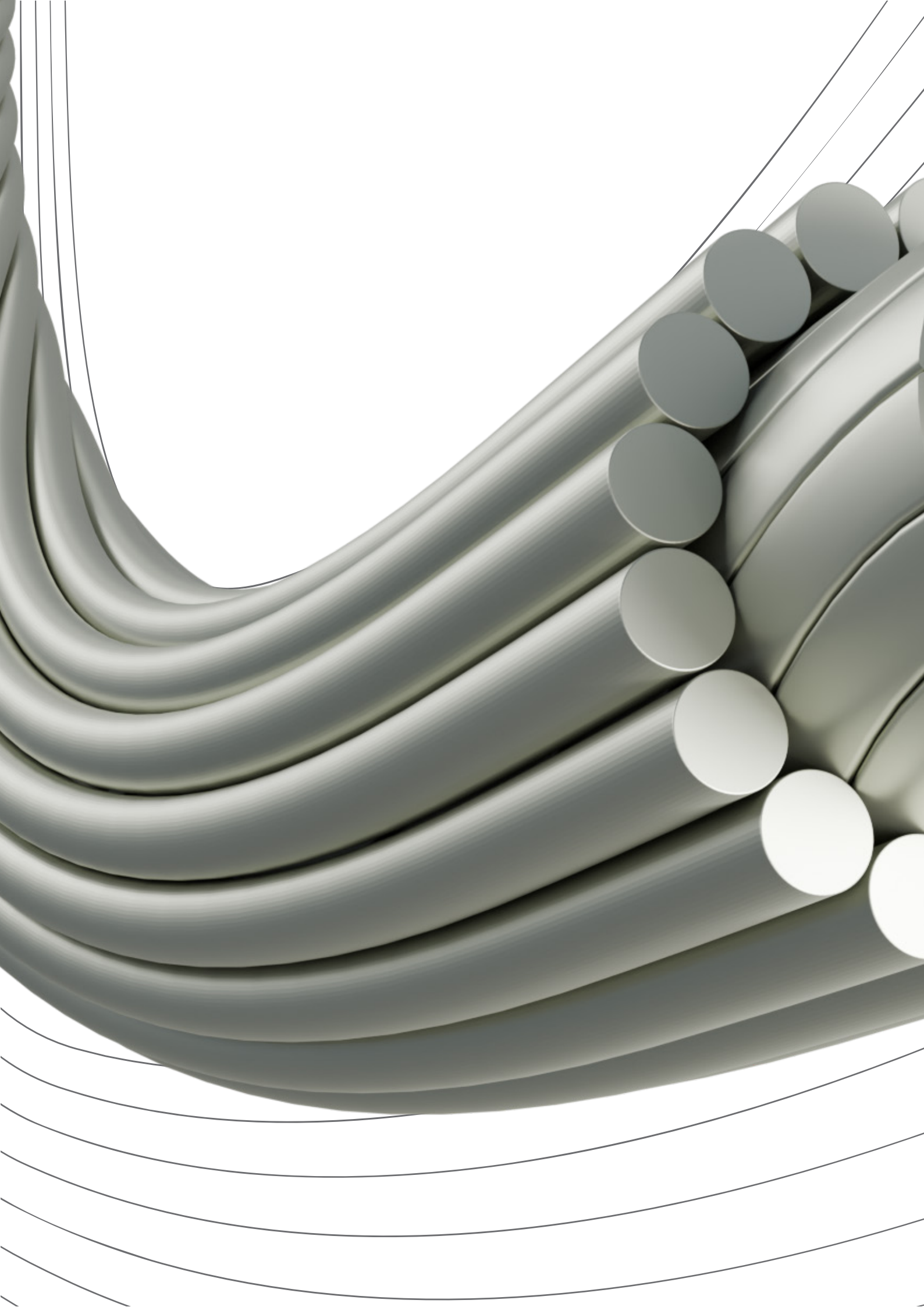
We produce high-quality PVC granules for cable insulation and sheathing, using advanced machinery and automatic mixing technology.

LV XLPE compounds

We produce high-purity LV XLPE insulation material for low-voltage cables, utilizing advanced machinery and automatic mixing technology.

Wooden & Steel Drums

Our facility is a state-of-the-art plant for manufacturing wooden and steel drums of various sizes for the cable industry, using high-speed production lines to ensure top quality at minimal cost.



الرواد
Al Rowad

شركة الرواد لإنتاج الأسلاك والقابلوات الكهربائية
AL ROWAD COMPANY FOR PRODUCTION OF ELECTRIC CABLES

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