

UNIVERSAL CABLE

(SARAWAK) SDN BHD

(Company No. 060048-A)

ALUMINIUM PRODUCTS

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OUR VISION

To maintain as the leading power cable manufacturer in Sarawak; continues to be innovative and dynamic in attaining higher standard of products quality and services, and be a total power solutions provider for complete customer satisfaction.

OUR MISSION

We aim to be the leading provider of total / integrated power solutions, creating sustainable value for our stakeholders, and the communities in which we operate.

OUR VALUES

Integrity
Trust
Teamwork
Innovation
Performance
Customer/Client Focus
Caring



BACKGROUND

Universal Cable (Sarawak) Sdn. Bhd. ("UCS") is wholly owned subsidiary of Sarawak Cable Berhad.

Founded in 1980 and commenced operation in 1981 as a trading company, UCS ventured into the manufacturing business a year later and has since grown into an established and reputable manufacturer of power cables and electrical wires in East Malaysia.

In 2007, UCS moved its business operation from Bintawa Industrial Estate to a new site at Demak Laut Industrial Park, Kuching. The move to the new state-of-the-art manufacturing facilities enables UCS to extend its manufacturing scale and product range in tandem with its growth over the years. Apart from newer modern machineries, the facilities also comes equipped with modern testing equipment.

In 2008, a new branch office cum warehouse was setup in Kota Kinabalu, Sabah to serve its ever expanding business network.

BUSINESS ACTIVITIES

UCS mainly manufactures low voltage power cables & wires and high voltage bare conductors for transmission and distribution of electricity.

Production capacity currently stands at about 4,700 tons and 3,800 tons of aluminium and copper respectively.

Apart from its core manufacturing business, UCS is also actively involved in trading of all types of power cables and wires, which at times include installation and commissioning works as a total package.

QUALITY ACHIEVEMENT

In line with our Mission and Quality Policy, we continuously strive to improve our products and stay ahead of our competitors.

In 1999, UCS had complied with and was certified ISO 9002:1996 Quality Management System by SIRIM QAS International.

In 2001, its Quality Management System was converted and certified ISO 9001:2000.

As of today, UCS has maintained its compliance with the standard and is certified with the latest ISO 9001:2008.



Aluminium Conductors / Cables For Distribution Line



Aluminium & Aluminium Alloy Conductors

Aluminium & aluminium alloy conductors are the preferred and dominant conductors in power transmission and distribution lines. These conductors are widely used in the overhead power transmission system. The major areas dominated by aluminium and aluminium alloy conductors are bare conductor on overhead power transmission and insulated cables on overhead or non overhead power distribution lines.

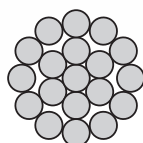
Aluminium and aluminium alloy conductors are made by various processes from wire-drawing (rod break down to fine wire) to wire stranding at multiple layers.



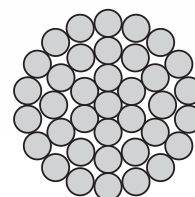
Bare All Aluminium Conductors (AAC)



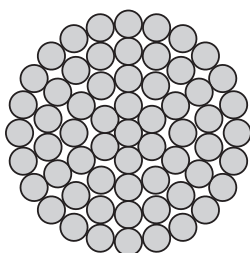
7 (1 + 6)



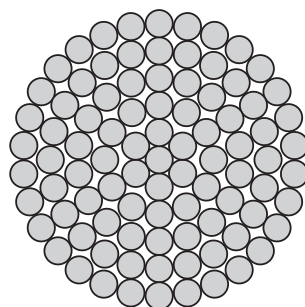
19 (1 + 6 + 12)



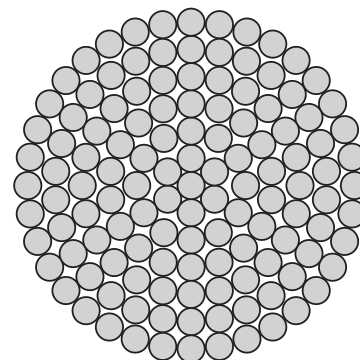
37 (1 + 6 + 12 + 18)



61 (1 + 6 + 12 + 18 + 24)



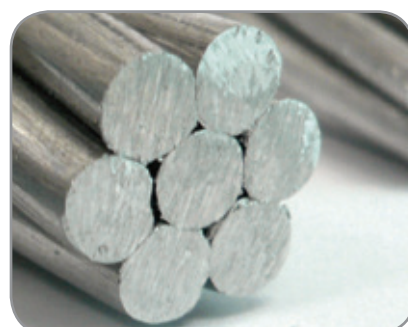
91 (1 + 6 + 12 + 18 + 24 + 30)



127 (1 + 6 + 12 + 18 + 24 + 30 + 36)

The stranded Bare All Aluminium Conductor (AAC) are made up of concentric-lay-stranded aluminium wires only. The conductor may be made up to 7, 19, 37, 61 or more wires in 1, 2, 3, 4 or more layers around a central wire. Each successive layer shall have six more wires than the layer immediately beneath. For a given cross-sectional area, the conductor becomes more flexible as the number of wires is increased (with a corresponding decrease in size of each wire).

When All Aluminium Conductors are to be used in overhead lines, full hard drawn temper wires are used. The illustration above shows some typical stranding patterns.



Bare All Aluminium Conductors (AAC) (BS 215, Part 1)

Code Name	Nominal Area	Construction No/Wire Diameter	Calculated Sectional Area	Approx. Overall Diameter	Approx. Weight	Calculated Breaking Load	Calculated DC Resistance at 20°C
	mm ²	no./mm	mm ²	mm	kg/km	KN	ohm/km
Midge	22	7/2.06	23.33	6.18	64	3.99	1.2270
Ant	50	7/3.10	52.83	9.30	146	8.28	0.5419
Fly	60	7/3.40	63.55	10.20	175	9.90	0.4504
Wasp	100	7/4.39	105.95	13.17	292	16.00	0.2702
Hornet	150	19/3.25	157.62	16.25	434	24.70	0.1825
Chafer	200	19/3.78	213.22	18.90	587	32.40	0.1349
Cockroach	250	19/4.22	265.75	21.10	731	40.40	0.1083
Butterfly	300	19/4.65	322.66	23.25	888	48.75	0.0892
Centipede	400	37/3.78	415.22	26.46	1,142	63.10	0.0694



PVC Covered Aluminium Cables



The PVC covered aluminium cables have been developed primarily to give protection to telecommunication lines which are crossed by power lines and to give protection to the public from low voltage lines in case of accidental contact for short periods.

The PVC-covered aluminium cables have also been found useful in corrosive atmospheres and for preventing faults due to birds and trees. For such purposes, thickness of covering other than those specified in this catalogue may be used.

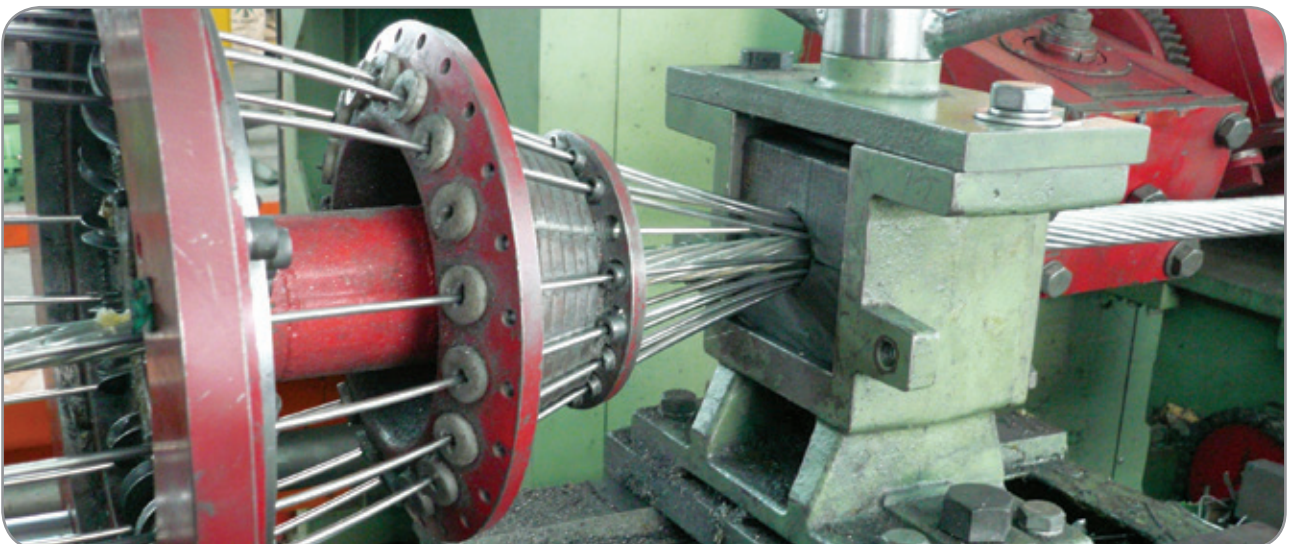


PVC Covered Aluminium Cables (AAC) (BS 215, Part 1 And BS 6485)

Nominal Aluminium Area	Construction No/Wire Diameter	Approx. Overall Conductor Diameter	Calculated DC Resistance at 20°C	Approx. Breaking Load	Approx. Overall Cable Diameter Type 8	Approx. Weight Type 8
mm ²	no./mm	mm	ohm/km	KN	mm	Kg/km
22 50	7/2.06 7/3.10	6.18 9.30	1.2270 0.5419	3.99 8.28	8.2 11.7	105 218
100 150	7/4.39 19/3.78	13.17 16.25	0.2702 0.1825	16.00 24.70	16.0 19.0	409 566



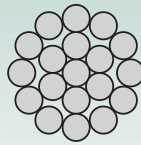
Bare Aluminium Conductors For Overhead High Tension Transmission Line



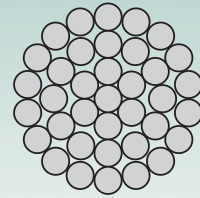
Bare All Aluminium Alloy Conductors (AAAC)



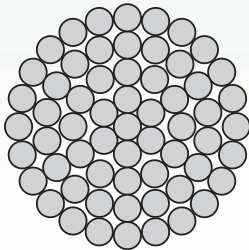
7 (1 + 6)



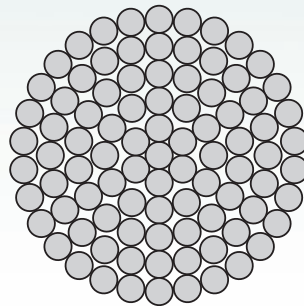
19 (1 + 6 + 12)



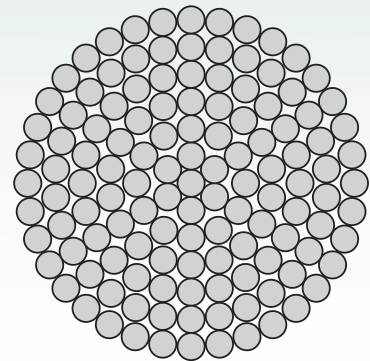
37 (1 + 6 + 12 + 18)



61 (1 + 6 + 12 + 18 + 24)



91 (1 + 6 + 12 + 18 + 24 + 30)



127 (1 + 6 + 12 + 18 + 24 + 30 + 36)

Bare All Aluminium Alloy Conductors contains a small percentage (about 0.6%) of silicon and magnesium elements. It provides several benefits for overhead power lines.

In term of strength, Bare All Aluminium Alloy Conductors are about twenty percents (20%) lighter than Bare Aluminium Conductor Steel Reinforced (ACSR) of the similar size.

On surface hardness Bare All Aluminium Alloy Conductors are significantly harder than EC grade aluminium 1350 (on AAC and ACSR). It is less liable to damage during installation which is an important advantage of EHV transmission lines where corona and radio interference is a major consideration.

Bare All Aluminium Alloy Conductors have a high resistance to atmospheric corrosion which is suitable for coastal and industrial areas.



Bare All Aluminium Alloy Conductors (AAAC) (BS 3242 / MS 1143)

Code Name	Nominal Alum Area	Construction No/Wire Diameter	Calculated Sectional Area	Approx. Overall Diameter	Approx. Weight	Calculated Breaking Load	Calculated DC Resistance at 20°C
	mm ²	no./mm	mm ²	mm	kg/km	KN	ohm/km
Almond Cedar Fir	25	7/2.34	30.10	7.02	83	8.44	1.0940
	30	7/2.54	35.47	7.62	98	9.94	0.9281
	40	7/2.95	47.84	8.85	132	13.40	0.6880
Hazel Oak Ash	50	7/3.30	59.87	9.90	165	16.80	0.5498
	100	7/4.65	117.88	13.95	328	33.30	0.2769
	150	19/3.48	180.72	17.40	497	50.65	0.1830
Elm Upas	175	19/3.76	214.35	18.80	580	59.10	0.1568
	300	37/3.53	362.11	24.71	996	101.5	0.0916

Bare All Aluminium Alloy Conductors (AAAC) (AS 1531)

Code Name	Construction No/Wire Diameter	Calculated Sectional Area	Approx. Overall Diameter	Approx. Weight	Calculated Breaking Load	Calculated DC Resistance at 20°C
	no./mm	mm ²	mm	kg/km	KN	ohm/km
Diamond Dolomite Emerald	7/2.50	34.36	7.50	95	9.64	0.967
	7/2.75	41.58	8.25	115	11.6	0.799
	7/3.00	49.48	9.00	136	13.9	0.671
Garnet Jade Jasper	7/3.75	77.31	11.25	213	21.7	0.430
	7/4.50	111.33	13.50	307	31.2	0.298
	7/4.75	124.04	14.25	342	34.8	0.268
Opal Patronise Pearl	19/3.25	157.62	16.25	434	44.2	0.212
	19/3.50	182.80	17.50	503	51.3	0.183
	19/3.75	209.85	18.75	577	58.8	0.159
Ruby Ruthenium Rutile	37/3.00	261.54	21.00	720	73.5	0.128
	37/3.25	306.94	22.75	845	86.1	0.109
	19/4.75	336.69	23.75	926	94.4	0.0991
Sapphire Spinel Tantalum Topaz	37/3.75	408.65	26.25	1,124	115	0.0819
	61/3.25	506.04	29.25	1,392	135	0.0662
	61/3.50	586.89	31.50	1,614	156	0.0572
	61/3.75	673.72	33.75	1,853	179	0.0498

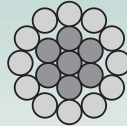
Bare Aluminium Conductor Steel Reinforced (ACSR)



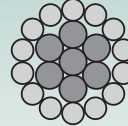
6 + 1



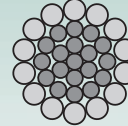
6 + 7 (1 + 6)



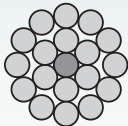
12 + 7 (1 + 6)



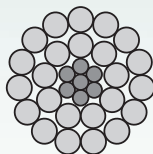
14 + 7 (1 + 6)



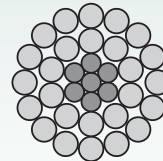
14 + 19 (1 + 6 + 12)



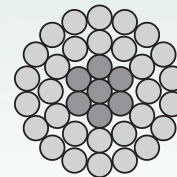
18 (6 + 12) + 1



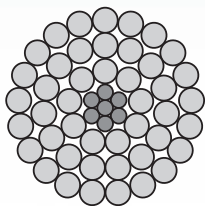
24 (9 + 15) + 7 (1 + 6)



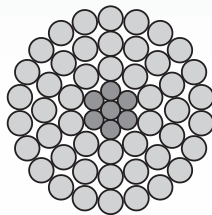
26 (10 + 16) + 7 (1 + 6)



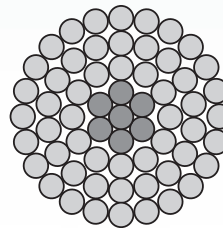
30 (12 + 18) + 7 (1 + 6)



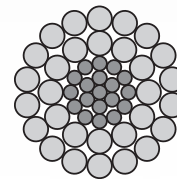
45 (9 + 15 + 21) + 7 (1 + 6)



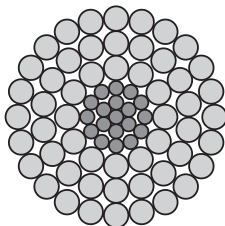
48 (10 + 16 + 22) + 7 (1 + 6)



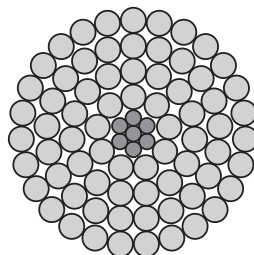
54 (12 + 18 + 24) + 7 (1 + 6)



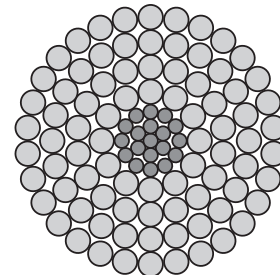
30 (12 + 18) + 19 (1 + 6 + 12)



54 (12 + 18 + 24) + 19 (1 + 6 + 12)



72 (9 + 15 + 21 + 27) + 7 (1 + 6)



84 (12 + 18 + 24 + 30) + 19 (1 + 6 + 12)



Bare Aluminium Conductor Steel Reinforced is a composite, concentrically stranded conductor in which the light weight and good conductivity of aluminium wires are combined with the high tensile strength of steel wires. It is composed of one or more layers of EC grade hard drawn aluminium 1350 wires helically stranded around an inner core of high strength heavily galvanized / zinc-coated steel wires. The inner core may be a single zinc coated wire or concentrically stranded of one or more layers of zinc coated steel wires.

Bare Aluminium Conductor Steel Reinforced have been widely used as overhead high tension transmission lines and have an established reputation for economy and dependability. The illustration above shows typical standard stranding patterns.

Bare Aluminium Conductor Steel Reinforced (ACSR) (BS 215 , Part 2)

Code Name	Nominal Alum Area	Construction No/Wire Diameter		Calculated Sectional Area		Approx. Overall Diameter	Approx. Weight	Calculated Breaking Load	Calculated DC Resistance at 20°C
		Aluminium	Steel	Aluminium	Steel				
	mm ²	no./mm	no./mm	mm ²	mm ²	mm	kg/km	KN	ohm/km
Gopher	25	6/2.36	1/2.36	26.25	4.37	7.08	106	9.61	1.0930
Weasel	30	6/2.59	1/2.59	31.61	5.27	7.77	128	11.45	0.9077
Ferret	40	6/3.00	1/3.00	42.41	7.07	9.00	172	15.20	0.6766
Rabbit	50	6/3.35	1/3.35	52.88	8.81	10.05	214	18.35	0.5426
Skunk	60	12/2.59	7/2.59	63.22	36.88	12.95	464	52.94	0.4567
Horse	70	12/2.79	7/2.79	73.36	42.80	13.95	538	61.20	0.3936
Dog	100	6/4.72	7/1.57	104.98	13.55	14.15	394	32.70	0.2733
Wolf	150	30/2.59	7/2.59	158.06	36.88	18.13	726	69.20	0.1828
Dingo	150	18/3.35	1/3.35	158.65	8.81	16.75	506	35.70	0.1815
Lynx	175	30/2.79	7/2.79	183.41	42.80	19.53	842	79.80	0.1576
Caracal	175	18/3.61	1/3.61	184.24	10.24	18.05	587	41.10	0.1563
Panther	200	30/3.00	7/3.00	212.06	49.48	21.00	974	92.25	0.1363
Jaguar	200	18/3.86	1/3.86	210.64	11.70	19.30	671	46.55	0.1367
Batang*	300	18/4.78	7/1.68	323.01	2.22	24.16	1,010	69.67	0.0891
Bison	350	54/3.00	7/3.00	381.70	49.48	27.00	1,450	120.68	0.0757
Zebra	400	54/3.18	7/3.18	428.88	55.60	28.62	1,621	131.90	0.0674

* Not in BS 215 : Part 2

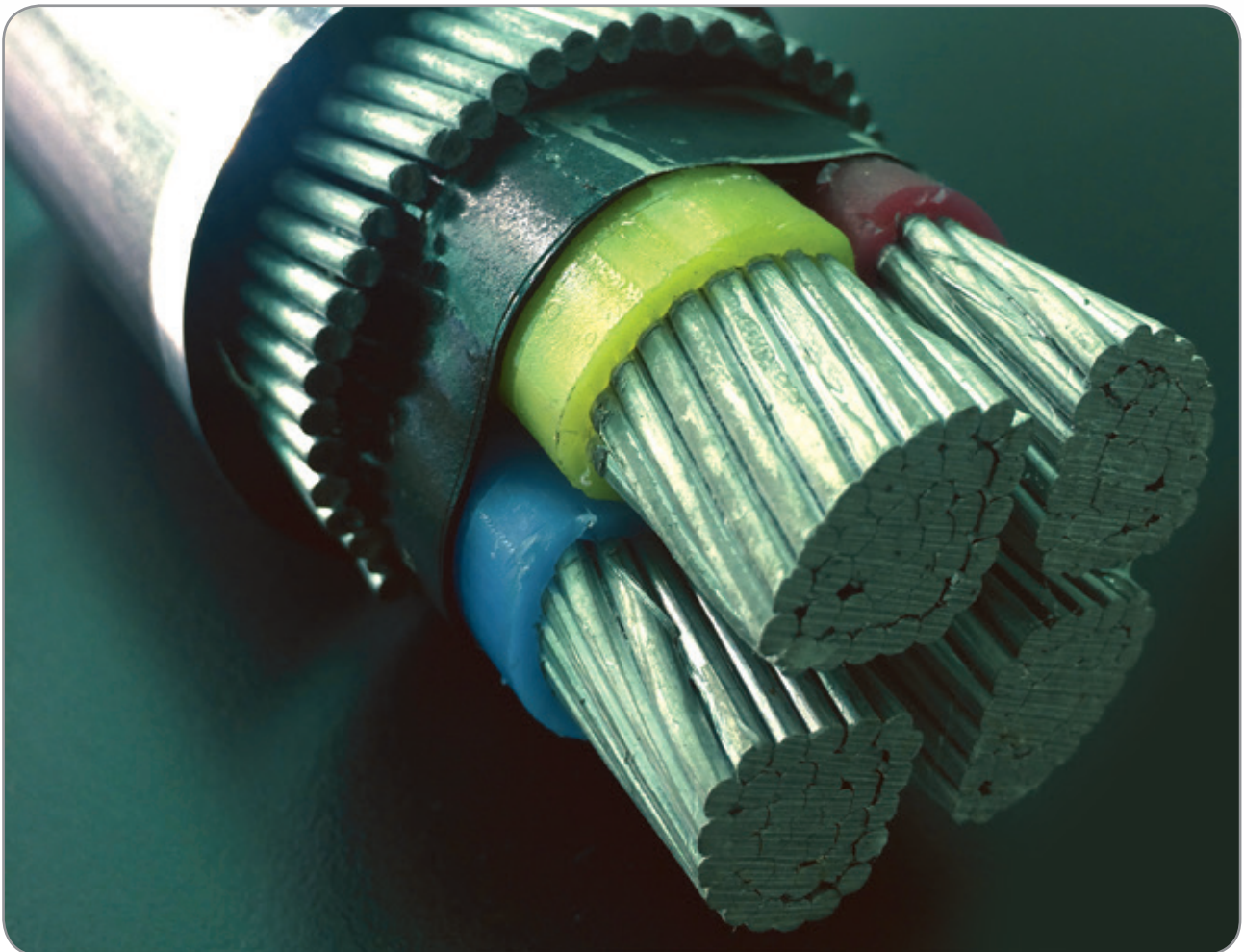


Bare Aluminium Conductor Steel Reinforced (ACSR) (ASTM B 232)

Code Name	Nominal Size	Construction No/Wire Diameter		Calculated Sectional Area		Approx. Overall Diameter	Approx. Weight	Calculated Breaking Load	Calculated DC Resistance at 20°C
	AWG/MCM	Aluminium	Steel	Aluminium	Steel				
	mm ²	no./mm	no./mm	mm ²	mm ²	mm	kg/km	KN	ohm/km
Flamingo	666.6	24/4.23	7/2.82	337.27	43.72	25.38	1,276	105.50	0.0859
Gannet	666.6	26/4.07	7/3.16	338.26	54.90	25.76	1,366	117.28	0.0857
Stilt	715.5	24/4.39	7/2.92	363.27	46.88	26.32	1,373	113.37	0.0797
Starling	715.5	26/4.21	7/3.28	361.93	59.15	26.68	1,465	125.98	0.0801
Redwing	715.5	30/3.92	19/2.35	362.06	82.41	27.43	1,651	153.69	0.0802
Cuckoo*	795.0	24/4.62	7/3.08	402.33	52.15	27.72	1,521	123.85	0.0720
Drake*	795.0	26/4.44	7/3.45	402.56	65.44	28.11	1,626	139.70	0.0720
Tern*	795.0	45/3.38	7/2.25	403.77	27.83	27.03	1,336	98.22	0.0718
Condor	795.0	54/3.08	7/3.08	402.33	52.15	27.72	1,527	125.08	0.0720
Mallard	795.0	30/4.14	19/2.48	403.84	91.78	28.96	1,840	171.26	0.0719
Ruddy	900.0	45/3.59	7/2.40	455.50	31.67	28.74	1,509	108.98	0.0636
Canary	900.0	54/3.28	7/3.28	456.28	59.15	29.52	1,732	141.85	0.0635
Rail*	954.0	45/3.70	7/2.47	483.84	33.54	29.61	1,602	115.65	0.0599
Cardinal*	954.0	54/3.38	7/3.38	484.52	62.81	30.42	1,839	150.64	0.0598
Ortolan	1,033.5	45/3.85	7/2.57	523.87	36.31	30.81	1,735	123.31	0.0553
Curlew	1,033.5	54/3.51	7/3.51	522.51	67.73	31.59	1,983	162.45	0.0554
Bluejay*	1,113.0	45/4.00	7/2.66	565.49	38.90	31.98	1,871	132.73	0.0512
Finch*	1,113.0	54/3.65	19/2.19	565.03	71.57	32.85	2,131	174.12	0.0515
Bunting	1,192.5	45/4.14	7/2.76	605.76	41.88	33.12	2,005	142.45	0.0478
Grackle	1,192.5	54/3.77	19/2.27	602.79	76.89	33.97	1,678	229.05	0.0483
Bittern*	1,272.0	45/4.27	7/2.85	644.40	44.66	34.17	2,135	151.66	0.0450
Pheasant*	1,272.0	54/3.90	19/2.34	645.08	81.71	35.10	2,437	194.17	0.0451
Dipper	1,351.5	45/4.40	7/2.93	684.24	47.20	35.19	2,265	160.77	0.0423
Martin	1,351.5	54/4.02	19/2.41	685.39	86.67	36.17	2,586	206.13	0.0425
Bobolink*	1,431.0	45/4.53	7/3.02	725.27	50.14	36.24	2,402	170.54	0.0399
Plover*	1,431.0	54/4.14	19/2.48	726.92	91.78	37.24	2,742	218.45	0.0401
Nuthatch	1,510.0	45/4.65	7/3.10	764.20	52.83	37.20	2,530	177.67	0.0379
Parrot	1,510.5	54/4.25	19/2.55	766.06	97.03	38.25	2,893	230.58	0.0380
Lapwing*	1,590.0	45/4.78	7/3.18	807.53	55.60	38.22	2,672	187.47	0.0359
Falcon*	1,590.0	54/4.36	19/2.62	806.22	102.4	39.26	3,047	243.04	0.0361

* indicates those "preferred" sizes most commonly used.

Specification LV Aluminium Armoured Cable



Specification LV Aluminium Armoured Cable

0.6/1kV Single Core, XLPE Insulated, PVC Sheathed Armoured Cables

Conductor		Nominal thickness of insulation	Nominal diameter of steel wire	Nominal thickness of sheath	Approx. overall diameter	Approx. cable weight
Nominal cross-sectional area	Shape					Aluminium
mm ²		mm	mm	mm	mm	kg/km
500	c.c.	2.2	2.0	2.2	45.7	2705

Note: c.c. - compacted circular stranded conductor

0.6/1kV Two Cores, XLPE Insulated, PVC Sheathed Armoured Cables

Conductor		Nominal thickness of insulation	Nominal diameter of steel wire	Nominal thickness of sheath	Approx. overall diameter	Approx. cable weight
Nominal cross-sectional area	Shape					Aluminium
mm ²		mm	mm	mm	mm	kg/km
25	r.e.	0.9	1.25	1.8	25.0	1118

Note: r.e. - solid round conductor

0.6/1kV Four Cores, XLPE Insulated, PVC Sheathed Armoured Cables

Conductor		Nominal thickness of insulation	Nominal diameter of steel wire	Nominal thickness of sheath	Approx. overall diameter	Approx. cable weight
Nominal cross-sectional area	Shape					Aluminium
mm ²		mm	mm	mm	mm	kg/km
25	r.e.	0.9	1.6	1.8	28.5	1508
70	s.m.	1.1	2.0	2.1	43.6	2795
150	s.m.	1.4	2.5	2.4	55.8	5135
300	s.m.	1.8	3.15	2.9	75.0	8840

Note: r.e. - solid round conductor
s.m. - sectoral stranded conductor

Specification LV Aluminium Armoured Cable

Current Carrying Capacity

The current carrying capacity given in the following tables are based on the assumption shown below:

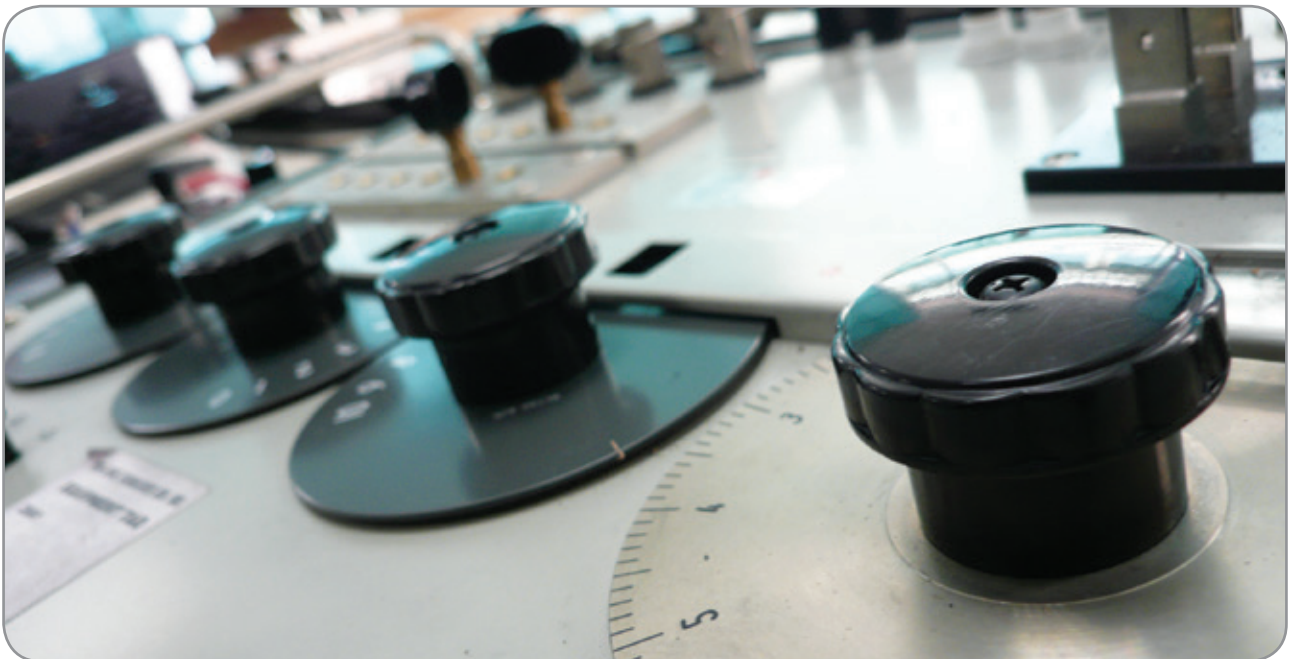
- 1) Maximum conductor temperature : 90°C
- 2) Maximum ambient temperature : In air (Voltage up to 1.9/3.3 (3.6) kV)..... 30°C
(Voltage 6.6 kV up to and including 33 kV)..... 25°C
In ground..... 15°C
- 3) Soil thermal resistivity : 1.2 Km/W
- 4) Laying depth : For voltage up to 1 kV..... 0.5 M
For higher voltage above 1 kV..... 0.8 M
- 5) Spacing between cables laid : In flat formation 2 times of overall diameter
In trefoil with cable touching
- 6) For other conditions, the rating factors included should be applied

Current Rating for Aluminium Conductor 0.6 / 1 (1.2) kV Armoured XLPE Cable

Conductor Size (mm ²)	In Air				In Ground			
	Single Core*		2 Core	3 or 4 Core	Single Core*		2 Core	3 or 4 Core
	Trefoil (A)	Flat (A)	(A)	(A)	Trefoil (A)	Flat (A)	(A)	(A)
16	-	-	85	74	-	-	108	91
25	-	-	112	98	-	-	138	116
35	-	-	138	120	-	-	165	139
50	162	215	116	145	177	185	196	165
70	207	270	211	185	218	227	241	203
95	252	324	254	224	260	270	288	244
120	292	372	-	264	296	306	-	278
150	337	424	-	305	331	339	-	311
185	391	477	-	350	274	380	-	353
240	465	554	-	418	433	435	-	409
300	540	626	-	488	486	483	-	461

* Single core cables with aluminium wire armour

Appendix: Technical Data



Appendix: Technical Data

Aluminium 1350 and Aluminium Alloy Rods (Chemical Composition)

Element		Composition (%)		
		Aluminium	Aluminium Alloy	
		1350	6201	6101
Silicon	Max.	0.10	0.50 ~ 0.90	0.40 ~ 0.70
Iron	Max.	0.40	0.50	0.50
Copper	Max.	0.05	0.10	0.10
Manganese	Max.	0.01	0.03	0.03
Magnesium	Max.	-	0.60 ~ 0.90	0.40 ~ 0.70
Chromium	Max.	0.01	0.03	0.03
Zinc	Max.	0.05	0.10	0.10
Boron	Max.	0.05	0.06	0.06
Gallium	Max.	0.03	-	-
Vanadium & Titanium, total	Max.	0.02	-	-
Other elements, each	Max.	0.03	0.03	0.03
Other elements, total	Max.	0.01	0.10	0.10
Aluminium	Max.	99.50	Remainder	Remainder

Aluminium 1350 and Aluminium Alloy Rods (Mechanical and Electrical Properties)

Designation	Tensile strength	Minimum conductivity	Volume electrical resistivity at 20°C
	kgf/mm ²	% IACS	ohm.mm ² /mm
Aluminium			
1350 - O	6.0 ~ 9.9	61.8	0.027899
1350 - H12 & - H22	8.5 ~ 11.9	61.5	0.028035
1350 - H14 & - H24	10.5 ~ 14.1	61.4	0.028080
1350 - H16 & - H26	11.9 ~ 15.3	61.3	0.028126
Aluminium Alloy			
6201	16 ~ 19	52.5	0.032841
6101	16 ~ 19	52.5	0.032841

Aluminium 1350 and Aluminium Alloy Rods (Diameter Tolerance)

Specified diameter	Deviation diameter from specified diameter	Deviation at any point from specified diameter
mm	mm	mm
9.5	±0.5	±0.76

Appendix: Technical Data

Properties of Aluminium, Aluminium Alloy and Copper

Characteristic	Unit	Aluminium		Aluminium Alloy		Copper	
		Hard-drawn	Annealed	6201	6101	Hard-drawn	Annealed
Specified gravity	g/cm	2.703	2.703	2.703	2.703	8.89	8.89
Tensile strength	kgf/mm	Min. 16	Max. 9.2	16 ~ 19	16 ~ 19	34 ~ 47	20 ~ 28
Electrical resistivity at 20°C	μohm.cm	2.8264	2.803	3.38	3.31	1.777	1.724
Conductivity at 20°C	%IACS	61	61.5	51	52	97	100
Temperature coefficient at 20°C	per °C	0.00403	0.00410	0.00347	0.00347	0.00381	0.00393
Coefficient of linear expansion	1.0 x 10 ⁻⁶ /°C	23	23	23	23	17	17

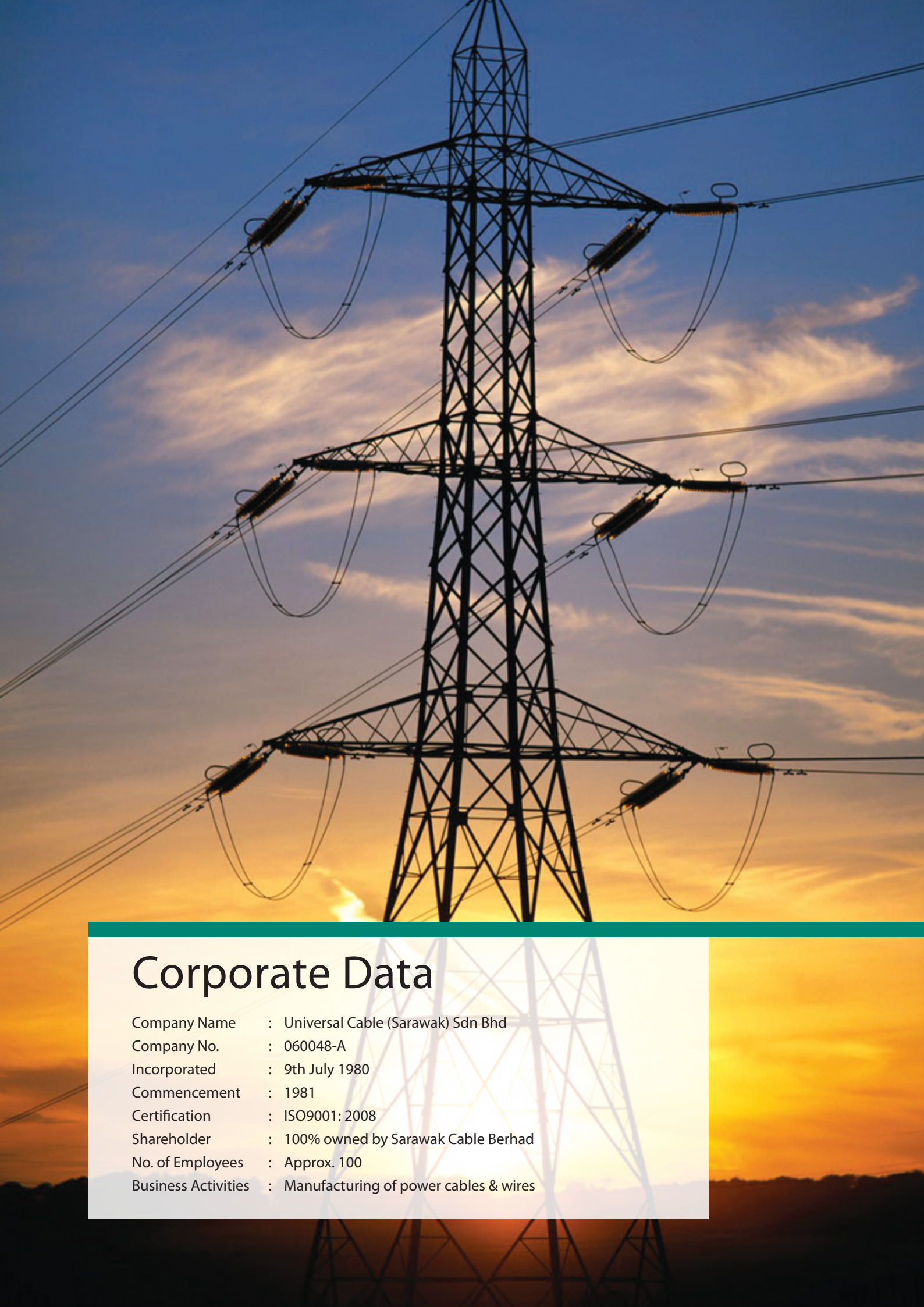
Comparison of Aluminium and Copper Conductors

Particular	Hard-drawn Aluminium Take annealed copper as 100%	Copper (annealed) Take hard-drawn aluminium as 100%
	%	%
For equal sectional area and length Weight Resistance Approx. breaking load	30 164 41	329 61 244
For equal weight and length Area Diameter Resistance Approx. breaking load	329 180 50 137	30 55 200 73
For equal resistance Area Diameter Weight Approx. breaking load	164 128 50 68	61 78 200 147
For equal current and temperature rise Weight Diameter	42 119	237 84

Wire Gauges

Gauge System		Diameter		Cross-sectional area			Weight of copper	Weight of aluminium
A. W. G.	S. W. G.	mm	mil	mm ²	sq. mil	CM	kg/km	kg/km
6/0	-	14.732	580	170.5	264200	336400	1515	460.2
5/0	-	13.119	516.5	135.2	209500	266800	1202	365.0
-	7/0	12.700	500	126.7	196400	250000	1126	342.0
-	6/0	11.786	464	109.1	169100	215300	969.9	294.6
4/0	-	11.684	460	107.2	166200	211600	953.2	289.5
-	5/0	10.973	432	94.56	146600	186600	840.6	255.3
3/0	-	10.404	409.6	85.01	131800	167800	755.8	229.5
-	4/0	10.160	400	81.07	125700	160000	720.7	218.9
-	3/0	9.449	372	70.12	108700	138400	623.4	189.3
2/0	-	9.266	364.8	67.43	104500	133100	599.5	182.1
-	2/0	8.839	348	61.36	95110	121100	545.5	165.7
0	-	8.252	324.9	53.49	82910	105600	475.5	144.4
-	0	8.230	324	53.19	82450	105000	472.9	143.6
-	1	7.620	300	45.60	70690	90000	405.4	123.1
1	-	7.348	289.3	42.41	65730	83690	377.0	114.5
-	2	7.011	276	38.60	59830	76180	343.2	104.2
2	-	6.544	257.6	33.63	52120	66370	299.0	90.80
-	3	6.401	252	32.18	49880	63500	286.1	86.88
-	4	5.893	232	27.27	42270	53820	242.4	73.63
3	-	5.827	229.4	26.66	41330	52620	237.0	71.99
-	5	5.385	212	22.77	35300	44940	202.4	61.49
4	-	5.189	204.3	21.15	32780	41730	188.0	57.10
-	6	4.877	192	18.68	28950	36860	166.1	50.43
5	-	4.621	181.9	16.77	26000	33100	149.1	45.28
-	7	4.470	176	15.69	24320	30970	139.5	42.37
6	-	4.115	162	13.30	20620	26250	118.3	35.92
-	8	4.064	160	12.97	20110	25600	115.3	35.02
7	-	3.665	144.3	10.55	16350	20820	93.78	28.48
-	9	3.658	144	10.50	16290	20740	93.41	28.37
8	-	3.264	128.5	8.367	12970	16510	74.39	22.59
-	10	3.251	128	8.302	12870	16380	73.80	22.42
-	11	2.946	116	6.818	10570	13460	60.61	18.41
9	-	2.906	114.4	6.633	10280	13090	58.96	17.91
-	12	2.642	104	5.481	8495	10820	48.72	14.80
10	-	2.588	101.9	5.261	8155	10380	46.77	14.21
-	13	2.337	92	4.289	6648	8465	38.13	11.58
11	-	2.305	90.74	4.172	6467	8234	37.09	11.26
12	-	2.053	80.81	3.309	5129	6531	29.42	8.935
-	14	2.032	80	3.243	5027	6400	28.83	8.756
-	15	1.829	72	2.627	4072	5185	23.35	7.093
13	-	1.828	71.96	2.624	4067	5178	23.33	7.085
14	-	1.628	64.08	2.081	3225	4107	18.50	5.618
-	16	1.626	64	2.075	3217	4096	18.45	5.604
15	-	1.450	57.07	1.650	2558	3257	14.67	4.456
-	17	1.422	56	1.589	2463	3136	14.13	4.290
16	-	1.291	50.82	1.309	2029	2583	11.63	3.534
-	18	1.219	48	1.167	1810	2304	10.38	3.152
17	-	1.150	45.26	1.0380	1609	2048	9.226	2.802
18	-	1.024	40.3	0.8227	1275	1624	7.314	2.221
-	19	1.016	40	0.8107	1257	1600	7.207	2.189
-	20	0.9144	36	0.6567	1018	1296	5.838	1.773
19	-	0.9117	35.89	0.6529	1012	1288	5.804	1.763
-	21	0.8128	32	0.5189	804.2	1024	4.613	1.401
20	-	0.8116	31.95	0.5174	801.9	1021	4.600	1.397
21	-	0.7230	28.46	0.4105	636.3	810.1	3.649	1.108

Gauge System		Diameter		Cross-sectional area			Weight of copper	Weight of aluminium
A. W. G.	S. W. G.	mm	mil	mm ²	sq. mil	CM	kg/km	kg/km
-	22	0.7112	28	0.3973	615.8	784.0	3.532	1.0730
22	-	0.6439	25.35	0.3256	504.7	642.6	2.895	0.8792
-	23	0.6096	24	0.2919	452.4	576.0	2.595	0.7880
23	-	0.5733	22.57	0.2581	400.1	509.4	2.295	0.6970
-	24	0.5588	22	0.2452	380.1	484.0	2.180	0.6622
24	-	0.5106	20.1	0.2047	317.3	404.0	1.820	0.5528
-	25	0.5080	20	0.2027	314.2	400.0	1.802	0.5472
-	26	0.4572	18	0.1642	254.5	324.0	1.460	0.4433
25	-	0.4546	17.9	0.1623	251.6	320.4	1.443	0.4383
-	27	0.4166	16.4	0.1363	211.3	269.0	1.212	0.3680
26	-	0.4049	15.94	0.1288	199.8	254.1	1.145	0.3477
-	28	0.3759	14.8	0.1110	172.0	219.0	0.9867	0.2997
27	-	0.3606	14.2	0.1021	158.3	201.5	0.9077	0.2757
-	29	0.3454	13.6	0.09372	145.3	185.0	0.8332	0.2530
28 -	-	0.3211	12.64	0.08097	125.5	159.8	0.7198	0.2186
-	30	0.3150	12.4	0.17791	120.8	153.8	0.6926	0.2104
-	31	0.2947	11.6	0.06819	105.7	134.6	0.6062	0.1841
29	-	0.2860	11.26	0.06422	99.54	126.7	0.5709	0.1734
-	32	0.2743	10.8	0.05908	91.58	116.6	0.5252	0.1595
30	-	0.2548	10.03	0.05097	79.01	100.6	0.4531	0.1376
-	33	0.2540	10	0.05067	78.54	100.0	0.4505	0.1368
-	34	0.2337	9.2	0.04289	66.48	84.64	0.3813	0.1158
31	-	0.2268	8.928	0.04039	62.60	79.71	0.3590	0.1090
-	35	0.2134	8.4	0.03575	55.42	70.56	0.3178	0.09653
32	-	0.2019	7.95	0.03203	49.64	63.20	0.2847	0.08647
-	36	0.1930	7.6	0.02927	45.36	57.76	0.2602	0.07902
33	-	0.1798	7.08	0.02540	39.37	50.13	0.2258	0.06858
-	37	0.1727	6.8	0.02343	36.32	46.24	0.2083	0.06326
34	-	0.1602	6.305	0.02014	31.22	39.75	0.1791	0.05439
-	38	0.1524	6	0.01824	28.27	36.00	0.1622	0.04925
35	-	0.1426	5.615	0.01597	24.76	31.53	0.1420	0.04313
-	39	0.1321	5.2	0.01370	21.24	27.04	0.1218	0.03700
36	-	0.1270	5	0.01267	19.63	25.00	0.1126	0.03420
-	40	0.1219	4.8	0.01167	18.10	23.04	0.1038	0.03152
37	-	0.1131	4.453	0.01005	15.57	19.83	0.08931	0.02713
-	41	0.1118	4.4	0.009810	15.21	19.36	0.08721	0.02649
-	42	0.1016	4	0.008107	12.57	16.00	0.07207	0.02189
38	-	0.1007	3.965	0.007968	12.35	15.72	0.07084	0.02151
-	43	0.09140	3.6	0.006567	10.18	12.96	0.05838	0.01773
39	-	0.08970	3.531	0.006319	9.794	12.47	0.05618	0.01706
-	44	0.08128	3.2	0.005189	8.042	10.24	0.04613	0.01401
40	-	0.07988	3.145	0.005012	7.768	9.891	0.04456	0.01353
41	45	0.07113	2.8	0.003973	6.159	7.842	0.03532	0.01073
42	-	0.06334	2.494	0.003151	4.884	6.219	0.02801	0.008508
-	46	0.06096	2.4	0.002919	4.524	5.760	0.02595	0.007880
43	-	0.05641	2.221	0.002499	3.873	4.932	0.02222	0.006747
-	47	0.05080	2	0.002027	3.142	4.000	0.01802	0.005472
44	-	0.05023	1.978	0.001982	3.072	3.911	0.01762	0.005351
45	-	0.04474	1.761	0.001572	2.436	3.102	0.01397	0.004244
-	46	0.04064	1.6	0.001297	2.011	2.560	0.01153	0.003502
46	-	0.03984	1.568	0.001246	1.932	2.460	0.01108	0.003365
47	-	0.03548	1.397	0.0009884	1.532	1.951	0.008787	0.002669
48	-	0.03159	1.244	0.0007838	1.215	1.547	0.006968	0.002116
-	49	0.03048	1.2	0.0007297	1.131	1.440	0.006487	0.001970
49	-	0.02813	1.108	0.0006216	0.9635	1.227	0.005526	0.001678
-	50	0.02540	1	0.0005067	0.7354	1.000	0.004505	0.001368
50	-	0.02505	0.9863	0.0004929	0.7641	0.9728	0.004382	0.001331



Corporate Data

Company Name	: Universal Cable (Sarawak) Sdn Bhd
Company No.	: 060048-A
Incorporated	: 9th July 1980
Commencement	: 1981
Certification	: ISO9001: 2008
Shareholder	: 100% owned by Sarawak Cable Berhad
No. of Employees	: Approx. 100
Business Activities	: Manufacturing of power cables & wires



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