ALCON

MAREPHA

— PASSION FOR POWER —

MANUFACTURER OF ALL TYPES OF ALUMINIUM
OVERHEAD POWER CONDUCTORS

BLACK
WOMEN OWNED
BBBEE LEVEL
1

COMPANY PROFILE

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REGISTRATION DETAILS

Registered Company Name:	Alcon Marepha (Pty) Ltd
Registration Number:	2001/020977/07
Business Income Tax Number:	9034454141
VAT Registration Number:	4800198394
Skills Levy Number:	L520741994

CONTACT DETAILS

Physical Address:	10 Kite Street Birch Acres Kempton Park 1619
Postal Address:	PO Box 13837 Norkem Park 1613
Business Telephone Number:	011 393 4037
Business Fax Number:	011 393 4410
Email Address:	info@alcon.co.za
Website Address:	www.alcon.co.za
Equity Ownership:	100% Black Owned
Directors:	Edwin Dwinki Phala (CEO) Adele Hall (Chairperson) Neil Kayton (Non-Executive
Contact Person:	Louis Du Preez Marketing & Sales Manager

ALCON MAREPHA
— PASSION FOR POWER —

BLACK WOMEN OWNED BBBEE LEVEL 1

Established in 2001, Alcon Marepha is a leading manufacturer of bare aluminium overhead power conductors for municipalities, electrical wholesalers, power line construction companies and power utilities across most of Southern Africa.

We are a BBBEE Level 1 contributor and are proud to be a Black, Women, Youth owned organisation, with 95% Black employment.

We are committed to transformative objectives through our Employment Equity policy, skills development initiatives and enterprise development programmes.

With a current count of 100 employees, we pride ourselves on delivering our promise to our clients by always providing competitive pricing, guaranteed quality and providing the shortest possible lead times.

OUR STORY

Alcon Marepha (Pty) Ltd was formed in 2001 by industrialist, Edwin Dwinki Phala, an Electrical Engineer with a Master's Degree in Engineering Management.

We were founded with the vision of creating a 100% black-owned entity and our mission is to provide opportunities and job creation through:

- Upskilling and developing our employees;
- Recruiting unskilled labour workers (including students from tertiary institutions); and
- Developing a workforce that can support the growth of the business.

We have grown from manufacturing aluminium conductors for small distribution to manufacturing a wide variety of all types and sizes of aluminium overhead power conductors, used for voltages up to 765kV. We have been an approved supplier to Eskom since 2001, a relationship that has greatly contributed towards our growth in technology, our quality control systems, our Safety, Health and Environment (SHE) policy and in job creation.

Our success is largely attributed to a strong focus on management, an organisational culture of team work, and continuous monitoring of Key Performance Indicators (KPI's) developed within our business processes. This ensures that the achievements of our business objectives and monthly targets, skills transfer targets, continuous client focus and product developments are readily acquired. Furthermore, our ethos, which is founded on operational excellence, strong financial control and corporate governance, is facilitated by a highly-driven working environment. This ensures optimal annual returns on investments for our shareholders.

OUR MISSION

To manufacture high quality, cost effective aluminium overhead power conductors in order to support our stakeholders in meeting their objectives.

OUR VISION

To be recognised as a market leader for our aluminium base overhead power conductors. We will continue to invest in human capital to support our business whilst ensuring the safety of our employees, and to preserve and sustain our environment for future generations.

OUR CORE VALUES

Our values define our character, our fundamental beliefs and how we work together. By implementing these core values, we achieve our purpose, realise our vision, and execute our strategy. Our values are:

1. **Integrity, Honesty and Trust**
   - We conduct business - and build lasting relationships with employees and customers alike in an open, honest and transparent manner.

2. **Respect:**
   - We foster trust and mutual admiration amongst our employees and customers alike.
   - We value, respect and embrace individual diversity.

3. **The ALCON Family**
   - We build relationships with our staff and customers through collaboration, compassion and empathy.

4. **Service Excellence**
   - We pride ourselves in maintaining a high level of service excellence through consistent communication, stringently sticking to deadlines and by supplying the highest quality product.

OUR COMPANY

EMPOWERMENT

- Alcon Marepha will continue to be proactive in order to attain optimal empowerment status.
- Alcon Marepha will empower its employees to support our business growth and objectives through training and skills development.
- Alcon Marepha will support our customers and suppliers in order to meet their business objectives.
- Alcon Marepha will also continue to empower the surrounding communities through job creation and support for community development.

OUR LONG-STANDING RELATIONSHIPS

Alcon Marepha have long-term supply contracts with ESKOM and TRANSNET in South Africa, as well as the Swaziland Electricity Board. While some of our conductors do pass over our borders, most of it is exported through our existing clientele.

Industries we supply to include: **Major Turnkey Contractors, Major Cable Distributors, Large Wholesalers Exports into Zimbabwe.**

TRANSNET

Eskom

SEC Swaziland Electricity Company

ALCON CARES 08

We, at Alcon Marepha, are committed to giving back to our surrounding communities by providing financial aid, school uniforms and school books to the **Bula Mahlo Orphanage** and **OR Tambo Primary School**, both of which are situated in Tembisa near the Alcon Marepha head office. We also aid learners from disadvantaged backgrounds with tuition for a tertiary education and textbooks through the **Agang Sechaba NGO**.

We believe that Investing in education is key to the growth of our country, and the success of future generations. Our primary corporate social investment focus has been to uplift local communities by providing bursary programmes aimed at developing students studying in the field of mechanical and electrical engineering.

OUR MANAGEMENT TEAM

Edwin Dwinki Phala
Chief Executive Officer

Edwin Dwinki Phala, is an Electrical Engineer with a Master's Degree in Engineering Management. An industrialist at heart, he formed Alcon Marepha (Pty) Ltd in 2001. Dwinki Phala was also a founding member of EON Consulting, an engineering and management consulting company.

He developed an interest in manufacturing after being on the board of directors for both the Aberdare Group and Powertech for 12 years, earning his stripes as a black industrialist in the sector.

Dwinki Phala had a vision of creating a black-owned, controlled and managed cable and conductor manufacturing entity. In pursuit of his vision, he approached the Aberdare Group to partner in the acquisition of Alcon Conductors (Pty) Ltd, after being unable to raise capital to acquire it on his own. Eventually Alcon Marepha was established, with Dwinki Phala as its majority shareholder though his investment company, Lone Ranger (Pty) Ltd.

Later, Dwinki Phala finally bought out Aberdare Group shares in Alcon Marepha, to make Alcon Marepha the only 100% black-owned aluminium overhead power conductor manufacturing company in South Africa.

Adele Hall
Chairperson

Adele Hall brings a wealth of experience to Alcon Marepha.

Hall's career started when she entered the accounting field, holding a number of positions while studying for her BCom degree in Accounting and Auditing. A defining moment of her career came when she was employed by Hannover Re, where one of Hall's responsibilities was to lead a large team of professionals. The project ended up delivering unprecedented results, and that was a tremendous boost in Hall's career.

Currently, Hall is intricately involved in the rewarding world of transformation within various organisations; using the Broad-Based Black Economic Empowerment (B-BBEE) Codes as the main driver.

To date, Hall has held a number of positions in the transformation domain, including Director for Transformation at UTi; Vice President and Head of Transformation at Saab Grintek Defence; and currently, a shareholder and Director at No Ordinary Corporation (NOC).

As a diligent and passionate learner, Hall has realised that change sometimes needs to happen incrementally - that every step in the right direction is critical, irrespective of its impact, as long as the vision remains a priority and the people are continually motivated to push forward.

Neil Kayton
Non-Executive Director

Neil Kayton qualified as a Chartered Accountant (CA) with Ernst and Young (EY) and during his articles, Neil focused primarily on the mining and manufacturing sectors.

Following EY, he joined Cape Gate, a private family-owned company that manufactures steel and related products from scrap steel. Neil was seconded to Universal Recycling Company, a joint venture business with Cape Gate, to assist in instituting governance processes and procedures.

During his time with Cape Gate, Neil acquired significant general management experience in all functions of the business. He was also involved in the management of a kosher wine farm in Paarl for some time, that allowed him to gain a comprehensive understanding of the complete business process.

Thereafter, he joined a global multinational pharmaceutical company, AstraZeneca, as a Financial Director. Here, his intent was to gain more sales and marketing experience and to see how an international company operates.

Following his role at AstraZeneca, Neil was approached by the Powertech Group; a wholly owned subsidiary of Altron, to join them as the Group CFO.

OUR SAFETY, HEALTH, ENVIRONMENTAL AND QUALITY POLICY

GREAT SAFETY LEADS TO BETTER FUTURES

Alcon Marepha (Pty) Ltd is a leading South African manufacturer, distributor and exporter of round wire concentric lay bare overhead electrical stranded conductors, manufactured to internationally recognised standards.

We have attained market leadership through:

- The supply of superior quality products;
- Alerting ourselves to the changing needs of our clients;
- Being alert and making use of any new innovative technologies that arise; and
- By observing international trade conditions.

The foundation of this policy, and it's related objectives, set the framework for an effective Safety, Health, Environmental and Quality management system. This is established, measured and maintained against the appropriate international standards.

The management team of Alcon Marepha (Pty) Ltd recognises that the long-term success of our operation, and thus is an integral part of our business, depends largely upon the sustainable use of natural resources, the health and safety of our employees, as well as continued client service.

Our Commitment:

- To supply products and services that meet or exceed our client expectations and requirements.
- To comply with legal, the international standard, and other requirements which relate to:
  - Our management systems,
  - Our product,
  - The environment, and
  - The occupational health and safety of our employees.
- To the continual improvement of our products and services.
- To identify, eliminate and/or mitigate all risk throughout the company.
- To the prevention of pollution.
- To the recycling of materials, which reduces much of the waste of our product being sent to landfill.
- To the efficient use of energy.
- To develop value in our employees by building priority skills and aiding them to perform competently within their roles.
- To mitigate any injury or ill health to all our employees, sub-contractors and visitors.

Management endeavours to ensure that the Safety, Health, Environment and Quality (SHEQ) Policy, its related objectives and targets are understood, implemented and maintained at all levels within the organisation and shall be made available to all interested and affected parties, including to the public.

OUR SAFETY, HEALTH, ENVIRONMENTAL AND QUALITY POLICY

MANUFACTURING AND TEST FACILITIES

We manufacture a full range of aluminium overhead conductors to both international and national quality standards, from 7 strand conductors to 61 strand conductors. Aluminium Conductor Steel Reinforced (ACSR) are used in areas with less corrosive effects but can be greased to improve corrosion resistance.

All Aluminium Conductors (AAC) and All Aluminium Alloy Conductors (AAAC) are used in environments with aggressive corrosion. The AAAC conductors are used where longer spans are needed as their tensile strength is higher than that of the AAC conductors, however the carrying capacity of electrical currant of the AAC conductor is slightly higher than that of the AAAC conductor, assuming they both have the same dimensions.

CERTIFIED TO DELIVER

We have developed and implemented a quality management system to:

- Document our best business practices;
- Better the requirements and expectations of our clients; and
- Improve the overall management of our company.

Our quality management system meets the requirements of, (and has been certified to) ISO9001, since 2001. The requirements of the standard are applied to enable us at Alcon Marepha, to consistently provide products that meet our clients' requirements, and as such, international standards as per the SANS IEC 61089:1991.

BEST QUALITY, GUARANTEED

Our on-site laboratory is equipped to ensure that all products are continuously tested to the strictest standards. Our training staffed are proficient in the requirements of our clients and to the relevant International Standards which ensures that our product is consistently meeting clients' expectations.

The information contained in the standard tables is based on the following conditions:

• Ambient Temperature:	30°C
• Maximum Conductor Temperature:	75°C
• Wind Speed:	0,44m/s
• Normal Stringing Temperature:	25°C
• Solar Radiation:	890 Ω/m^2
• Solar Absorption Coefficiant:	1

COMPARISON OF THE CHARACTERISTICS OF ALUMINIUM

Material	Aluminium	Al Alloy
Specific gravity	2,70	2,70
Tensile Strength: MPa Hard Drawm Annealed	 160 100	 - 295
Volume Resistivity at 20°C W.m	2,826 x 10^{8}	3,253 x 10^{8}
Temperature coefficient of resistance per °C	0.00403	0,00360
Coefficient of linear expansion per °C	23 x 10^{6}	23 x 10^{6}
Specific Heat KJ/ kg/ K	0.904	0.904
Melting Point °C	658	658

CHEMICAL CHARACTERISTICS OF ROD

Aluminium

Code		Si	Fe	B	Mn + Ti + V + Cr	Al
99,7 EC	% min.	-	0,16	0,003	-	99,65
	% min.	-	0,22	0,005	-	99,70
	% min.	0,10	0,28	0,020	0,013	-

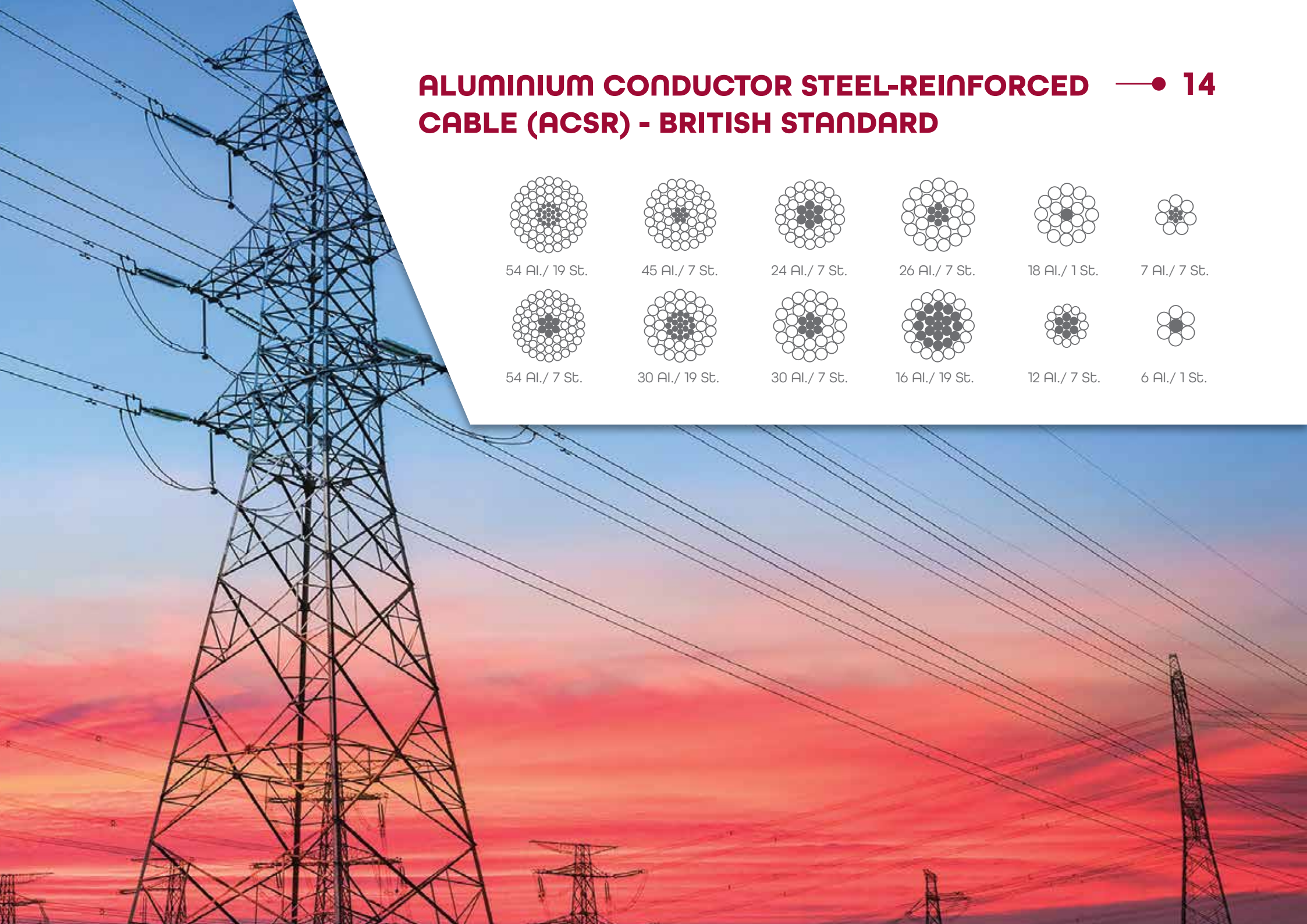
Alloy

Code		Si	Mg	Fe	B	Mn + Ti + V + Cr	Ti	Al
6101	% min.	0,40	0,50	0,15	0,004	-	-	-
	% min.	0,45	0,55	0,20	0,007	-	-	0,03
	% min.	0,50	0,60	0,25	0,020	0,013	0,007	-

MECHANICAL CHARACTERISTICS OF ROD

Description	Aluminium	Alloy
Tensile MPa	110-130	170-200
Elongation %	6-12	8-12,5
Conductivity	62,3 min.	52,5 min.
Diameter mm	9,55 nom.	9,55 nom.

ALUMINIUM CONDUCTOR STEEL-REINFORCED CABLE (ACSR) - BRITISH STANDARD



54 Al./ 19 St.

45 Al./ 7 St.

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18 Al./ 1 St.

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30 Al./ 19 St.

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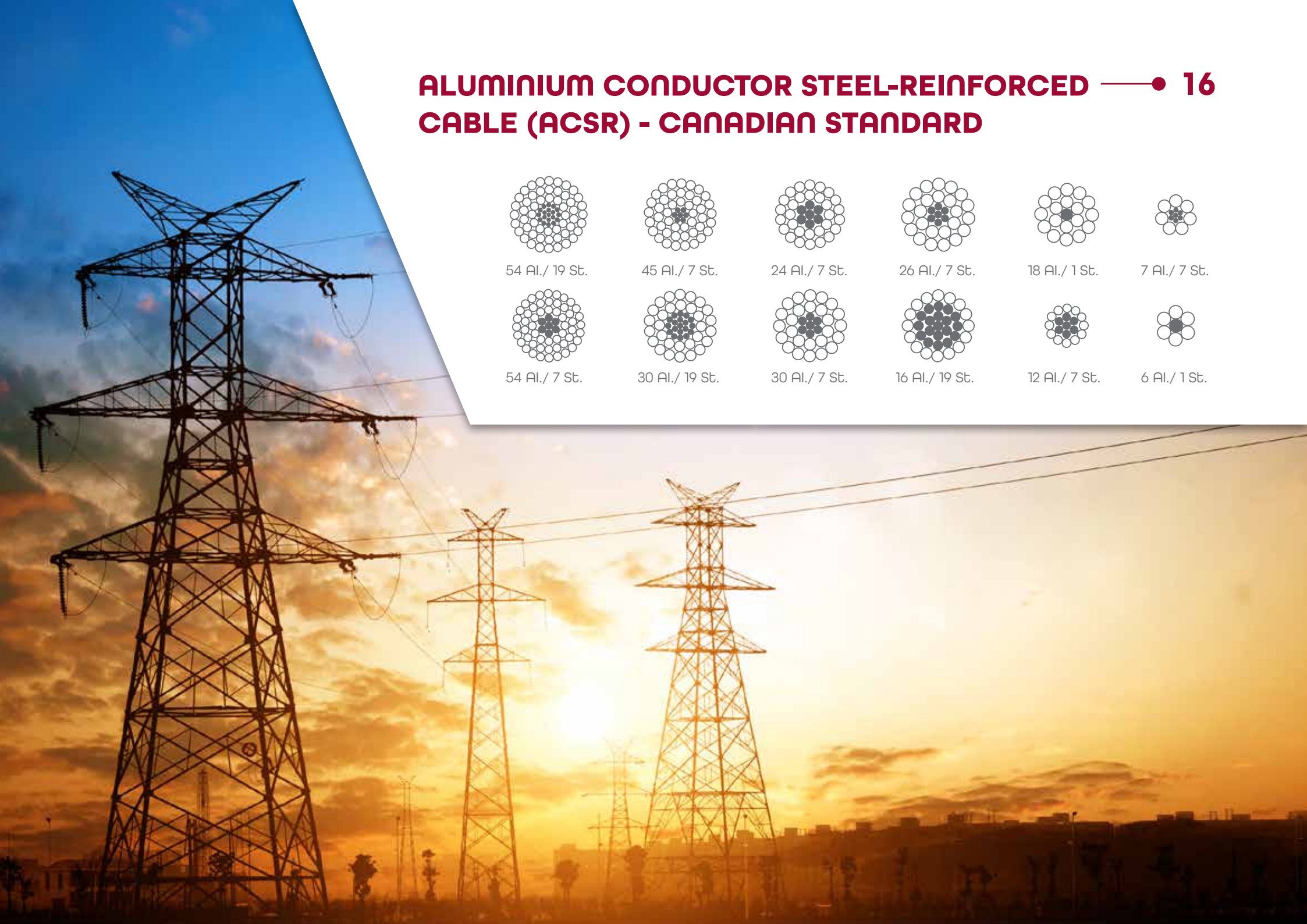
Code Name	Equival. Copper Area	Standing and Wire Diameter	Diameter Over Steel	Overall Diameter (Std.)	Aluminium area	Steel Area	Total Area	Mass kg/km			Ultimate tensile	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating
	mm²	mm	mm	mm	mm²	mm²	mm²	Alum	Steel	Total	Newton	/C° x 10⁻⁶	MPa	MPa	Ω/km	A
Squirrel	12,90	6/1/2,11	2,11	6,33	20,98	3,50	24,48	57,70	27,50	85,20	8020	19,31	54600	80400	1,3677	130
Gopher	16,30	6/1/2,36	2,36	7,08	26,25	4,37	30,62	72,20	34,40	107	9610	19,31	52700	80400	1,0933	150
Weasel	19,35	6/1/2,59	2,59	7,77	31,61	5,27	36,88	87,00	41,50	129	11450	19,31	51500	80400	0,9077	170
Fox	22,58	6/1/2,79	2,79	8,37	36,68	6,11	42,80	101	48,10	149	13100	19,31	50700	80400	0,7822	190
Ferret	25,81	6/1/3,00	3,00	9,00	42,41	7,07	49,48	117	55,60	173	15200	19,31	50200	80400	0,6766	210
Rabbit	32,26	6/1/3,35	3,35	10,05	52,88	8,81	61,70	145	69,40	214	18500	19,31	49500	80400	0,5426	240
Mink	38,71	6/1/3,66	3,66	10,98	63,13	10,52	73,65	174	82,80	257	21900	19,31	49100	80400	0,4546	260
Skunk	38,71	12/7/2,59	7,77	12,95	63,22	36,88	100,10	175	292	467	52900	15,84	71900	108000	0,4571	270
Beaver	45,16	6/1/3,99	3,99	11,97	75,02	12,50	87,53	206	98,40	304	25900	19,31	48800	80400	0,3825	290
Horse	45,16	12/7/2,79	8,37	13,95	73,36	42,80	116,16	203	338	541	60700	15,84	71000	108000	0,3939	300
Raccoon	48,39	6/1/4,9	4,09	12,27	78,83	13,14	91,97	217	103	320	27200	19,31	48700	80400	0,3640	300
Otter	51,61	6/1/4,22	4,22	12,66	83,92	13,99	97,91	231	110	341	28900	19,31	48700	80400	0,3419	310
Cat	58,06	6/1/4,50	4,50	13,50	95,43	15,90	111,33	263	125	388	32800	19,31	48500	80400	0,3007	340
Hare	64,52	6/1/4,72	4,72	14,16	104,98	17,50	122,48	289	138	427	36000	19,31	48500	80400	0,2733	360
Dog	64,52	6/4,72 + 7/1,57	4,71	14,15	104,98	13,55	118,53	289	100	389	34700	19,92	48800	76400	0,2733	360
Hyena	64,52	7/4,39 +7/1,93	5,79	14,57	105,95	20,48	126,43	291	162	453	41900	18,93	52400	82200	0,2697	360
Leopard	80,65	6/5,28 +7/1,75	5,25	15,81	131,37	16,84	148,21	361	133	494	42200	19,54	47800	76300	0,2184	410
Coyote	80,65	26/2,54	5,73	15,89	131,74	20,06	151,80	365	159	524	47300	19,54	51900	76000	0,3035	420
Tiger	80,65	30/7/2,36	4,72	16,52	131,23	30,62	161,85	364	242	606	58700	18,43	56900	83400	0,2202	420
Wolf	96,77	30/7/2,59	7,77	18,13	158,06	36,88	194,94	438	292	730	69200	18,43	55700	83400	0,1828	470
Lynx	112,90	30/7/2,79	8,37	19,53	183,41	42,80	226,20	508	330	846	79300	18,43	54900	83400	0,1576	520
Panther	129,00	30/7/3,00	9,00	21,00	212,06	49,48	261,54	588	391	970	90800	18,43	54300	83400	0,1363	560
Lion	145,20	30/7/3.18	9,54	22,26	238,27	55,60.	293,86	660	440	1100	101000	18,43	53900	83400	0,1213	610
Bear	161,30	30/7/3,35	10,05	23,45	264,42	61,70	326,12	733	488	1220	112000	18,43	53600	83400	0,1213	650
Goat	193,50	30/7/3,71	11,13	25,97	324,31	75,67	399,98	899	598	1500	136000	18,43	53100	83400	0,0891	730
Sheep	225,80	30/7/3,99	11,97	27,93	375,11	87,53	462,63	1040	692	1730	157000	18,43	52900	83400	0,0770	800
Antelope	225,80	54/7/2,97	8,91	26,73	374,11	48,50	422,60	1040	383	1420	117000	19,91	47700	73200	0,0773	790
Bison	225,80	54/7/3,00	9,00	27,00	381,70	49,48	431,18	1060	391	1450	119000	19,91	47600	73200	0,0757	800
Deer	258,10	30/7/4,27	12,81	29,89	429,60	100,24	529,84	1190	792	1980	179000	18,43	52800	83400	0,0673	870
Zebra	258,10	54/7/3,18	9,54	28,62	428,88	55,60	484,48	1190	440	1630	133000	19,91	47300	73200	0,0674	860
Elk	290,30	30/7/4,50	13,50	31,50	477,13	111,33	588,46	1320	880	2200	199000	18,43	52700	83400	0,0606	930
Camel	290,30	54/7/3,35	10,05	30,15	475,96	61,33	588,46	1320	488	1810	147000	19,91	47000	73200	0,0606	920
Moose	322,60	54/7/3,53	10,59	31,77	528,49	68,51	596,99	1460	542	2000	162000	19,91	46700	73200	0,0547	980
Dinosaur	414,63	54/3,95 +19/2,36	11,80	35,50	661,73	83,11	744,84	1835	658	2493	202920	19,91	46700	72200	0,0437	1110

ALUMINIUM CONDUCTOR STEEL-REINFORCED CABLE (ACSR) - CANADIAN STANDARD



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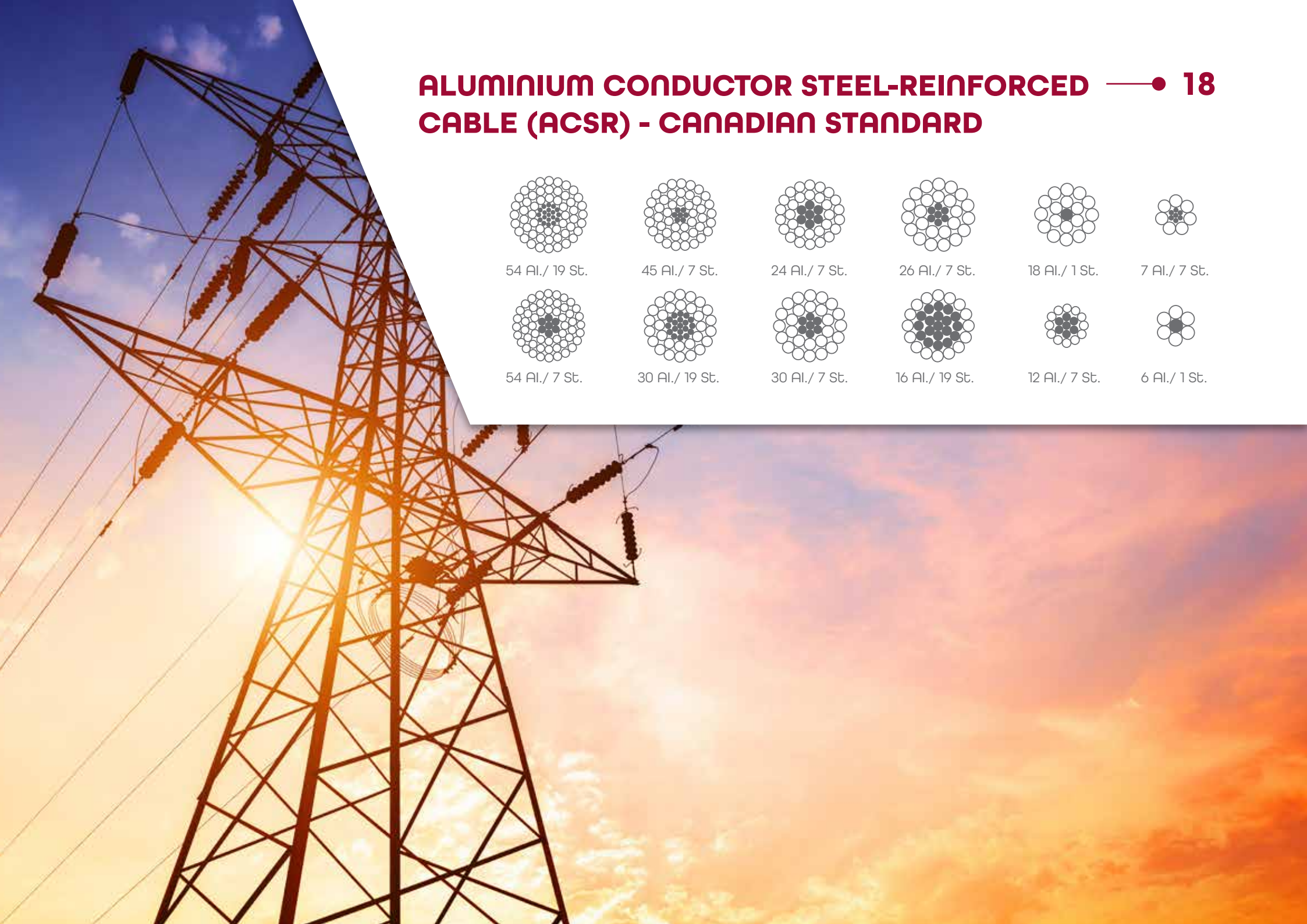
Code Name	Equival. Copper Area	Standing and Wire Diameter	Diameter Over Steel	Overall Diameter (Std.)	Aluminium area	Steel Area	Total Area	Mass kg/km			Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating	Std Drum Length
	mm²	mm	mm	mm	mm²	mm²	mm²	Alum	Steel	Total	Newton	/C° x 10⁻⁶	MPa	MPa	Ω/km	A	
Wren	5,26	6/1/1,33	1,33	1,33	1,33	1,39	9,73	22,90	10,90	33,80	4100	19,31	71100	80400	3,4423	75	30000
Warbler	6,63	6/1/1.50	1,50	1,50	1,50	1,77	12,37	29,20	13,90	43,10	4780	19,31	65000	80400	2,7062	87	3000
Turkey	8,37	6/1/1,68	1,68	1,68	1,68	2,22	15,52	36,60	17,40	54,00	5600	19,31	60500	80400	2,1574	100	3000
Thrush	10,55	6/1/1,89	1,89	1,89	1,89	2,81	19,64	46,30	22,10	68,40	6700	19,31	57000	80400	1,7046	120	3000
Swan	13,30	6/1/2,12	2,12	2,12	2,12	3,53	24,71	58,30	27,80	86,10	8080	19,31	54500	80400	1,3548	130	3000
Swallow	16,77	6/1/2,38	2,38	2,38	2,38	4,45	31,14	73,40	35,00	108	9850	19,31	52600	80400	1,0750	150	3000
Sparrow	21,15	6/1/2,67	2,67	2,67	2,67	5,60	39,19	92,40	44,10	137	12100	19,31	51200	80400	0,8541	180	2500
Robin	26,67	6/1/3,00	3,00	3,00	3,00	7,07	49,48	117	55,60	173	15000	19,31	50200	80400	0,6766	210	2500
Raven	36,62	6/1/3,37	3,37	3,37	3,37	8,92	62,44	147	70,20	217	18700	19,31	49400	80400	0,5361	240	2000
Quail	42,41	6/1/3,78	3,78	3,78	3,78	11,22	78,55	185	88,30	273	23300	19,31	49000	80400	0,4261	270	1500
Pigeon	53,49	6/1/4,25	4,25	4,25	4,25	14,19	99,30	234	112	346	29300	19,31	48600	80400	0,3371	320	1500
Penguin	67,43	6/1/4,77	4,77	4,77	4,77	17,87	125,09	295	141	436	36800	19,31	48500	80400	0,2676	370	1500
Partridge	85,01	26/2,57 + 7/2,00	6,00	6,00	6,00	21,99	156,87	373	174	547	49800	19,37	52400	77100	0,2140	420	1500
Owl	85,01	6/5,36 + 7/1,79	5,37	5,37	5,37	17,62	153,00	372	139	511	43600	19,90	47800	76500	0,2119	420	1000
Waxwing	85,01	18/1/3,09	3,09	3,09	3,09	7,50	142,48	373	59	432	30800	21,44	41900	66200	0,2126	420	2000
Piper	95,60	30/7/2,54	7,62	7,62	7,62	35,47	187,48	421	280	701	66900	18,43	55900	83400	0,1901	460	2000
Ostrich	95,60	26/2,73 + 7/2,12	6,36	6,36	6,36	24,71	176,90	421	195	616	55200	19,38	51500	77000	0,1897	460	2000
Oriole	107,20	30/7/2,69	8,07	8,07	8,07	39,78	210,28	472	315	787	74200	18,43	55300	83400	0,1695	490	2000
Linnet	107,20	26/2,89 + 7/2,25	6,75	6,75	6,75	27,83	198,39	472	220	692	61200	19,37	50900	77100	0,1692	490	2000
Merlin	107,20	18/1/3,47	3,47	3,47	3,47	9,46	179,68	470	74,40	544	38300	21,44	41300	66200	0,1686	480	2000
Chicadee	126,70	18/1/3,77	3,77	3,77	3,77	11,16	212,09	555	87,90	643	44900	21,44	41000	66200	0,1427	530	2000
Lark	126,70	30/7/2,92	8,76	8,76	8,76	46,88	247,77	557	371	928	86300	18,43	54500	83400	0,1438	550	1500
Ibis	126,70	26/3,14 + 7/2,44	7,32	7,32	7,32	32,73	234,07	557	259	816	71000	19,38	50100	77000	0,1434	540	1500
Pelican	152,00	18/1/4,14	4,14	4,14	4,14	13,46	255,77	669	106	775	53800	21,44	40700	66200	0,1189	600	1000
Flicker	152,00	24/3,58 + 7/2/3,39	7,17	7,17	7,17	31,40	272,99	668	248	916	75600	19,91	47300	73900	0,1195	610	2000
Hen	152,00	30/7/3,20	9,60	9,60	9,60	56,30	297,57	6668	445	1110	103000	18,43	53900	83400	0,1198	610	2000
Hawk	152,00	26/3,44 + 7/2,68	8,04	8,04	8,04	39,49	281,13	669	312	981	84300	19,36	49500	77100	0,1195	610	2000
Heron	159,40	30/7/3,28	9,84	9,84	9,84	59,15	312,64	702	468	1170	108000	18,43	53700	83400	0,1140	630	2000

ALUMINIUM CONDUCTOR STEEL-REINFORCED CABLE (ACSR) - CANADIAN STANDARD



54 Al./ 19 St.

45 Al./ 7 St.

24 Al./ 7 St.

26 Al./ 7 St.

18 Al./ 1 St.

7 Al./ 7 St.

54 Al./ 7 St.

30 Al./ 19 St.

30 Al./ 7 St.

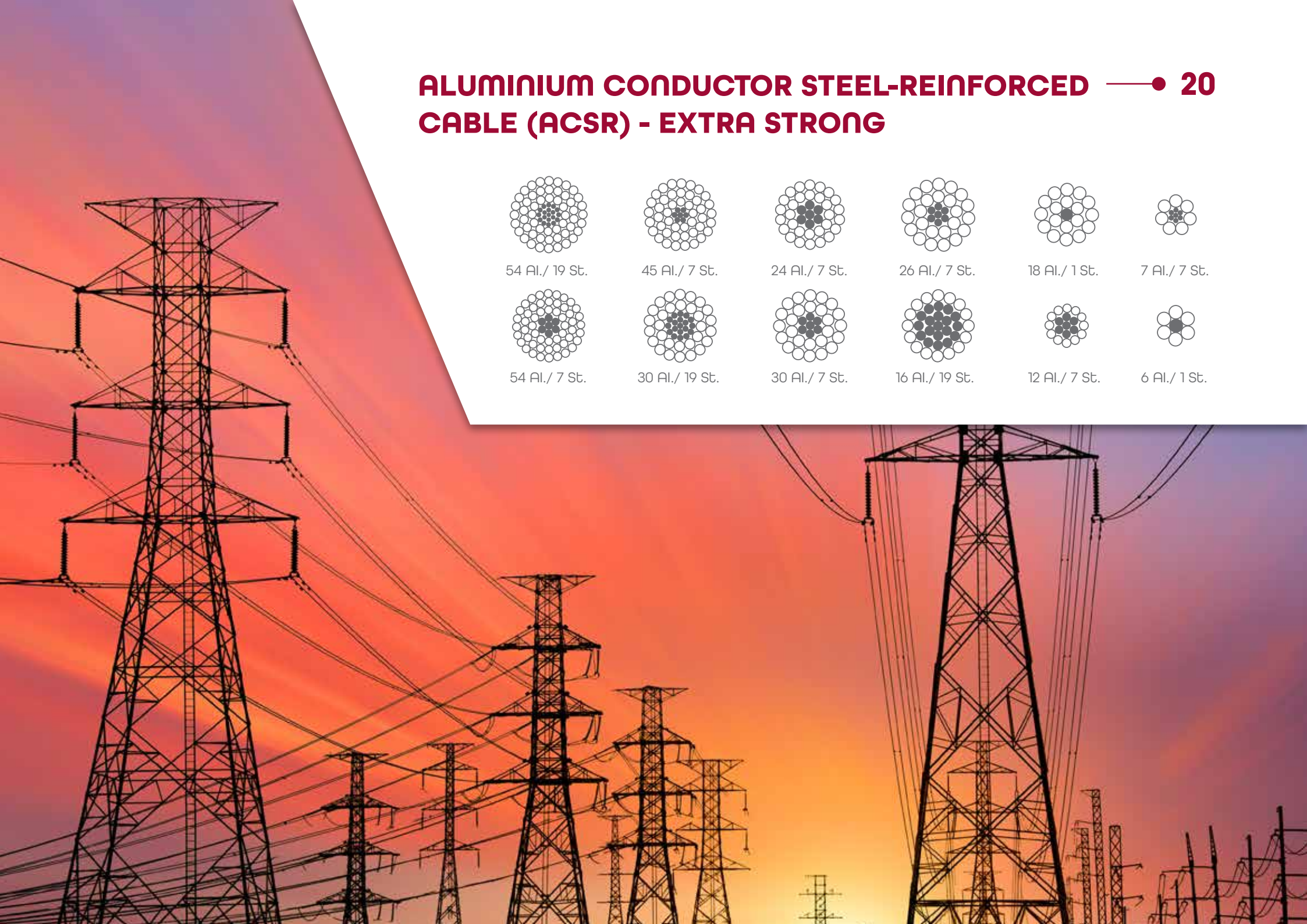
16 Al./ 19 St.

12 Al./ 7 St.

6 Al./ 1 St.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Diameter Over Steel	Overall Diameter (Std.)	Aluminium area	Steel Area	Total Area	Mass kg/km			Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resis-tance at 20°C	Current rating	Std Drum Length
	mm^2	mm	mm	mm	mm^2	mm^2	mm^2	Alum	Steel	Total	Newton	/C° x 10^{-6}	MPa	MPa	Ω/km	A	m
Cardinal	305,00	54/7/3,38	10,14	30,38	484,53	62,81	547,33	1340	497	1840	149000	19,91	46900	73200	0,0597	930	2000
Ortlan	329,40	45/3,85	7,71	30,81	523,87	36,31	560,18	1450	287	1740	126000	21,11	42200	66700	0,0552	970	2000
Curlew	329,40	54/7/3,52	10,56	31,65	525,50	68,12	593,62	1460	539	2000	161000	19,91	46700	73200	0,0550	980	2000
Bluejay	354,70	45/4,00	7,98	31.98	565,49	38,90	604,39	1560	308	1870	135000	21,13	42000	66600	0,0513	1000	1000
Finch	354,70	54/3,65 +19/2,19	10,95	32,84	565,03	71,57	636,60	1570	568	2138	176000	19,97	47300	72300	0,0512	1000	2000
Bunting	380,00	45/4,14 +19/2,19	8,28	33,07	607,76	41,88	647,64	1680	331	2010	145000	21,12	41900	66700	0,0478	1100	1000
Grackle	380,00	54/3,77 +19/2,27	11,35	33,99	602,79	76,89	679,68	1670	610	2280	187000	19,95	47100	72300	0,0480	1100	1000
Bittern	405,40	45/4,27	8,55	34,16	644,40	44,66	689,06	1780	353	2130	154000	21,11	41900	66700	0,0449	1100	1000
Pheasant	405,40	54/3,90 +19/2,85	11,70	35,36	645,08	81,71	726,79	1790	648	2440	199000	19,97	46900	72300	0,0448	1100	1000
Dipper	430,70	45/3,90	8,76	35,18	684,24	46,88	731,12	1890	371	2260	162000	21,13	41700	66500	0,0422	1100	1000
Martin	430,70	54/4,02	12,05	36,17	685,39	86,67	772,06	1900	687	2590	210000	19,97	46700	72300	0,0422	1100	1000
Boblink	456,00	45/4,14	9,06	36,25	725,27	50,14	775,41	2010	396	2410	172000	21,12	417,00	66700	0,0399	1200	1000
Plover	456,00	54/4,14 +19/2,48	12,40	37,27	726,92	91,78	818,70	2010	728	2740	222000	19,97	46500	72200	0,0398	1200	1000
Nuthatch	481,40	45/4,65	9,30	37,21	754,20	52,83	817,04	2110	418	2530	181000	21,12	41600	66700	0,0378	1200	1000
Parrot	481,40	54/4,25 +19/2,55	12,75	38,25	766,06	97,03	863,09	2120	770	2890	234000	19,97	46400	72300	0,0377	1200	1000
Lapwing	506,70	45/4,77	9,54	38,15	804,15	55,60	859,75	2220	440	2660	190000	21,12	41600	66700	0,0359	1300	1000
Falcon	506,70	54/4,36	13,10	39,24	806,23	102,43	908,66	2230	813	3040	246000	19,96	46400	72300	0,0359	1300	1000
Chukar	567,00	84/3,70 +19/2,22	11,10	40,69	903,18	73,54	976,72	2497	583	3080	233000	20,85	43600	67500	0,0321	1300	1000

ALUMINIUM CONDUCTOR STEEL-REINFORCED CABLE (ACSR) - EXTRA STRONG



54 Al./ 19 St.

45 Al./ 7 St.

24 Al./ 7 St.

26 Al./ 7 St.

18 Al./ 1 St.

7 Al./ 7 St.

54 Al./ 7 St.

30 Al./ 19 St.

30 Al./ 7 St.

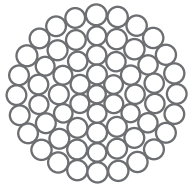
16 Al./ 19 St.

12 Al./ 7 St.

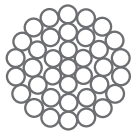
6 Al./ 1 St.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Diameter Over Steel	Overall Diameter (Std.)	Aluminium area	Steel Area	Total Area	Mass kg/km			Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	DC Resistance at 20°C	Current rating
	mm²	mm	mm	mm	mm²	mm²	mm²	Alum	Steel	Total	Newton	/C° x 10⁻⁶	MPa	Ω/km	A
Grouse	25,49	8/2,540 +1/4,242	4,24	9,32	40,52	14,13	54,65	111,20	109,60	221,10	23153	16,92	93770	0,707	195
Petrel	32,51	12/7/2,339	7,02	11,71	51,61	30,07	81,89	142,10	234,80	376,90	43835	15,30	104800	0,567	195
Minorca	35,32	12/7/2,441	7,32	12,22	56,13	32,77	88,90	154,70	255,60	410,30	47719	15,30	104800	0,512	244
Leghorn	42,87	12/7/2,690	8,07	13,46	68,19	39,81	108,00	188,00	310,30	498,30	57516	15,30	104800	2,422	275
Guinea	50,67	12/7/2,924	8,77	14,63	80,58	46,92	127,50	222,10	366,70	588,80	67567	15,30	104800	0,358	304
Dotterel	56,35	12/7/3,084	9,25	15,42	89,61	52,29	141,90	246,90	407,80	654,70	73108	15,30	104800	0,321	325
Dorking	60,80	12/7/3,204	9,61	16,03	96,71	56,39	153,10	266,30	440,30	706,60	78874	15,30	104800	0,299	339
Auk	54,71	8/4,046 +7/2,248	6,74	14,83	102,80	27,80	130,60	282,10	216,70	498,90	49621	17,64	86870	0,278	346
Brahma	64,76	16/19/2,863	12,41	18,14	103,00	91,80	194,80	285,50	719,50	1005	122543	13,22	115830	0,281	360
Cochin	67,34	12/7/3,271	10,11	16,87	107,10	62,40	169,50	295,10	4887,30	782,40	87396	15,30	104800	0,270	356

ALL ALUMINIUM CONDUCTOR (AAC) BRITISH STANDARD



61 Al.



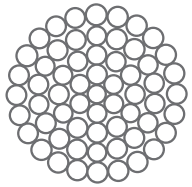
37 AL.

19 AL.

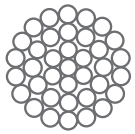
7 AL.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Overall Diameter	Aluminium area	Mass	Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating
	mm²	mm	mm	mm²	kg/km	Newton	/C° x 10⁻⁶	MPa	MPa	Ω/km	A
Midge	14,19	7/2,06	6,18	23,33	64,00	4340	23	52400	61000	1,2271	139
Aphis	16,13	3/3,35	7,24	26,44	72,70	4340	23	50000	69000	1,0810	154
Gnat	16,13	7/2,21	6,63	26,85	73,70	4860	23	52400	61000	1,0662	152
Weevil	19,35	3/3,66	7,91	31,56	86,80	5130	23	60000	69000	0,9078	172
Mosquito	22,58	7/2,59	7,77	36,88	101	6360	23	52400	61000	0,7763	185
Ladybird	25,81	7/2,79	8,37	42,80	117	7250	23	52400	61000	0,6690	203
Ant	32,26	7/3,10	9,30	52,83	145	8770	23	52400	61000	0,5419	231
Fly	38,71	7/3,40	10,20	63,55	174	10400	23	52400	61000	0,4505	259
Bluebottle	45,16	7/3,66	10,98	73,65	202	12000	23	52400	61000	0,3887	284
Earwig	48,39	7/3,78	11,34	78,55	216	12700	23	52400	61000	0,3644	296
Grasshopper	51,61	7/3,91	11,73	84,05	231	13600	23	52400	61000	0,3406	308
Clegg	58,06	7/4,17	12,51	95,60	262	15400	23	52400	61000	0,2995	334
Wasp	64,52	7/4,39	13,17	105,95	291	17000	23	52400	61000	0,2702	356
Beetle	64,52	19/2,67	13,35	106,38	293	18200	23	49650	59650	0,2704	358
Bee	80,64	7/4,90	14,70	132,00	362	21000	23	52400	61000	0,2169	408
Cricket	96,77	7/5,36	16,08	157,95	434	25100	23	52400	61000	0,1813	456
Hornet	96,77	19/3,25	16,25	157,95	435	26000	23	49650	59650	0,1825	457
Caterpillar	112,90	19/3,53	17,65	185,95	513	26000	23	49650	59650	0,1547	506
Chafer	129,00	19/3,78	18,90	213,22	588	34500	23	49650	59650	0,1349	551
Spider	145,20	19/3,99	19,95	237,57	655	38300	23	49650	59650	0,1211	589
Cockroach	161,30	19/4,22	21,10	265,75	733	42700	23	49650	59650	0,1083	632
Butterfly	193,50	19/4,65	23,25	322,66	890	51500	23	49650	59650	0,0892	713
Moth	225,80	19/5,00	25,00	373,06	1030	59400	23	49650	59650	0,0771	779
Drone	225,80	37/3,58	25,06	372,44	1030	60600	23	48250	58600	0,0774	779
Locust	258,10	19/5,36	26,80	428,72	1180	68200	23	49650	59650	0,0671	849
Centipede	258,10	37/3,78	26,46	415,22	1150	67200	23	48250	58600	0,0694	833
Maybug	290,30	37/4,09	28,63	486,11	1340	78200	23	48250	58600	0,0593	918
Scorpion	322,60	37/4,27	29,89	529,84	1460	85000	23	48250	58600	0,0544	967
Cicada	387,10	37/4,65	32,55	628,34	1740	100000	23	48250	58600	0,0459	1070
Tarantula	483,90	37/5,23	36,61	794,87	2200	126000	23	48250	58600	0,0363	1230
Bull	527,87	61/4,25	38,25	865,36	2400	139000	23	42600	57570	0,0334	1300

ALL ALUMINIUM CONDUCTOR (AAC) CANADIAN STANDARD



61 Al.



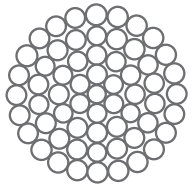
37 AL.

19 AL.

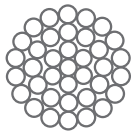
7 AL.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Overall Diameter	Aluminium area	Mass	Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating	Std Drum Length
	mm^2	mm	mm	mm^2	kg/km	Newton	/C° x 10^{-6}	MPa	MPa	Ω/km	A	m
Rose	13,30	7/1,96	5,88	21,12	58,00	4020	23	52400	6100	1,3555	130	5000
Lily	16,77	7/2,20	6,60	26,61	73,00	4830	23	52400	61000	1,0759	150	5000
Iris	21,15	7/2,47	7,41	33,54	92,10	5860	23	52400	61000	0,8535	170	5000
Pansy	26,67	7/2,77	8,31	42,18	116	7150	23	52400	61000	0,6787	200	2000
Poppy	33,62	7/3,12	9,36	53,52	147	8870	23	52400	61000	0,5349	230	2000
Aster	42,41	7/3,50	10,50	67,35	185	11000	23	52400	61000	0,4251	270	2000
Phlox	53,50	7/3,93	11,79	84,91	233	13700	23	52400	61000	0,3372	310	2000
Oxlip	67,43	7/4,41	13,23	106,92	294	17100	23	52400	61000	0,2678	360	2000
Daisy	85,01	7/4,96	14,88	135,25	371	21600	23	52400	61000	0,2117	410	2000
Peony	95,59	19/3,19	15,95	151,85	419	25100	23	49650	59650	0,1894	450	1500
Tulip	107,21	19/3,38	16,90	170,48	470	27900	23	49650	59650	0,1687	480	2000
Canna	126,69	19/3,67	18,35	200,99	554	32600	23	49650	59650	0,1431	530	2000
Cosmos	152,01	19/4,02	20,10	241,15	665	38900	23	49650	59650	0,1193	590	2000
Zinnia	159,38	19/4,12	20,60	253,30	699	40700	23	49650	59650	0,1136	610	2000
Dahlia	177,40	19/4,34	21,70	281,08	775	45100	23	49650	59650	0,1023	650	2000
Orchid	202,70	37/,3,33	23,31	322,24	891	52900	23	48250	58600	0,0895	710	2000
Violet	228,01	37/3,53	24,71	362,11	1000	59000	23	48250	58600	0,0796	770	2000
Petunia	239,00	37/3,61	25,27	378,71	1050	61600	23	48250	58600	0,0761	790	2000
Arbutus	253,39	37/3,72	26,04	402,14	1110	65200	23	48250	58600	0,0717	820	2000
Anemone	278,71	37/3,990	27,30	442,00	1220	71400	23	48250	58600	0,0652	870	1500
Magnolia	304,09	37/4,08	28,56	483,74	1340	77800	23	48250	58600	0,0596	910	1500
Bluebell	329,29	37/4,24	29,68	522,68	1440	83900	23	48250	58600	0,0552	960	1000
Marigold	354,72	61/3,43	30,87	563,65	1560	92200	23	46200	57570	0,0513	1000	1000
Hawthorn	380,02	61/3,55	31,95	603,78	1670	98400	23	46200	57570	0,0479	1050	1000
Narcissus	405,41	61/3,67	33,03	645,29	1790	105000	23	46200	57570	0,0448	1100	1000
Columbine	437,72	61/3,78	34,02	684,55	1900	111000	23	46200	57570	0,0422	1130	1000
Carnation	456,01	61/3,89	35,01	724,97	2010	117000	23	46200	57570	0,0399	1170	1000
Gladiolus	481,42	61/3,99	35,91	762,72	2110	123000	23	46200	57570	0,0379	1200	1000
Coreopsis	506,71	61/4,10	36,90	805,36	2230	130000	23	46200	57570	0,0359	1240	1000

ALUMINIUM ALLOY CONDUCTOR (AAAC) BRITISH STANDARD



61 Al.



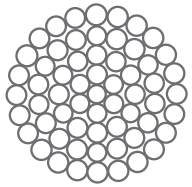
37 AL.

19 AL.

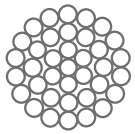
7 AL.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Overall Diameter	Aluminium area	Mass	Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating
	mm^2	mm	mm	mm^2	kg/km	Newton	/C° x 10^{-6}	MPa	MPa	Ω/km	A
Acacia	13	7/2,08	6,24	23,79	65	6690	23	52500	61000	1,39	133
Almond	16	7/2,34	7,02	30,10	82	8440	23	52400	61000	1,10	153
Cedar	19	7/2,54	7,59	35,47	97	9960	23	52400	61000	0,934	169
35	22	7/2,77	8,31	42,18	115	11860	23	52400	61000	0,785	189
FIR	25	7/2,95	8,85	47,84	131	13430	23	52400	61000	0692	204
Hazel	32	7/3,30	9,90	59,87	164	16820	23	52400	61000	0,553	235
Pine	38	7/3,61	10,83	71,65	196	20200	23	52400	61000	0,462	262
70	45	7/3,91	11,73	84,05	230	23630	23	52400	61000	0,394	290
Willow	48	7/4,04	12,12	89,73	245	25200	23	52400	61000	0,369	302
80	51	7/4,19	12,57	96,52	264	27060	23	52400	61000	0,343	316
90	58	7/4,45	13,35	108,9	298	30400	23	52400	6100	0,306	339
Oak	63	7/4,65	13,95	118,9	325	33330	23	52400	61000	0,279	359
100	63	19/2,82	14,10	118,7	326	33330	23	49650	59650	0,280	359
Mulberry	80	19/3,18	15,90	150,9	415	42350	23	49650	59650	0,221	416
Ash	96	19/3,48	17,40	180,7	497	50690	23	49650	59650	0,184	467
Elm	112	19/3,76	18,80	210,9	580	59220	23	49650	59650	0,158	513
Poplar	119	37/2,87	20,09	239,09	660	67350	23	48250	58600	0,139	551
225	143	37/3,05	21,35	270,3	744	75780	23	48600	58600	0,123	600
Sycamore	161	37/3,23	22,61	303,2	835	85000	23	48250	58600	0,110	643
Upas	192	37/3,53	24,71	362,1	997	101670	23	48250	58600	0,0921	718
350	224	37/3,81	26,67	421,8	1162	118430	23	48250	58600	0,0791	789
Yew	254	37/4,06	28,42	479,0	1319	134510	23	48250	58600	0,0696	853

ALUMINIUM ALLOY CONDUCTOR (AAAC) AMERICAN STANDARD



61 Al.



37 AL.

19 AL.

7 AL.

Code Name	Equival. Copper Area	Standing and Wire Diameter	Overall Diameter	Aluminium area	Mass	Ultimate tensile Strength	Coefficient of linear Expansion	Initial Modulus of Elasticity	Final Modulus of Elasticity	DC Resistance at 20°C	Current rating	Std drum length
	mm^2	mm	mm	mm^2	kg/km	Newton	$/C^o \times 10^{-6}$	MPa	MPa	Ω/km	A	m
Alotn	13,1	7/2,12	6,36	24,71	68	7850	23	52400	61000	1,14	147	3000
Ames	20,8	7/2,67	8,01	39,19	107	12550	23	52400	61000	0,714	196	2500
Azuza	33,1	7/3,37	10,11	62,44	171	19900	23	52400	61000	0,448	262	2500
Anaheim	42	7/3,78	11,34	78,55	215	24020	23	52400	61000	0,356	302	2500
Amherst	53	7/4,25	12,75	99,30	272	30290	23	52400	61000	0,283	349	1000
Alliance	66	7/4,77	14,31	125,09	342	28140	23	52400	61000	0,224	403	1000
Butte	84	19/3,26	16,30	115,86	436	48800	23	49650	59650	0,177	468	2000
Canton	106	19/3,66	18,30	200,0	549	59100	23	49650	59650	0,140	541	2000
Cairo	125	19/3,98	19,90	236,4	650	69700	23	49650	59650	0,119	599	2000
Darien	150	19/4,36	21,80	283,7	780	83600	23	49650	59650	0,099	671	1000
Elgin	176	19/4,71	23,55	331,0	910	97650	23	49650	59650	0,0848	739	1000
Flint	199	37/3,59	25,13	374,5	1031	108500	23	48250	58600	0,0746	799	2000
Greely	249	37/4,02	28,14	469,6	1293	136000	23	48250	58600	0,0595	918	1500

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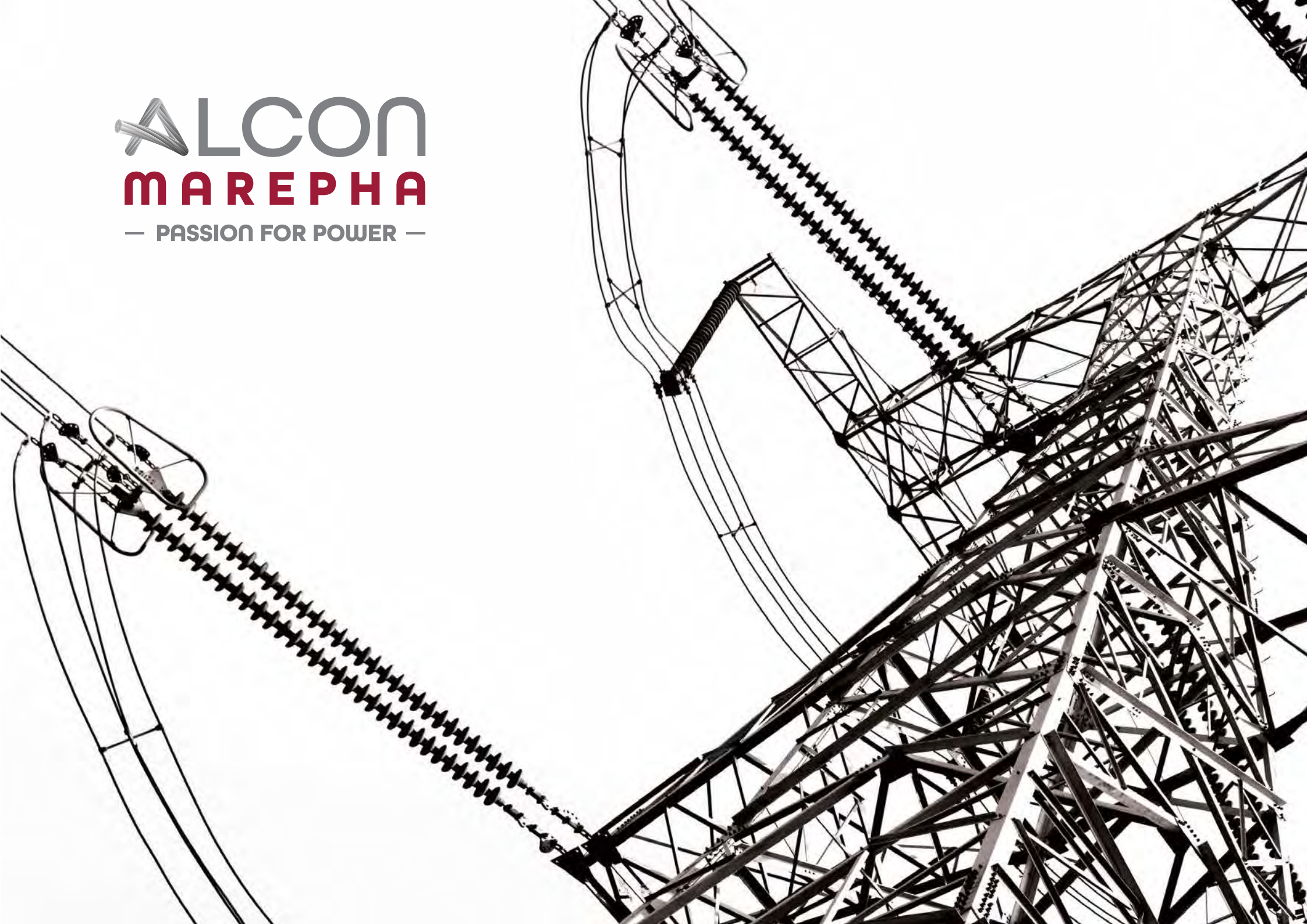

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MANUFACTURER OF ALL TYPES OF ALUMINIUM
OVERHEAD POWER CONDUCTORS

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