



### *Our Vision*

To be the Preferred Brand of Electric Cables in the region whilst strengthening the dominant position in Sri Lanka.

### *Our Mission*

To expand our range of products and the services in the field of electrification.

To be the most competitive in chosen global markets and to achieve continuous growth.

To create an environment that will inculcate a feeling of ownership in our people and their families.

To create a company that will be in the forefront of technology and win the admiration of our customers, suppliers, shareholders and the community.



## Foreword

We believe that this catalogue, which carries dimensions, electrical properties & some of the installation data on All Aluminium Conductors(AAC), Aluminium Conductor Steel Reinforced (ACSR/GZ), Aluminium Conductor Aluminium Clad Steel Reinforced (ACSR/AC), Aluminium Conductor Aluminium Coated Steel Reinforced (ACSR/AZ) and All Aluminium Alloy Conductors (AAAC) conforming to BS 215 Part 1 & Part 2, BSEN 50182, AS 3607 and AS 1531 will help our valued customers to a great extent.

We also take this opportunity to express our sincere gratitude towards our customers and well wishers with whom we have built a mutually beneficial relationship.

ACL Cables PLC  
December 2008





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# ACL – SINCE 1962

ACL is the largest manufacturer of cables in Sri Lanka having pioneered the industry in 1962. ACL holds 45% share of the local market and produces the widest range of cables in Sri Lanka. Today, ACL has grown to be a Group of companies holding 70% share of the cable market in Sri Lanka.

ACL is the most sought-after brand of cables in Sri Lanka, having supplied 80% of the requirements of Duty Free projects owned by overseas investors and approved by the Board of Investment, beating foreign suppliers of cables. Of the 13 tallest buildings in Sri Lanka, 9 are wired with ACL Cables. In addition, all leading factories, hotels, commercial buildings and warehouses have used ACL Cables.

ACL continues to innovate and lead the field in the introduction of new products, modern technology and machinery. In the four decades of its existence, the Company has evolved as a specialized manufacturer and supplier of the widest range of quality cables and conductors in the country, while possessing the most advanced technology in the Asian region for the manufacture of low voltage Cross Linked Polyethylene cables (XLPE).

## CONCEPT AT ACL

Modern industries and technologies have opened forth a wide range of endeavors and ventures in the Island of Sri Lanka. ACL ushered a new era in power sector and dedicated itself to the cause of transmission, distribution and utilization of electrical energy for all cross sections of the country.

With a rich heritage of over four and a half decades, ACL offers its products, which not only meet the stipulated requirements of the governing National and International specifications, but far exceeding them.

Excellence through “Total Quality Management” is the catchword at ACL. Since its inception ACL has striven not only to upgrade the product quality but to bring in to practice superior management of men to make its place in the

international market. Professionalism, advanced know-how and technology, customer services have been the hallmark of ACL. Its quality concept is translated into every length of product through co-ordinated efforts of professionals on job.

## ACL ON A SOLID FOUNDATION OF QUALITY AND ADVANCED TECHNOLOGY

From the inception ACL has been acquiring foreign technology for the development of existing and new products. At the inception of the company in the year 1962, ACL commenced operations with technical assistance arranged through the Colombo based liaison office of Mitsui. The Japanese engineers who installed machinery and operated them laid a solid foundation of Quality at ACL. Thereafter, ACL joined hands with two cable companies in India to establish the manufacture of Aluminum Conductors and Armored Cables.

One of the company’s most notable technology transfer agreements in recent times have been with NOKIA Cables of Finland for the manufacture of XLPE Insulated Cables, Aerial Bundled Cables and Aluminum Alloy Conductors.

Having obtained technology from NOKIA on two occasions in the years 1989 and 1993, ACL upgraded its technology on XLPE insulated Aerial Bundled Cables to surpass National French Standard NFC 33-209 in the year 1998 through its own Research and Development. This is a feat not matched in the region by any other manufacturer. The technology so achieved is employed in the manufacture of XLPE insulated Armored and Unarmored power cables and All Aluminum Alloy Conductors. These developments offer many benefits to valued customers and in order to highlight those benefits it was decided to name all our XLPE insulated cables under the brand name Power-X.

Having obtained ISO 9002 certification in the year 1998, ACL was awarded the prestigious ISO 9001:2001 certificate in the Year 2002. In the same year ACL was awarded ISO 14001:1997 Environmental Management System Certification.



# TECHNOLOGICAL DEVELOPMENT OF AAC, ACSR AND AAAC

## All Aluminium Conductors

Being the pioneer cable manufacturer in Sri Lanka, ACL not only pioneered the cable industry but also pioneered the manufacture of each and every single cable and conductor manufactured and marketed in Sri Lanka. This is the reason why it is no surprise that ACL joined hands with Alind of India in 1981 to manufacture and sell 1400 metric tons of All Aluminum Conductor (AAC Fly 7/3.4m) to Ceylon Electricity Board pioneering Aluminum Conductor manufacture in Sri Lanka. With this ACL commenced a long march towards mastering the technology for Aluminum Conductors Steel Reinforced (ACSR), Aluminum Alloy Conductors (AAAC), Aluminum Conductors Aluminum Clad Steel Reinforced (ACSR/AC) for voltages ranging from 1 kv to 750kv in addition to Aluminum Cables.

## Securing of Aluminum Alloy Technology

ACL in 1988 entered into a Technical Corporation Agreement with NOKIA Cables of Finland to manufacture and supply 850 km of XLPE insulated Aerial Bundled Cables (AB Cables) to Lanka Electricity Company (LECO) which was moving in to the new product replacing bare Aluminum Conductors (AAC). AB Cables are in fact made of AAC and AAAC conductors insulated and bundled together using advanced process and design technology. ACL was very fortunate that it got involved itself with LECO who in turn was supported by Beca Worley of New Zealand at that time to rehabilitate and modernize distribution system which was heavily losing power due to dilapidated condition of the network. All the above helped ACL to master AB Cable technology and installation practices surpassing all manufacturers in South and South-East Asia. In 1998 through internal Research and Development, ACL surpassed the most comprehensive and stringent standard for AB Cables which is the National French Standard NFC 33 209. This is considered a remarkable feat since only a handful of manufacturers in South East Asia had mastered. None in South Asia has achieved this standard.

ACL's technical superiority for AB Cables was recognized by the largest corporate in India and in 2003 and they invited ACL to Design and introduce AB Cables to BSES or the Power Distributing Authority of New Delhi. Since then ACL supplied more than US\$ 12 million worth of AB Cables to BSES, JVVN Jaipur and DISCOM of Orissa.

## Establishment of Furnace for ageing of Aluminum Alloy

The benefit of AB Cable for the development Conductor technology was realized in 1993 when ACL entered in to a second Joint venture agreement with NOKIA Cables of Finland to acquire technology for the Drawing and ageing of Aluminum Alloy which is an integral part of AB Cables. A furnace was set up for this purpose. Since then ACL commenced the supply and manufacture of All Aluminum Alloy Conductors (AAAC) and in 1996 it exported AAAC and Aerial Bundled Service wire to Rural Electrification Board of Bangladesh. Up to 2008, ACL has manufactured more than 25,000 km of AAAC for use either in AB Cables or as bare conductors.

Today, ACL's prowess in Aluminum Conductor technology and AB Cable Technology is well recognized in the region and is exporting same to Australia for transmission lines ranging from 220kv to 330 kv.

## Standards

ACL has been developing its capabilities to supply conductors to various international standards. In addition to Sri Lankan Standards, ACL use following International Standards to manufacture Conductors.

- British Standards;
- BS EN Standards;
- IEC Standards;
- Australian Standards;
- DIN Standards
- ASTM Standards

## Aluminium Rod Plant

ACL in its march towards becoming a giant in Transmission and Distribution Conductor and Cable technology made one of its most prudent investments in 2007 to set up a plant for Aluminum and Aluminum Alloy rod. This has been a very successful story and today, it is in the process of delivering carefully controlled grades of Aluminum to further enhance the quality of Finished Conductors. The establishment of a

comprehensive laboratory and its proximity to the Aluminum conductor plant continues to enable ACL to develop finest quality control in the manufacture of Conductors and development of newer grades of Aluminum and Alloy. Delivering first class products at a competitive price is just what the customers need and ACL is now well set for same. The capacity of the rod plant is nearly 24,000 metric tons per annum in full swing.



*24000 MT Capacity (annual) Melting Furnance*





*Rod Rolling Mill*

# ACL – TECHNOLOGICAL DEVELOPMENT

- |        |  |       |  |
|--------|--|-------|--|
| 1962 - | Establishment of ACL with technical assistance from Mitsui of Japan  | 1993- | Acquisition of Technology from NOKIA of Finland to draw and age Aluminum Alloy and establishment of aging furnace.   |
| 1978-  | Introduction of Wire Drawing facility  | 1993- | Establishment of ACL Plastics Limited for the manufacture of our own PVC Compound.   |
| 1981-  | Acquisition of Technology from Alind of India for drawing and processing of Aluminum Conductors to jointly manufacture and supply 1400 MT of AAC Fly Conductor to Ceylon Electricity Board.                              | 1998- | Successfully upgraded XLPE Extrusion Technology to National French Standard NFC 33-209 and won 500 km order for Aerial Bundled Cables from Ceylon Electricity Board. |
| 1985-  | Manufacture of Armored Power and Control Cables for the first time in Sri Lanka with Indian Technical assistance.  | 2005- | Introduction of Flame Retardant (FR), Flame Retardant Low Smoke (FRLS) and Low Smoke Halogen Free (LSHF) cables in technical collaboration of British Company.       |
| 1989-  | Acquisition of Technology from NOKIA of Finland to jointly manufacture XLPE insulated Aerial Bundled Cables to execute an order for 800 km of that product on an ADB funded tender floated by Lanka Electricity Company. | 2007- | Setting up of Aluminum Rod plant with a total capacity of 24,000 metric tons per annum.  |



*Unloading of 2 ton coil of Aluminium Rod*



# ACL CORPORATE HIGHLIGHTS

- |  |   |
|--|---|
| <p>1962- Commencement as a member of Associated Motorways Group (AMW) of Companies under the name Associated Cables Ltd.</p> <p>1976- Converted to a Public Limited Liability Company.</p> <p>1978- Moved out of AMW Group.</p> <p>1982- Establishment of own island-wide distribution network.</p> <p>1990- Change of Company name to ACL Cables Limited.</p> | <p>1991- Establishment of ACL Plastics Limited</p> <p>1995- Acquisition of Ceylon Bulbs and Electricals Limited.</p> <p>1999- Purchase of 75% of shares of the second largest cable manufacturer in the Island.</p> <p>2002- Setting up of state of the art Magnet Wire project</p> |
|--|---|

## OTHER ACHIEVEMENTS OF ACL

- |  |   |
|--|---|
| <p>1995- Commencement of Export of Cables<br/>In August 1995 US\$ 269,650/- worth of Alloy Conductors were exported to Rural Electrification Board, Bangladesh.<br/>In November 1995 US\$ 117,609/- worth of Armored Cables were exported to Maldives Electricity Board, Maldives.</p> | <p>2002 – Achievement of ISO 14001:1997 Environmental Management System Certificate<br/>Achieved prestigious ISO 14001: 1991 Environmental Management System Certificate.</p> |
| <p>1998 – Achievement of ISO 9002:1994 Quality Management System Certificate<br/>Achieved prestigious ISO 9002:1994 Quality Management System certificate.</p>   | <p>2004 – Large scale export of Aerial Bundled Cables to India.</p>   |
| <p>2002 – Achievement ISO 9001:2000 Quality Management System Certificate<br/>Achieved prestigious ISO 9001: 2000 Quality Management System Certificate</p>  | <p>2004 – Achievement of IS 694 Product Certificate from Bureau of Indian Standards.</p>  |
| <p>2002 – Introduction of “ACL FLEXI” cables to the Sri Lankan market.<br/>Introduced a series of domestic wires with super flexibility in the range of 1.0<sup>2</sup>-6mm<sup>2</sup></p>  |   |



*Stacked coils of Aluminium Rod after Quality Inspection*



*Optical Emission Spectrometer for analyzing chemical composition of Aluminium*

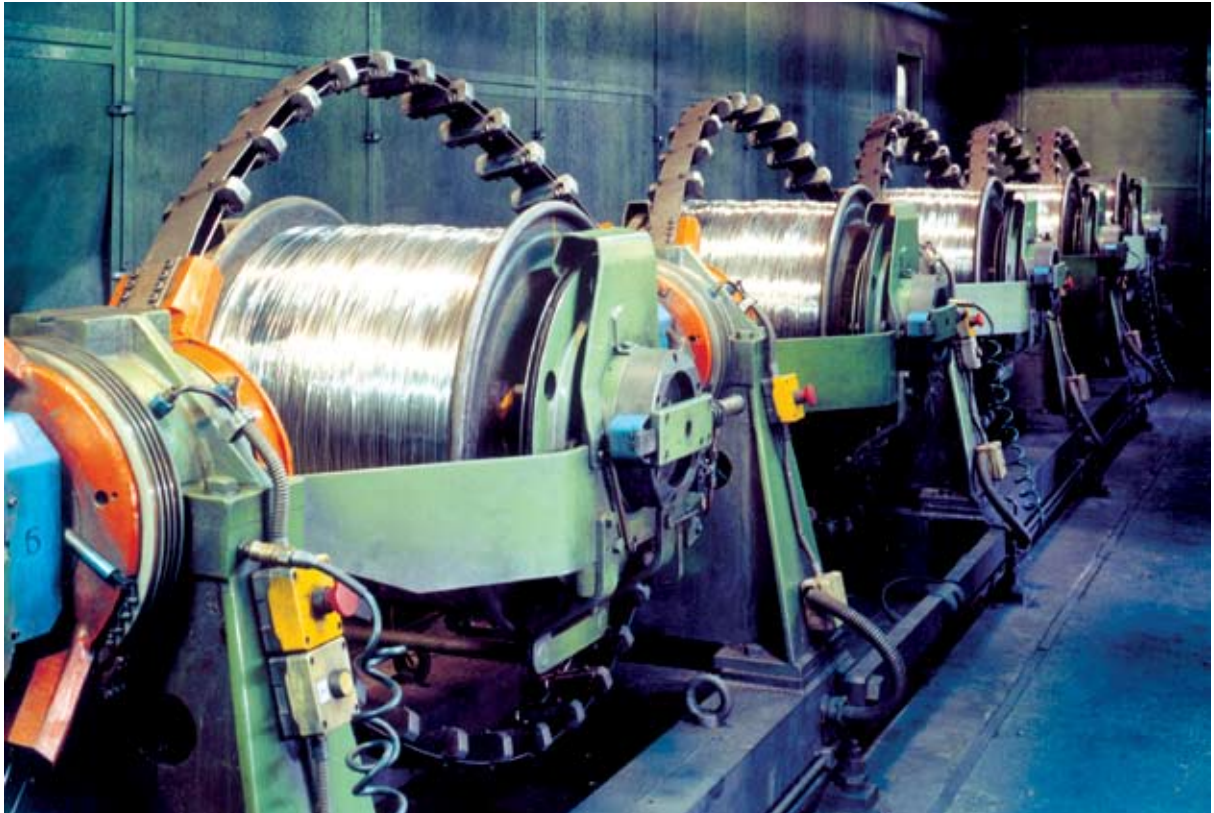


*Tensile Testing Machine*





*Measuring Physical Parameters of Finished Aluminium Rod*



*7 Strand Aluminium Conductor is being stranded on Skip strander*



*Automatic Temperature Controlled Equipment for measurement of Resistance of conductors*



*Drums used for export of Cables and Conductors*



# CERTIFICATES OF EXCELLENCE



ISO  
14001:2006



ISO  
9001:2000

# AWARDS OF EXCELLENCE



*Taiki Akimoto 5s  
Merit Award  
2007*



*Industrial  
Excellence Award  
In Extra Large  
Manufacturing  
Category  
2007 & 2008*

# AWARDS OF EXCELLENCE



*National Quality Award  
Large Manufacturing  
Category  
2007*

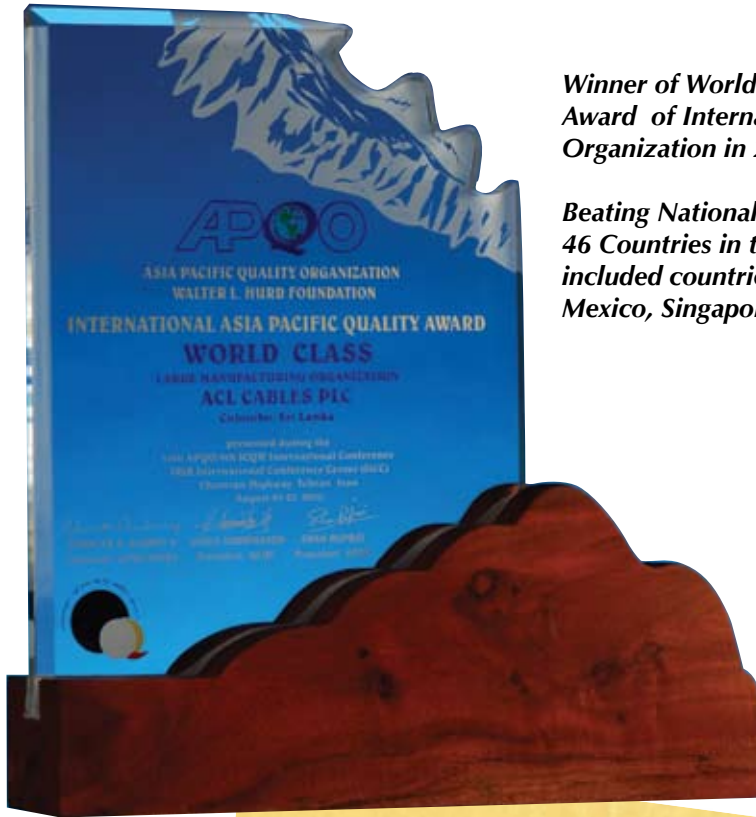
*Highest Sri Lankan Award for Quality*



*National Productivity Award  
Large Manufacturing  
Sector  
2007*

*Highest Sri Lankan Award for Productivity*

# INTERNATIONAL AWARD OF EXCELLENCE



*Winner of World Class Award or the Highest Award of International Asia Pacific Quality Organization in 2008*

*Beating National Quality Award Winners of 46 Countries in the Asia Pacific region which included countries such as Japan, Australia, Mexico, Singapore, India, Korea Taiwan etc.*



# MATERIALS USED IN THE MANUFACTURE OF AAC, ACSR & AAAC

ACL uses various grades of Aluminium & Aluminium Alloy in the manufacture of overhead bare conductors. In addition, it incorporates various grades of Zinc coated steel, Aluminium Clad Steel, Aluminium Coated Steel to meet the needs of customers across the globe who demand products conforming to various international & national standards. Some of the important items used are listed below.

## Properties of Aluminium, Copper, Aluminium Alloy, Galvanized Steel, Aluminium Clad Steel and Aluminium Coated Steel

Property	Unit	Aluminium	Hard Drawn Copper	Aluminium Alloy 1120	Aluminium Alloy 6201A	Galvanized Steel	Aluminium Clad Steel	Aluminium Coated Steel
Density at 20 °C	kg/m <sup>3</sup>	2700	8890	2700	2700	7800	6590	7600
Conductivity at 20 °C	% IACS	61	97	59	53	10	20	11.5
Resistivity at 20 °C	μΩ.m	0.0283	0.01771	0.0293	0.0328	0.17	0.085	0.15
Constant Mass Temperature Coefficient of Resistance	per °C	0.00403	0.00381	0.00390	0.00360	0.00440	0.00360	0.00440
Ultimate Tensile Stress	MPa	160 - 185	370	230 - 250	295	1310 -1390	1270 -1340	1170 -1280
Modulus of Elasticity	GPa	68	124	68	68	193	162	193
Coefficient of Linear Expansion	per °C	23 x 10 <sup>-6</sup>	17 x 10 <sup>-6</sup>	23 x 10 <sup>-6</sup>	23 x 10 <sup>-6</sup>	11.5 x 10 <sup>-6</sup>	12.9 x 10 <sup>-6</sup>	11.5 x 10 <sup>-6</sup>

### Aluminium & Aluminium Alloys :

Aluminium 1350 of high purity EC grade which has 61% IACS conductivity and Aluminium Alloy 1120 & 6201A which have over 50% IACS conductivity are used to produce bare overhead line conductors. Aluminium Alloy 1120 conductors are becoming more popular as replacement for steel reinforced conductors in areas of high corrosion risk.

### Galvanized Steel :

The wire shall be Zinc-coated using either the hot dip or electrolytic process. Galvanized steel wires made from fully-killed steel with a carbon content of 0.6% has a Ultimate Tensile Strength of 1310 - 1390 Mpa. It has Zinc coating mass of 200-260 g/m<sup>2</sup>

### Aluminium -clad Steel :

The Aluminium used for the cladding shall conform to the impurity limits of Copper 0.05%(max.) & Copper plus silicon plus iron 0.50% (max.). Aluminium clad steel has an Aluminium cladding with a radial thickness not less than 5% of the overall wire diameter. Composite conductors with Aluminium clad steel have lower electrical resistance & high corrosion-resistant than compared to galvanized steel.

### Aluminium -coated Steel :

The Aluminium used for the coating shall conform to the impurity limits of Copper 0.10%(max.) & Iron 0.50%(max.) It has Aluminium coating mass of 77 - 104 g/m<sup>2</sup>.

### Grease :

Grease, used for additional corrosion protection, shall have a drop point of not less than 120 °C in accordance with ASTM D 566

# TECHNICAL DATA OF AAC, ACSR & AAAC Conforming to BS 215 Part 1 , 2 & BSEN 50182 Standards

- Current Carrying Capacity values are based on following conditions,

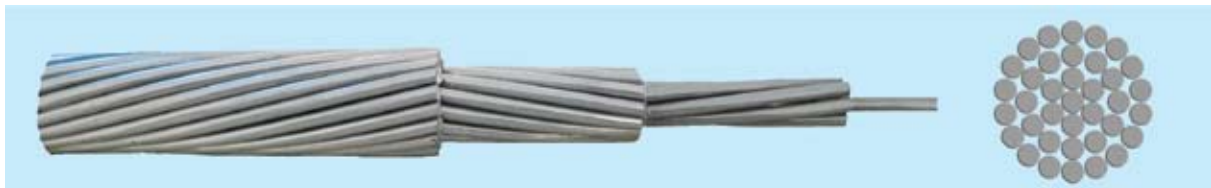
* Speed of Cross Wind ( 90° to the line )	v	1 m/s
* Intensity of Solar Radiation	$S_i$	900 W/m <sup>2</sup>
* Solar Absorption Coefficient	Y	0.5
* Emissivity Coefficient	$K_e$	0.6
* Conductor Temperature	T2	80 °C
* Ambient Temperature	T1	30 °C
* Frequency	f	50 Hz

- Total approximate weight of conductor do not include the weight of grease.
- Available grease application methods are given in Appendix A.



## All Aluminium Conductors - AAC

Reference Standard : BS 215 - Part I : 1970



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Nominal Area	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		mm <sup>2</sup>	No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
G - 1	MIDGE	22	7 / 2.06	6.18	23.33	64	3.99	59
G - 5	ANT	50	7 / 3.10	9.30	52.83	144	8.28	59
G - 6	FLY	60	7 / 3.40	10.20	63.55	174	9.90	59
G - 11	WASP	100	7 / 4.39	13.17	105.95	289	16.00	59
G - 15	HORNET	150	19 / 3.25	16.25	157.62	433	25.70	56
G - 17	CHAFER	200	19 / 3.78	18.90	213.22	585	32.40	56
G - 19	COCKROACH	250	19 / 4.22	21.10	265.75	730	40.40	56
G - 20	BUTTERFLY	300	19 / 4.65	23.25	322.66	886	48.75	56
G - 24	CENTIPEDE	400	37 / 3.78	26.46	415.22	1144	63.10	56

TABLE 1 - A

**Note 1 :** Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

## All Aluminium Conductors - AAC

Reference Standard : BS 215 - Part I : 1970



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 80°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 80°C	Current Carrying capacity at still air & Conductor Temp. 80°C	Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
		No / mm	Ω / km	Ω / km	A	A	Ω / km	MΩ.km
G - 1	MIDGE	7 / 2.06	1.2270	1.5238	168	92	0.3098	0.2630
G - 5	ANT	7 / 3.10	0.5419	0.6730	283	163	0.2825	0.2396
G - 6	FLY	7 / 3.40	0.4505	0.5595	318	186	0.2772	0.2343
G - 11	WASP	7 / 4.39	0.2702	0.3357	442	265	0.2608	0.2196
G - 15	HORNET	19 / 3.25	0.1825	0.2270	571	351	0.2447	0.2076
G - 17	CHAFER	19 / 3.78	0.1349	0.1680	694	433	0.2353	0.1990
G - 19	COCKROACH	19 / 4.22	0.1083	0.1351	799	504	0.2287	0.1926
G - 20	BUTTERFLY	19 / 4.65	0.0892	0.1115	905	577	0.2227	0.1871
G - 24	CENTIPEDE	37 / 3.78	0.0694	0.0871	1064	687	0.2135	0.1797

TABLE 1 - B

Note 2 : The applicable conditions for current calculations of this table are given in page 15

## All Aluminium Conductors - AAC

Reference Standard : BSEN 50182 : 2001



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Nominal Area	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		mm <sup>2</sup>	No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
G - 2	GNAT	–	7 / 2.21	6.63	26.85	73	4.83	59
G - 3	MOSQUITO	–	7 / 2.59	7.77	36.88	101	6.27	59
G - 4	LADYBIRD	–	7 / 2.79	8.37	42.80	117	7.28	59
G - 7	BLUEBOTTLE	–	7 / 3.66	10.98	73.65	201	11.78	59
G - 8	EARWIG	–	7 / 3.78	11.34	78.55	214	12.57	59
G - 9	GRASSHOPPER	–	7 / 3.91	11.73	84.05	229	13.45	59
G - 10	CLEGG	–	7 / 4.17	12.51	95.60	261	15.30	59
G - 12	BEETLE	–	19 / 2.67	13.35	106.38	292	18.08	56
G - 13	BEE	–	7 / 4.90	14.70	132.00	360	21.12	59
G - 16	CATERPILLAR	–	19 / 3.53	17.65	185.95	511	29.75	56
G - 18	SPIDER	–	19 / 3.99	19.95	237.57	652	38.01	56
G - 21	MOTH	–	19 / 5.00	25.00	373.06	1024	59.69	56
G - 22	DRONE	–	37 / 3.58	25.06	372.44	1026	59.59	56
G - 25	MAYBUG	–	37 / 4.09	28.63	486.11	1339	77.78	56
G - 26	SCORPION	–	37 / 4.27	29.89	529.84	1460	84.77	56
G - 27	CICADA	–	37 / 4.65	32.55	628.34	1731	100.54	56

TABLE 2 - A

Note 1 : Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

## All Aluminium Conductors - AAC

Reference Standard : BSEN 50182 : 2001



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 80°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 80°C	Current Carrying capacity at still air & Conductor Temp. 80°C	Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
		No / mm	Ω / km	Ω / km	A	A	Ω / km	MΩ.km
G - 2	GNAT	7 / 2.21	1.0643	1.3217	184	102	0.3044	0.2590
G - 3	MOSQUITO	7 / 2.59	0.7749	0.9624	225	127	0.2947	0.2499
G - 4	LADYBIRD	7 / 2.79	0.6678	0.8294	247	141	0.2903	0.2456
G - 7	BLUEBOTTLE	7 / 3.66	0.3880	0.4820	350	206	0.2723	0.2301
G - 8	EARWIG	7 / 3.78	0.3638	0.4520	365	215	0.2707	0.2282
G - 9	GRASSHOPPER	7 / 3.91	0.3400	0.4224	381	226	0.2677	0.2263
G - 10	CLEGG	7 / 4.17	0.2989	0.3714	414	247	0.2649	0.2226
G - 12	BEETLE	19 / 2.67	0.2701	0.3356	444	267	0.2570	0.2189
G - 13	BEE	7 / 4.90	0.2165	0.2691	509	309	0.2546	0.2133
G - 16	CATERPILLAR	19 / 3.53	0.1546	0.1924	635	394	0.2399	0.2029
G - 18	SPIDER	19 / 3.99	0.1210	0.1508	744	467	0.2319	0.1959
G - 21	MOTH	19 / 5.00	0.0770	0.0965	994	638	0.2179	0.1829
G - 22	DRONE	37 / 3.58	0.0774	0.0969	992	638	0.2173	0.1828
G - 25	MAYBUG	37 / 4.09	0.0593	0.0747	1176	766	0.2087	0.1752
G - 26	SCORPION	37 / 4.27	0.0544	0.0688	1241	812	0.2059	0.1727
G - 27	CICADA	37 / 4.65	0.0459	0.0584	1382	912	0.2007	0.1678

TABLE 2 - B

**Note 2 :** The applicable conditions for current calculations of this table are given in page 15

## All Aluminium Alloy Conductors - AAAC

Reference Standard : BSEN 50182 : 2001



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
G - 234	BOX	7 / 1.85	5.55	18.82	51	5.55	59
G - 235	ACACIA	7 / 2.08	6.24	23.79	65	7.02	59
G - 29	ALMOND	7 / 2.34	7.02	30.10	82	8.88	59
G - 30	CEDAR	7 / 2.54	7.62	35.47	97	10.46	59
G - 236	DEODAR	7 / 2.77	8.31	42.18	115	12.44	59
G - 31	FIR	7 / 2.95	8.85	47.84	131	14.11	59
G - 32	HAZEL	7 / 3.30	9.90	59.87	163	17.66	59
G - 237	PINE	7 / 3.61	10.83	71.65	196	21.14	59
G - 238	HOLLY	7 / 3.91	11.73	84.05	229	24.79	59
G - 239	WILLOW	7 / 4.04	12.12	89.73	245	26.47	59
G - 33	OAK	7 / 4.65	13.95	118.88	325	35.07	59
G - 240	MULBERRY	19 / 3.18	15.90	150.90	414	44.52	56
G - 34	ASH	19 / 3.48	17.40	180.72	496	53.31	56
G - 35	ELM	19 / 3.76	18.80	210.97	579	62.24	56
G - 241	POPLAR	37 / 2.87	20.09	239.36	659	70.61	56
G - 242	SYCAMORE	37 / 3.23	22.61	303.18	835	89.40	56
G - 36	UPAS	37 / 3.53	24.71	362.11	998	106.82	56
G - 243	YEW	37 / 4.06	28.42	479.01	1320	141.31	56
G - 244	TOTARA	37 / 4.14	28.98	498.07	1372	146.93	56
G - 245	RUBUS	61 / 3.50	31.50	586.89	1622	173.13	54
G - 246	SORBUS	61 / 3.71	33.39	659.43	1822	194.53	54
G - 247	ARAUCARIA	61 / 4.14	37.26	821.15	2269	242.24	54
G - 248	REDWOOD	61 / 4.56	41.04	996.21	2753	293.88	54

TABLE 3 - A

Note 1 : Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

# All Aluminium Alloy Conductors - AAAC

Reference Standard : BSEN 50182 : 2001



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 80°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 80°C	Current Carrying capacity at still air & Conductor Temp. 80°C	Inductive Reactance for 0.3048m radius (X <sub>i</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>c</sub> )
		No / mm	Ω / km	Ω / km	A	A	Ω / km	MΩ.km
G - 234	BOX	7 / 1.85	1.7480	2.1256	138	75	0.3158	0.2691
G - 235	ACACIA	7 / 2.08	1.3828	1.6815	160	88	0.3070	0.2624
G - 29	ALMOND	7 / 2.34	1.0926	1.3287	186	104	0.3018	0.2557
G - 30	CEDAR	7 / 2.54	0.9273	1.1277	207	117	0.2947	0.2510
G - 236	DEODAR	7 / 2.77	0.7797	0.9482	231	132	0.2903	0.2460
G - 31	FIR	7 / 2.95	0.6875	0.8361	250	144	0.2863	0.2424
G - 32	HAZEL	7 / 3.30	0.5494	0.6682	289	168	0.2789	0.2360
G - 237	PINE	7 / 3.61	0.4591	0.5584	324	190	0.2739	0.2308
G - 238	HOLLY	7 / 3.91	0.3913	0.4760	359	213	0.2677	0.2263
G - 239	WILLOW	7 / 4.04	0.3665	0.4459	374	223	0.2663	0.2244
G - 33	OAK	7 / 4.65	0.2767	0.3367	449	271	0.2570	0.2163
G - 240	MULBERRY	19 / 3.18	0.2192	0.2668	523	321	0.2468	0.2089
G - 34	ASH	19 / 3.48	0.1830	0.2229	588	364	0.2408	0.2037
G - 35	ELM	19 / 3.76	0.1568	0.1911	649	405	0.2362	0.1993
G - 241	POPLAR	37 / 2.87	0.1387	0.1692	704	442	0.2311	0.1955
G - 242	SYCAMORE	37 / 3.23	0.1095	0.1338	819	521	0.2235	0.1887
G - 36	UPAS	37 / 3.53	0.0917	0.1122	918	589	0.2179	0.1836
G - 243	YEW	37 / 4.06	0.0693	0.0853	1098	715	0.2093	0.1756
G - 244	TOTARA	37 / 4.14	0.0666	0.0820	1126	735	0.2081	0.1745
G - 245	RUBUS	61 / 3.50	0.0567	0.0701	1249	822	0.2022	0.1697
G - 246	SORBUS	61 / 3.71	0.0505	0.0627	1344	889	0.1987	0.1664
G - 247	ARAUCARIA	61 / 4.14	0.0406	0.0510	1541	1030	0.1918	0.1601
G - 248	REDWOOD	61 / 4.56	0.0334	0.0425	1738	1174	0.1860	0.1545

TABLE 3 - B

Note 2 : The applicable conditions for current calculations of this table are given in page 15



## Aluminium Conductors Steel Reinforced ACSR

Reference Standard : BS 215 - Part 2 : 1970



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Nominal Area	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)	Coefficient of linear expansion
		mm <sup>2</sup>	No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
G - 39	GOPHER	25	6 / 2.36	1 / 2.36	7.08	30.62	25.89	106	9.61	79	19.1
G - 40	WEASEL	30	6 / 2.59	1 / 2.59	7.77	36.88	31.18	128	11.45	79	19.1
G - 42	FERRET	40	6 / 3.00	1 / 3.00	9.00	49.48	41.83	171	15.20	79	19.1
G - 43	RABBIT	50	6 / 3.35	1 / 3.35	10.05	61.70	52.16	214	18.35	79	19.1
G - 47	HORSE	70	12 / 2.79	7 / 2.79	13.95	116.16	71.90	538	61.20	105	15.3
G - 52	DOG	100	6 / 4.72	7 / 1.57	14.15	118.54	103.55	394	32.70	75	19.8
G - 56	WOLF	150	30 / 2.59	7 / 2.59	18.13	194.94	154.81	726	69.20	80	17.8
G - 57	DINGO	150	18 / 3.35	1 / 3.35	16.75	167.47	155.92	505	35.70	66	21.2
G - 58	LYNX	175	30 / 2.79	7 / 2.79	19.53	226.20	179.57	842	79.80	80	17.8
G - 59	CARACAL	175	18 / 3.61	1 / 3.61	18.05	194.47	181.06	586	41.10	66	21.2
G - 60	PANTHER	200	30 / 3.00	7 / 3.00	21.00	261.54	207.63	974	92.25	80	17.8
G - 61	JAGUAR	200	18 / 3.86	1 / 3.86	19.30	222.34	207.02	670	46.55	66	21.2
G - 69	ZEBRA	400	54 / 3.18	7 / 3.18	28.62	484.48	419.88	1621	131.90	69	19.3

TABLE 4 - A

# Aluminium Conductors Steel Reinforced ACSR

Reference Standard : BS 215 - Part 2 : 1970



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 80°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 80°C	Current Carrying capacity at still air & Conductor Temp. 80°C	Inductive Reactance for 0.3048m radius (X <sub>i</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>c</sub> )
		No / mm	No / mm	Ω / km	Ω / km	A	A	Ω / km	MΩ.km
G - 39	GOPHER	6 / 2.36	1 / 2.36	1.0930	1.5609	172	96	0.3224	0.2552
G - 40	WEASEL	6 / 2.59	1 / 2.59	0.9077	1.2963	194	110	0.3166	0.2499
G - 42	FERRET	6 / 3.00	1 / 3.00	0.6766	0.9663	234	134	0.3073	0.2414
G - 43	RABBIT	6 / 3.35	1 / 3.35	0.5426	0.7749	269	157	0.3004	0.2351
G - 47	HORSE	12 / 2.79	7 / 2.79	0.3936	0.5621	347	210	0.2518	0.2163
G - 52	DOG	6 / 4.72	7 / 1.57	0.2733	0.3904	418	253	0.2789	0.2155
G - 56	WOLF	30 / 2.59	7 / 2.59	0.1828	0.2278	588	366	0.2340	0.2013
G - 57	DINGO	18 / 3.35	1 / 3.35	0.1815	0.2263	577	355	0.2417	0.2059
G - 58	LYNX	30 / 2.79	7 / 2.79	0.1576	0.1965	647	405	0.2293	0.1971
G - 59	CARACAL	18 / 3.61	1 / 3.61	0.1563	0.1950	635	394	0.2370	0.2016
G - 60	PANTHER	30 / 3.00	7 / 3.00	0.1363	0.1700	711	449	0.2247	0.1929
G - 61	JAGUAR	18 / 3.86	1 / 3.86	0.1367	0.1708	692	433	0.2328	0.1978
G - 69	ZEBRA	54 / 3.18	7 / 3.18	0.0674	0.0867	1091	711	0.2054	0.1752

TABLE 4 - B

**Note 1 :** The applicable conditions for current calculations of this table are given in page 15.

# Aluminium Conductors Steel Reinforced ACSR

Reference Standard : BSEN 50182 : 2001



## Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
G - 37	MOLE	6 / 1.50	1 / 1.50	4.50	12.37	10.47	42.8	4.14	79	19.1
G - 38	SQUIRREL	6 / 2.11	1 / 2.11	6.33	24.48	20.72	84.7	7.87	79	19.1
G - 41	FOX	6 / 2.79	1 / 2.79	8.37	42.80	36.23	148.1	13.21	79	19.1
G - 44	MINK	6 / 3.66	1 / 3.66	10.98	73.65	62.33	254.9	21.67	79	19.1
G - 45	SKUNK	12 / 2.59	7 / 2.59	12.95	100.10	61.95	463.6	52.79	105	15.3
G - 46	BEAVER	6 / 3.99	7 / 3.99	11.97	87.53	74.08	302.9	25.76	79	19.1
G - 48	RACCOON	6 / 4.09	1 / 4.09	12.30	92.03	77.85	318.3	27.06	79	19.1
G - 49	OTTER	6 / 4.22	1 / 4.22	12.66	97.91	82.87	338.8	28.81	79	19.1
G - 50	CAT	6 / 4.50	1 / 4.50	13.50	111.33	94.24	385.3	32.76	79	19.1
G - 51	HARE	6 / 4.72	1 / 4.72	14.16	122.48	103.66	423.9	36.04	79	19.1
G - 249	COYOTE	26 / 2.54	7 / 1.91	15.89	151.80	129.11	520.8	45.86	86	19.4
G - 250	COUGAR	18 / 3.05	1 / 3.05	15.25	138.82	129.34	418.5	29.74	66	21.2
G - 55	TIGER	30 / 2.36	7 / 2.36	16.52	161.85	128.52	600.9	57.87	80	17.8
G - 62	LION	30 / 3.18	7 / 3.18	22.26	293.86	233.31	1090.9	100.47	80	17.8
G - 63	BEAR	30 / 3.35	7 / 3.35	23.45	326.12	258.92	1210.7	111.50	80	17.8
G - 64	GOAT	30 / 3.71	7 / 3.71	25.97	399.98	317.62	1484.9	135.13	80	17.8
G - 65	SHEEP	30 / 3.99	7 / 3.99	27.93	462.63	367.06	1717.4	156.30	80	17.8
G - 66	ANTELOPE	54 / 2.97	7 / 2.97	26.73	422.60	366.11	1408.7	118.88	69	19.3
G - 67	BISON	54 / 3.00	7 / 3.00	27.00	431.18	373.35	1437.4	121.30	69	19.3
G - 68	DEER	30 / 4.27	7 / 4.27	29.89	529.84	420.51	1966.9	179.00	80	17.8
G - 70	ELK	30 / 4.50	7 / 4.50	31.50	588.46	467.00	2184.6	198.80	80	17.8
G - 71	CAMEL	54 / 3.35	7 / 3.35	30.15	537.66	465.46	1792.3	146.40	69	19.3
G - 72	MOOSE	54 / 3.53	7 / 3.53	31.77	596.99	517.37	1990	159.92	69	19.3

TABLE 5 - A

# Aluminium Conductors Steel Reinforced ACSR

Reference Standard : BSEN 50182 : 2001



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 80°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 80°C	Current Carrying capacity at still air & Conductor Temp. 80°C	Inductive Reactance for 0.3048m radius (X <sub>i</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>c</sub> )
		No / mm	No / mm	Ω / km	Ω / km	A	A	Ω / km	MΩ.km
G - 37	MOLE	6 / 1.50	1 / 1.50	2.7027	3.8596	97	51	0.3509	0.2811
G - 38	SQUIRREL	6 / 2.11	1 / 2.11	1.3659	1.9507	149	82	0.3294	0.2616
G - 41	FOX	6 / 2.79	1 / 2.79	0.7812	1.1157	213	122	0.3119	0.2456
G - 44	MINK	6 / 3.66	1 / 3.66	0.4540	0.6485	302	178	0.2948	0.2301
G - 45	SKUNK	12 / 2.59	7 / 2.59	0.4568	0.6524	316	189	0.2564	0.2206
G - 46	BEAVER	6 / 3.99	1 / 3.99	0.3820	0.5456	337	200	0.2894	0.2251
G - 48	RACOON	6 / 4.09	1 / 4.09	0.3635	0.5192	349	208	0.2877	0.2236
G - 49	OTTER	6 / 4.22	1 / 4.22	0.3415	0.4878	363	217	0.2859	0.2219
G - 50	CAT	6 / 4.50	1 / 4.50	0.3003	0.429	394	237	0.2818	0.2182
G - 51	HARE	6 / 4.72	1 / 4.72	0.2730	0.39	419	253	0.2788	0.2155
G - 249	COYOTE	26 / 2.54	7 / 1.91	0.2192	0.2732	517	317	0.2423	0.2089
G - 250	COUGAR	18 / 3.05	1 / 3.05	0.2188	0.2728	511	312	0.2476	0.2112
G - 55	TIGER	30 / 2.36	7 / 2.36	0.2202	0.2744	522	321	0.2398	0.2067
G - 62	LION	30 / 3.18	7 / 3.18	0.1213	0.1513	767	487	0.2211	0.1896
G - 63	BEAR	30 / 3.35	7 / 3.35	0.1093	0.1364	820	523	0.2178	0.1866
G - 64	GOAT	30 / 3.71	7 / 3.71	0.0891	0.1113	936	604	0.2114	0.1808
G - 65	SHEEP	30 / 3.99	7 / 3.99	0.0771	0.0963	1028	668	0.2068	0.1766
G - 66	ANTELOPE	54 / 2.97	7 / 2.97	0.0773	0.0993	999	646	0.2097	0.1791
G - 67	BISON	54 / 3.00	7 / 3.00	0.0758	0.0975	1011	655	0.2091	0.1785
G - 68	DEER	30 / 4.27	7 / 4.27	0.0673	0.0842	1122	734	0.2026	0.1727
G - 70	ELK	30 / 4.50	7 / 4.50	0.0606	0.076	1200	789	0.1993	0.1697
G - 71	CAMEL	54 / 3.35	7 / 3.35	0.0608	0.0784	1166	763	0.2022	0.1722
G - 72	MOOSE	54 / 3.53	7 / 3.53	0.0547	0.0707	1247	821	0.1989	0.1692

TABLE 5 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 15





# TECHNICAL DATA OF AAC, ACSR & AAAC Conforming to AS 1531 & AS 3607 Standards

- **Current Carrying Capacity values are based on following conditions,**

* Speed of Cross Wind ( 90° to the line )	v	1 m/s
* Intensity of Solar Radiation	$S_i$	
* For Summer Noon	900	W/m <sup>2</sup>
* For Winter Night	0	W/m <sup>2</sup>
* Solar Absorption Coefficient	Y	0.5
* Emissivity Coefficient	$K_e$	0.6
* Conductor Temperature	T <sub>2</sub>	
* For Summer Noon	75	°C
* For Winter Night	50	°C
* Ambient Temperature	T <sub>1</sub>	
* For Summer Noon	35	°C
* For Winter Night	10	°C
* Frequency	f	50 Hz

- **Total approximate weight of conductor do not include the weight of grease.**
- **Available grease application methods are given in Appendix A.**
- **Application of grease & coloured thread to identify alloy 1120 & 6201A are dependent on customer requirement.**



## All Aluminium Conductors - AAC

Reference Standard : AS 1531 : 1991



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Nominal Area	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		mm <sup>2</sup>	No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
AUG - 1	LEO	–	7 / 2.50	7.50	34.36	94	5.71	59
AUG - 2	LEONIDS	–	7 / 2.75	8.25	41.58	114	6.72	59
AUG - 3	LIBRA	–	7 / 3.00	9.00	49.48	135	7.98	59
AUG - 4	MARS	–	7 / 3.75	11.25	77.31	211	11.80	59
AUG - 5	MURCURY	–	7 / 4.50	13.50	111.33	304	16.90	59
AUG - 6	MOON	–	7 / 4.75	14.25	124.04	339	18.90	59
AUG - 7	NEPTUNE	–	19 / 3.25	16.25	157.62	433	24.70	56
AUG - 8	ORION	–	19 / 3.50	17.50	182.80	502	28.70	56
AUG - 9	PLUTO	–	19 / 3.75	18.75	209.85	576	31.90	56
AUG - 10	SATURN	–	37 / 3.00	21.00	261.54	720	42.20	56
AUG - 11	SIRIUS	–	37 / 3.25	22.75	306.94	846	48.20	56
AUG - 12	TAURUS	–	19 / 4.75	23.75	336.69	924	51.30	56
AUG - 13	TRITON	–	37 / 3.75	26.25	408.65	1126	62.20	56
AUG - 14	URANUS	–	61 / 3.25	29.25	506.04	1399	75.20	54
AUG - 15	URSULA	–	61 / 3.50	31.50	586.89	1622	87.30	54
AUG - 16	VENUS	–	61 / 3.75	33.75	673.72	1862	97.20	54

TABLE 6 - A

Note 1 : Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

## All Aluminium Conductors - AAC

Reference Standard : AS 1531 : 1991



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
					Current Carrying capacity at v=1m/s wind & Conductor Temp.75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp.50°C	Current Carrying capacity at still air & Conductor Temp.50°C		
		No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 1	LEO	7 / 2.50	0.8330	1.0177	192	103	214	121	0.2970	0.2519
AUG - 2	LEONIDS	7 / 2.75	0.6890	0.8418	217	118	242	138	0.2903	0.2464
AUG - 3	LIBRA	7 / 3.00	0.5790	0.7074	242	133	271	156	0.2844	0.2414
AUG - 4	MARS	7 / 3.75	0.3700	0.4522	322	181	361	214	0.2707	0.2287
AUG - 5	MURCURY	7 / 4.50	0.2580	0.3155	406	233	456	277	0.2595	0.2182
AUG - 6	MOON	7 / 4.75	0.2320	0.2837	435	251	489	298	0.2558	0.2151
AUG - 7	NEPTUNE	19 / 3.25	0.1830	0.2240	508	298	573	354	0.2447	0.2076
AUG - 8	ORION	19 / 3.50	0.1570	0.1922	560	331	632	394	0.2408	0.2034
AUG - 9	PLUTO	19 / 3.75	0.1370	0.1679	611	364	691	434	0.2362	0.1994
AUG - 10	SATURN	37 / 3.00	0.1100	0.1350	704	424	797	507	0.2279	0.1929
AUG - 11	SIRIUS	37 / 3.25	0.0940	0.1155	779	473	883	566	0.2235	0.1883
AUG - 12	TAURUS	19 / 4.75	0.0857	0.1055	825	503	937	604	0.2213	0.1859
AUG - 13	TRITON	37 / 3.75	0.0706	0.0871	935	576	1063	692	0.2141	0.1801
AUG - 14	URANUS	61 / 3.25	0.0572	0.0711	1068	665	1216	801	0.2070	0.1739
AUG - 15	URSULA	61 / 3.50	0.0493	0.0615	1173	736	1336	887	0.2022	0.1697
AUG - 16	VENUS	61 / 3.75	0.0429	0.0539	1279	808	1458	975	0.1982	0.1657

TABLE 6 - B

Note 2 : The applicable conditions for current calculations of this table are given in page 27

## All Aluminium Alloy Conductors - AAAC / 1120

Reference Standard : AS 1531 : 1991



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
AUG - 17	CHLORINE	7 / 2.50	7.50	34.36	94	8.18	59
AUG - 18	CHROMIUM	7 / 2.75	8.25	41.58	114	9.91	59
AUG - 19	FLUORINE	7 / 3.00	9.00	49.48	135	11.8	59
AUG - 20	HELIUM	7 / 3.75	11.25	77.31	211	17.6	59
AUG - 21	HYDROGEN	7 / 4.50	13.50	111.33	304	24.3	59
AUG - 22	IODINE	7 / 4.75	14.25	124.04	339	27.1	59
AUG - 23	KRYPTON	19 / 3.25	16.25	157.62	433	37.4	56
AUG - 24	LUTETIUM	19 / 3.50	17.50	182.80	502	41.7	56
AUG - 25	NEON	19 / 3.75	18.75	209.85	576	47.8	56
AUG - 26	NITROGEN	37 / 3.00	21.00	261.54	720	62.2	56
AUG - 27	NOBELIUM	37 / 3.25	22.75	306.94	846	72.8	56
AUG - 28	OXYGEN	19 / 4.75	23.75	336.69	924	73.6	56
AUG - 29	PHOSPHORUS	37 / 3.75	26.25	408.65	1126	93.1	56
AUG - 30	SELENIUM	61 / 3.25	29.25	506.04	1399	114	54
AUG - 31	SILICON	61 / 3.50	31.50	586.89	1622	127	54
AUG - 32	SULPHUR	61 / 3.75	33.75	673.72	1862	145	54

TABLE 7 - A

**Note 1 :** Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

# All Aluminium Alloy Conductors - AAAC / 1120

Reference Standard : AS 1531 : 1991



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
					Current Carrying capacity at v=1m/s wind & Conductor Temp.75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp.50°C	Current Carrying capacity at still air & Conductor Temp.50°C		
					A	A	A	A		
		No / mm	Ω / km	Ω / km					Ω / km	MΩ.km
AUG - 17	CHLORINE	7 / 2.50	0.8640	1.0494	189	102	210	119	0.2965	0.2519
AUG - 18	CHROMIUM	7 / 2.75	0.7130	0.8660	214	116	238	136	0.2905	0.2464
AUG - 19	FLUORINE	7 / 3.00	0.5990	0.7276	239	131	266	154	0.2850	0.2414
AUG - 20	HELIUM	7 / 3.75	0.3830	0.4654	318	179	356	211	0.2710	0.2287
AUG - 21	HYDROGEN	7 / 4.50	0.2660	0.3234	401	230	450	273	0.2595	0.2182
AUG - 22	IODINE	7 / 4.75	0.2390	0.2906	429	248	483	294	0.2562	0.2151
AUG - 23	KRYPTON	19 / 3.25	0.1890	0.2299	501	294	565	349	0.2452	0.2076
AUG - 24	LUTETIUM	19 / 3.50	0.1630	0.1984	551	326	621	387	0.2405	0.2034
AUG - 25	NEON	19 / 3.75	0.1420	0.1730	602	358	680	427	0.2362	0.1994
AUG - 26	NITROGEN	37 / 3.00	0.1140	0.1391	693	418	785	499	0.2282	0.1929
AUG - 27	NOBELIUM	37 / 3.25	0.0973	0.1189	767	466	870	558	0.2232	0.1883
AUG - 28	OXYGEN	19 / 4.75	0.0884	0.1082	815	497	924	596	0.2213	0.1859
AUG - 29	PHOSPHORUS	37 / 3.75	0.0731	0.0897	921	568	1046	681	0.2142	0.1801
AUG - 30	SELENIUM	61 / 3.25	0.0592	0.0730	1054	657	1199	790	0.2071	0.1739
AUG - 31	SILICON	61 / 3.50	0.0511	0.0634	1155	725	1316	874	0.2024	0.1697
AUG - 32	SULPHUR	61 / 3.75	0.0444	0.0554	1261	797	1438	961	0.1981	0.1657

TABLE 7 - B

Note 2 : The applicable conditions for current calculations of this table are given in page 27

## All Aluminium Alloy Conductors - AAAC / 6201A

Reference Standard : AS 1531 : 1991



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	Conductor OD	Calculated Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Practical)
		No / mm	mm	mm <sup>2</sup>	kg / km	kN	GPa
AUG - 33	DIAMOND	7 / 2.50	7.50	34.36	94	9.64	59
AUG - 34	DOLOMITE	7 / 2.75	8.25	41.58	114	11.6	59
AUG - 35	EMERALD	7 / 3.00	9.00	49.48	135	13.9	59
AUG - 36	GARNET	7 / 3.75	11.25	77.31	211	21.7	59
AUG - 37	JADE	7 / 4.50	13.50	111.33	304	31.2	59
AUG - 38	JASPER	7 / 4.75	14.25	124.04	339	34.8	59
AUG - 39	OPAL	19 / 3.25	16.25	157.62	433	44.2	56
AUG - 40	PATRONITE	19 / 3.50	17.50	182.80	502	51.3	56
AUG - 41	PEARL	19 / 3.75	18.75	209.85	576	58.8	56
AUG - 42	RUBY	37 / 3.00	21.00	261.54	720	73.5	56
AUG - 43	RUTHENIUM	37 / 3.25	22.75	306.94	846	86.1	56
AUG - 44	RUTILE	19 / 4.75	23.75	336.69	924	94.4	56
AUG - 45	SAPPHIRE	37 / 3.75	26.25	408.65	1126	115	56
AUG - 46	SPINEL	61 / 3.25	29.25	506.04	1399	135	54
AUG - 47	TANTALUM	61 / 3.50	31.50	586.89	1622	156	54
AUG - 48	TOPAZ	61 / 3.75	33.75	673.72	1862	179	54

TABLE 8 - A

**Note 1 :** Coefficient of Linear Expansion for above conductor sizes is  $23 \times 10^{-6} / ^\circ\text{C}$

# All Aluminium Alloy Conductors - AAAC / 6201A

Reference Standard : AS 1531 : 1991



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
					Current Carrying capacity at v=1m/s wind & Conductor Temp.75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp.50°C	Current Carrying capacity at still air & Conductor Temp.50°C		
					A	A	A	A		
		No / mm	Ω / km	Ω / km					Ω / km	MΩ.km
AUG - 33	DIAMOND	7 / 2.50	0.9670	1.1586	180	97	200	113	0.2965	0.2519
AUG - 34	DOLOMITE	7 / 2.75	0.7990	0.9573	203	111	226	129	0.2905	0.2464
AUG - 35	EMERALD	7 / 3.00	0.6710	0.8040	227	125	253	146	0.2850	0.2414
AUG - 36	GARNET	7 / 3.75	0.4300	0.5153	302	170	337	200	0.2710	0.2287
AUG - 37	JADE	7 / 4.50	0.2980	0.3572	381	219	427	259	0.2595	0.2182
AUG - 38	JASPER	7 / 4.75	0.2680	0.3214	408	236	458	279	0.2562	0.2151
AUG - 39	OPAL	19 / 3.25	0.2120	0.2543	476	279	535	331	0.2452	0.2076
AUG - 40	PATRONITE	19 / 3.50	0.1830	0.2196	524	309	589	367	0.2405	0.2034
AUG - 41	PEARL	19 / 3.75	0.1590	0.1909	573	341	645	405	0.2362	0.1994
AUG - 42	RUBY	37 / 3.00	0.1280	0.1538	659	397	744	473	0.2282	0.1929
AUG - 43	RUTHENIUM	37 / 3.25	0.1090	0.1312	730	444	825	530	0.2232	0.1883
AUG - 44	RUTILE	19 / 4.75	0.0991	0.1194	775	473	877	565	0.2213	0.1859
AUG - 45	SAPPHIRE	37 / 3.75	0.0819	0.0989	877	541	994	647	0.2142	0.1801
AUG - 46	SPINEL	61 / 3.25	0.0662	0.0803	1005	626	1141	751	0.2071	0.1739
AUG - 47	TANTALUM	61 / 3.50	0.0572	0.0697	1102	692	1252	831	0.2024	0.1697
AUG - 48	TOPAZ	61 / 3.75	0.0498	0.0611	1201	759	1367	913	0.1981	0.1657

TABLE 8 - B

Note 2 : The applicable conditions for current calculations of this table are given in page 27

## Aluminium Conductor Galvanized Steel Reinforced ACSR 1350 / GZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 49	ALMOND	6 / 2.50	1 / 2.50	7.50	34.36	29.03	119	10.5	83	19.3
AUG - 50	APRICOT	6 / 2.75	1 / 2.75	8.25	41.58	35.16	144	12.6	83	19.3
AUG - 51	APPLE	6 / 3.00	1 / 3.00	9.00	49.48	41.80	171	14.9	83	19.3
AUG - 52	BANANA	6 / 3.75	1 / 3.75	11.25	77.31	65.36	268	22.7	83	19.3
AUG - 53	CHERRY	6 / 4.75	7 / 1.60	14.30	120.40	104.43	402	33.4	80	19.9
AUG - 54	FIG	18 / 3.50	1 / 3.50	17.50	182.80	170.07	551	38.8	71	21.4
AUG - 55	GRAPE	30 / 2.50	7 / 2.50	17.50	181.62	144.39	676	63.5	88	18.4
AUG - 56	LEMON	30 / 3.00	7 / 3.00	21.00	261.54	208.09	974	90.4	88	18.4
AUG - 57	LYCHEE	30 / 3.25	7 / 3.25	22.75	306.94	243.97	1142	105	88	18.4
AUG - 58	LIME	30 / 3.50	7 / 3.50	24.50	355.98	283.00	1325	122	88	18.4
AUG - 59	MANGO	54 / 3.00	7 / 3.00	27.00	431.18	373.35	1442	119	78	19.9
AUG - 60	ORANGE	54 / 3.25	7 / 3.25	29.25	506.04	438.08	1693	137	78	19.9
AUG - 61	OLIVE	54 / 3.50	7 / 3.50	31.50	586.89	508.08	1963	159	78	19.9
AUG - 62	PAWPAW	54 / 3.75	19 / 2.25	33.75	671.96	583.51	2241	178	77	20.0
AUG - 63	QUINCE	3 / 1.75	4 / 1.75	5.25	16.84	8.71	95	12.7	136	13.9
AUG - 64	RAISIN	3 / 2.50	4 / 2.50	7.50	34.36	17.80	194	24.4	136	13.9
AUG - 65	SULTANA	4 / 3.00	3 / 3.00	9.00	49.48	31.55	244	28.3	119	15.2
AUG - 66	WALNUT	4 / 3.75	3 / 3.75	11.25	77.31	49.39	381	43.9	119	15.2

TABLE 9 - A

## Aluminium Conductor Galvanized Steel Reinforced ACSR 1350 / GZ

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 49	ALMOND	6 / 2.50	1 / 2.50	0.9750	1.3698	165	89	184	104	0.3188	0.2519
AUG - 50	APRICOT	6 / 2.75	1 / 2.75	0.8050	1.1310	187	102	209	119	0.3128	0.2464
AUG - 51	APPLE	6 / 3.00	1 / 3.00	0.6770	0.9512	209	115	233	135	0.3073	0.2414
AUG - 52	BANANA	6 / 3.75	1 / 3.75	0.4330	0.6084	278	156	311	185	0.2933	0.2287
AUG - 53	CHERRY	6 / 4.75	7 / 1.60	0.2710	0.3809	375	217	423	258	0.2782	0.2149
AUG - 54	FIG	18 / 3.50	1 / 3.50	0.1664	0.2042	543	321	613	383	0.2390	0.2034
AUG - 55	GRAPE	30 / 2.50	7 / 2.50	0.1960	0.2402	501	296	565	353	0.2362	0.2034
AUG - 56	LEMON	30 / 3.00	7 / 3.00	0.1360	0.1668	633	381	717	456	0.2247	0.1929
AUG - 57	LYCHEE	30 / 3.25	7 / 3.25	0.1160	0.1423	701	426	796	511	0.2197	0.1883
AUG - 58	LIME	30 / 3.50	7 / 3.50	0.1000	0.1228	771	472	876	567	0.2151	0.1841
AUG - 59	MANGO	54 / 3.00	7 / 3.00	0.0758	0.0959	898	555	1022	668	0.2091	0.1785
AUG - 60	ORANGE	54 / 3.25	7 / 3.25	0.0646	0.0819	995	620	1134	747	0.2041	0.1739
AUG - 61	OLIVE	54 / 3.50	7 / 3.50	0.0557	0.0708	1093	686	1249	829	0.1994	0.1697
AUG - 62	PAWPAW	54 / 3.75	19 / 2.25	0.0485	0.0620	1192	754	1364	912	0.1951	0.1657
AUG - 63	QUINCE	3 / 1.75	4 / 1.75	3.2500	4.5660	82	42	91	49	0.3412	0.2723
AUG - 64	RAISIN	3 / 2.50	4 / 2.50	1.5900	2.2338	130	70	144	82	0.3188	0.2519
AUG - 65	SULTANA	4 / 3.00	3 / 3.00	0.8970	1.2602	181	100	203	117	0.3073	0.2414
AUG - 66	WALNUT	4 / 3.75	3 / 3.75	0.5730	0.8051	241	136	271	161	0.2933	0.2287

TABLE 9 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 27

## Aluminium Conductor Aluminium Clad Steel Reinforced ACSR 1350 / AC

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 67	ANGLING	6 / 2.50	1 / 2.50	7.50	34.36	30.66	113	10.6	79	20.1
AUG - 68	AQUATICS	6 / 2.75	1 / 2.75	8.25	41.58	37.09	137	12.7	79	20.1
AUG - 69	ARCHERY	6 / 3.00	1 / 3.00	9.00	49.48	44.15	163	15.1	79	20.1
AUG - 70	BASEBALL	6 / 3.75	1 / 3.75	11.25	77.31	69.02	254	22.3	79	20.1
AUG - 71	BOWLS	6 / 4.75	7 / 1.60	14.30	120.40	109.27	385	32.7	76	20.6
AUG - 72	BOXING	18 / 3.50	1 / 3.50	17.50	182.80	171.52	540	38.8	69	21.8
AUG - 73	CRICKET	30 / 2.50	7 / 2.50	17.50	181.62	155.49	634	64.4	82	19.4
AUG - 74	DARTS	30 / 3.00	7 / 3.00	21.00	261.54	224.60	913	91.6	82	19.4
AUG - 75	DICE	30 / 3.25	7 / 3.25	22.75	306.94	262.04	1072	106	82	19.4
AUG - 76	DIVING	30 / 3.50	7 / 3.50	24.50	355.98	304.96	1243	122	82	19.4
AUG - 77	GOLF	54 / 3.00	7 / 3.00	27.00	431.18	389.81	1382	120	75	20.6
AUG - 78	GYMNASTICS	54 / 3.25	7 / 3.25	29.25	506.04	457.19	1622	139	75	20.6
AUG - 79	HURDLES	54 / 3.50	7 / 3.50	31.50	586.89	530.96	1881	159	75	20.6
AUG - 80	LACROSSE	54 / 3.75	19 / 2.25	33.75	671.96	608.60	2149	180	74	20.7
AUG - 81	SKATING	3 / 1.75	4 / 1.75	5.25	16.84	10.29	84	12.3	119	15.3
AUG - 82	SOCCER	3 / 2.50	4 / 2.50	7.50	34.36	21.12	171	24.9	119	15.3
AUG - 83	SWIMMING	4 / 3.00	3 / 3.00	9.00	49.48	35.07	218	28.9	106	16.5
AUG - 84	TENNIS	4 / 3.75	3 / 3.75	11.25	77.31	54.74	340	42.6	106	16.5

TABLE 10 - A

# Aluminium Conductor Aluminium Clad Steel Reinforced ACSR 1350 / AC

Reference Standard : AS 3607 : 1989



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 67	ANGLING	6 / 2.50	1 / 2.50	0.9230	1.2968	170	92	190	107	0.3188	0.2519
AUG - 68	AQUATICS	6 / 2.75	1 / 2.75	0.7630	1.0720	192	104	214	123	0.3128	0.2464
AUG - 69	ARCHERY	6 / 3.00	1 / 3.00	0.6410	0.9006	215	118	240	139	0.3073	0.2414
AUG - 70	BASEBALL	6 / 3.75	1 / 3.75	0.4100	0.5761	285	161	320	190	0.2933	0.2287
AUG - 71	BOWLS	6 / 4.75	7 / 1.60	0.2590	0.3640	384	222	432	264	0.2782	0.2149
AUG - 72	BOXING	18 / 3.50	1 / 3.50	0.1650	0.2025	545	322	616	384	0.2390	0.2034
AUG - 73	CRICKET	30 / 2.50	7 / 2.50	0.1820	0.2232	519	307	587	366	0.2362	0.2034
AUG - 74	DARTS	30 / 3.00	7 / 3.00	0.1260	0.1546	658	396	745	474	0.2247	0.1929
AUG - 75	DICE	30 / 3.25	7 / 3.25	0.1080	0.1326	727	441	825	529	0.2197	0.1883
AUG - 76	DIVING	30 / 3.50	7 / 3.50	0.0928	0.1141	800	490	910	589	0.2151	0.1841
AUG - 77	GILF	54 / 3.00	7 / 3.00	0.0726	0.0919	917	567	1045	683	0.2091	0.1785
AUG - 78	GYMNASTICS	54 / 3.25	7 / 3.25	0.0619	0.0785	1016	633	1159	763	0.2041	0.1739
AUG - 79	HURDLES	54 / 3.50	7 / 3.50	0.0533	0.0678	1117	701	1275	846	0.1994	0.1697
AUG - 80	LACROSE	54 / 3.75	19 / 2.25	0.0465	0.0594	1218	770	1391	930	0.1951	0.1657
AUG - 81	SKATING	3 / 1.75	4 / 1.75	2.7500	3.8634	90	46	99	54	0.3412	0.2723
AUG - 82	SOCCER	3 / 2.50	4 / 2.50	1.3400	1.8826	141	76	157	89	0.3188	0.2519
AUG - 83	SWIMMING	4 / 3.00	3 / 3.00	0.8070	1.1339	191	105	214	124	0.3073	0.2414
AUG - 84	TENNIS	4 / 3.75	3 / 3.75	0.5170	0.7264	254	143	285	169	0.2933	0.2287

TABLE 10 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 27



## Aluminium Conductor Aluminium Coated Steel Reinforced ACSR 1350 / AZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 85	BARLEY	6 / 2.50	1 / 2.50	7.50	34.36	29.03	118	10.2	83	19.3
AUG - 86	BEAN	6 / 3.00	1 / 3.00	9.00	49.48	41.80	170	14.5	83	19.3
AUG - 87	CABBAGE	6 / 3.75	1 / 3.75	11.25	77.31	65.36	265	21.4	83	19.3
AUG - 88	CARROT	6 / 4.75	7 / 1.60	14.30	120.40	104.43	399	32.0	80	19.9

TABLE 11 - A

## Aluminium Conductor Aluminium Coated Steel Reinforced ACSR 1350 / AZ

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 85	BARLEY	6 / 2.50	1 / 2.50	0.9750	1.3698	165	89	184	104	0.3188	0.2519
AUG - 86	BEAN	6 / 3.00	1 / 3.00	0.6770	0.9512	209	115	233	135	0.3073	0.2414
AUG - 87	CABBAGE	6 / 3.75	1 / 3.75	0.4330	0.6084	278	156	311	185	0.2933	0.2287
AUG - 88	CARROT	6 / 4.75	7 / 1.60	0.2710	0.3809	375	217	423	258	0.2782	0.2149

TABLE 11 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 27

## Aluminium Alloy Conductor Galvanized Steel Reinforced AACSR 1120 / GZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 89	APPLE 1120	6 / 3.00	1 / 3.00	9.00	49.48	40.43	171	18.3	83	19.3
AUG - 90	BANANA 1120	6 / 3.75	1 / 3.75	11.25	77.31	63.17	268	27.9	83	19.3
AUG - 91	CHERRY 1120	6 / 4.75	7 / 1.60	14.30	120.40	101.43	402	40.7	80	19.9
AUG - 92	FIG 1120	18 / 3.50	1 / 3.50	17.50	182.80	163.58	551	51.5	71	21.4
AUG - 93	GRAPE 1120	30 / 2.50	7 / 2.50	17.50	181.62	139.41	676	74.4	88	18.4
AUG - 94	LEMON 1120	30 / 3.00	7 / 3.00	21.00	261.54	200.71	974	107	88	18.4
AUG - 95	LYCHEE 1120	30 / 3.25	7 / 3.25	22.75	306.94	235.83	1142	126	88	18.4
AUG - 96	LIME 1120	30 / 3.50	7 / 3.50	24.50	355.98	272.12	1325	143	88	18.4
AUG - 97	MANGO 1120	54 / 3.00	7 / 3.00	27.00	431.18	360.97	1442	149	78	19.9
AUG - 98	ORANGE 1120	54 / 3.25	7 / 3.25	29.25	506.04	423.02	1693	174	78	19.9
AUG - 99	OLIVE 1120	54 / 3.50	7 / 3.50	31.50	586.89	489.62	1963	197	78	19.9

TABLE 12 - A

# Aluminium Alloy Conductor Galvanized Steel Reinforced AACSR 1120 / GZ

Reference Standard : AS 3607 : 1989



## Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 89	APPLE 1120	6 / 3.00	1 / 3.00	0.7000	0.9778	206	113	230	133	0.3073	0.2414
AUG - 90	BANANA 1120	6 / 3.75	1 / 3.75	0.4480	0.6258	274	154	307	182	0.2933	0.2287
AUG - 91	CHERRY 1120	6 / 4.75	7 / 1.60	0.2790	0.3897	371	215	417	254	0.2782	0.2149
AUG - 92	FIG 1120	18 / 3.50	1 / 3.50	0.1730	0.2111	534	316	603	376	0.2390	0.2034
AUG - 93	GRAPE 1120	30 / 2.50	7 / 2.50	0.2030	0.2474	493	292	557	347	0.2362	0.2034
AUG - 94	LEMON 1120	30 / 3.00	7 / 3.00	0.1410	0.1720	623	376	706	449	0.2247	0.1929
AUG - 95	LYCHEE 1120	30 / 3.25	7 / 3.25	0.1200	0.1463	692	420	784	503	0.2197	0.1883
AUG - 96	LIME 1120	30 / 3.50	7 / 3.50	0.1040	0.1270	759	464	861	557	0.2151	0.1841
AUG - 97	MANGO 1120	54 / 3.00	7 / 3.00	0.0784	0.0985	886	548	1007	658	0.2091	0.1785
AUG - 98	ORANGE 1120	54 / 3.25	7 / 3.25	0.0669	0.0842	981	611	1117	736	0.2041	0.1739
AUG - 99	OLIVE 1120	54 / 3.50	7 / 3.50	0.0578	0.0729	1077	676	1227	815	0.1994	0.1697

TABLE 12 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 27

## Aluminium Alloy Conductor Aluminium Clad Steel Reinforced AACSR 1120 / AC

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 100	ARCHERY 1120	6 / 3.00	1 / 3.00	9.00	49.48	42.75	163	18.4	79	20.1
AUG - 101	BASEBALL 1120	6 / 3.75	1 / 3.75	11.25	77.31	66.75	254	27.6	79	20.1
AUG - 102	BOWIS 1120	6 / 4.75	7 / 1.60	14.30	120.40	105.99	385	40.0	76	20.6
AUG - 103	BOXING 1120	18 / 3.50	1 / 3.50	17.50	182.80	167.46	540	51.5	69	21.8
AUG - 104	CRICKET 1120	30 / 2.50	7 / 2.50	17.50	181.62	150.53	634	75.2	82	19.4
AUG - 105	DARTS 1120	30 / 3.00	7 / 3.00	21.00	261.54	217.69	913	108	82	19.4
AUG - 106	DICE 1120	30 / 3.25	7 / 3.25	22.75	306.94	254.95	1072	127	82	19.4
AUG - 107	DIVING 1120	30 / 3.50	7 / 3.50	24.50	355.98	294.48	1243	143	82	19.4
AUG - 108	GOLF 1120	54 / 3.00	7 / 3.00	27.00	431.18	377.33	1382	150	75	20.6
AUG - 109	GYMNASTICS 1120	54 / 3.25	7 / 3.25	29.25	506.04	442.88	1622	176	75	20.6
AUG - 110	HURDLES 1120	54 / 3.50	7 / 3.50	31.50	586.89	512.68	1881	197	75	20.6

TABLE 13 - A

## Aluminium Alloy Conductor Aluminium Clad Steel Reinforced AACSR 1120 / AC

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 100	ARCHERY 1120	6 / 3.00	1 / 3.00	0.6620	0.9247	212	116	236	137	0.3073	0.2414
AUG - 101	BASEBALL 1120	6 / 3.75	1 / 3.75	0.4240	0.5922	282	159	315	187	0.2933	0.2287
AUG - 102	BOWIS 1120	6 / 4.75	7 / 1.60	0.2670	0.3731	379	219	427	260	0.2782	0.2149
AUG - 103	BOXING 1120	18 / 3.50	1 / 3.50	0.1690	0.2063	540	319	610	380	0.2390	0.2034
AUG - 104	CRICKET 1120	30 / 2.50	7 / 2.50	0.1880	0.2291	513	303	578	361	0.2362	0.2034
AUG - 105	DARTS 1120	30 / 3.00	7 / 3.00	0.1300	0.1586	649	391	735	468	0.2247	0.1929
AUG - 106	DICE 1120	30 / 3.25	7 / 3.25	0.1110	0.1355	719	437	815	523	0.2197	0.1883
AUG - 107	DIVING 1120	30 / 3.50	7 / 3.50	0.0961	0.1173	789	483	896	579	0.2151	0.1841
AUG - 108	GOLF 1120	54 / 3.00	7 / 3.00	0.0750	0.0944	905	559	1030	673	0.2091	0.1785
AUG - 109	GYMNASTICS 1120	54 / 3.25	7 / 3.25	0.0639	0.0806	1003	625	1142	752	0.2041	0.1739
AUG - 110	HURDLES 1120	54 / 3.50	7 / 3.50	0.0552	0.0698	1101	691	1256	833	0.1994	0.1697

TABLE 13 - B

**Note 1 :** The applicable conditions for current calculations of this table are given in page 27



## Aluminium Alloy Conductor Aluminium Coated Steel Reinforced AACSR 1120 / AZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 111	BEAN 1120	6 / 3.00	1 / 3.00	9.00	49.48	40.43	170	17.90	83	19.3
AUG - 112	CABBAGE 1120	6 / 3.75	1 / 3.75	11.25	77.31	63.17	265	26.50	83	19.3
AUG - 113	CARROT 1120	6 / 4.75	7 / 1.60	14.30	120.40	101.43	399	39.30	80	19.9

TABLE 14 - A

## Aluminium Alloy Conductor Aluminium Coated Steel Reinforced AACSR 1120 / AZ

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 111	BEAN 1120	6 / 3.00	1 / 3.00	0.7000	0.9778	206	113	230	216	0.3073	0.2414
AUG - 112	CABBAGE 1120	6 / 3.75	1 / 3.75	0.4480	0.6258	274	154	301	281	0.2933	0.2287
AUG - 113	CARROT 1120	6 / 4.75	7 / 1.60	0.2790	0.3897	371	215	413	385	0.2782	0.2149

TABLE 14 - B

Note 1 : The applicable conditions for current calculations of this table are given in page 27

## Aluminium Alloy Conductor Galvanized Steel Reinforced AACSR 6201A / GZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 114	APPLE 6201	6 / 3.00	1 / 3.00	9.00	49.48	36.05	171	20.2	83	19.3
AUG - 115	BANANA 6201	6 / 3.75	1 / 3.75	11.25	77.31	56.26	268	31.5	83	19.3
AUG - 116	CHERRY 6201	6 / 4.75	7 / 1.60	14.30	120.40	90.42	402	47.4	80	19.9
AUG - 117	FIG 6201	18 / 3.50	1 / 3.50	17.50	182.80	146.63	551	60.8	71	21.4
AUG - 118	LEMON 6201	30 / 3.00	7 / 3.00	21.00	261.54	179.11	974	117	88	18.4
AUG - 119	LIME 6201	30 / 3.50	7 / 3.50	24.50	355.98	243.97	1325	158	88	18.4

TABLE 15 - A

## Aluminium Alloy Conductor Galvanized Steel Reinforced AACSR 6201A / GZ

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 114	APPLE 6201	6 / 3.00	1 / 3.00	0.7850	1.0815	196	108	218	126	0.3073	0.2414
AUG - 115	BANANA 6201	6 / 3.75	1 / 3.75	0.5030	0.6931	260	147	291	172	0.2933	0.2287
AUG - 116	CHERRY 6201	6 / 4.75	7 / 1.60	0.3130	0.4314	353	204	396	241	0.2782	0.2149
AUG - 117	FIG 6201	18 / 3.50	1 / 3.50	0.1930	0.2321	509	301	573	357	0.2390	0.2034
AUG - 118	LEMON 6201	30 / 3.00	7 / 3.00	0.1580	0.1900	593	357	670	426	0.2247	0.1929
AUG - 119	LIME 6201	30 / 3.50	7 / 3.50	0.1160	0.1397	723	443	819	530	0.2151	0.1841

TABLE 15 - B

**Note 1 :** The applicable conditions for current calculations of this table are given in page 27

## Aluminium Alloy Conductor Aluminium Clad Steel Reinforced AACSR 6201A / AC

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 120	ARCHERY 6201	6 / 3.00	1 / 3.00	9.00	49.48	38.40	163	20.3	79	20.1
AUG - 121	BASEBALL 6201	6 / 3.75	1 / 3.75	11.25	77.31	59.96	254	31.1	79	20.1
AUG - 122	BOWIS 6201	6 / 4.75	7 / 1.60	14.30	120.40	94.97	385	46.8	76	20.6
AUG - 123	BOXING 6201	18 / 3.50	1 / 3.50	17.50	182.80	149.74	540	60.8	69	21.8
AUG - 124	DARTS 6201	30 / 3.00	7 / 3.00	21.00	261.54	195.17	913	118	82	19.4
AUG - 125	DIVING 6201	30 / 3.50	7 / 3.50	24.50	355.98	266.98	1243	158	82	19.4

TABLE 16 - A

## Aluminium Alloy Conductor Aluminium Clad Steel Reinforced AACSR 6201A / AC

Reference Standard : AS 3607 : 1989



### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 120	ARCHERY 6201	6 / 3.00	1 / 3.00	0.7370	1.0154	202	111	225	130	0.3073	0.2414
AUG - 121	BASEBALL 6201	6 / 3.75	1 / 3.75	0.4720	0.6504	269	151	300	178	0.2933	0.2287
AUG - 122	BOWIS 6201	6 / 4.75	7 / 1.60	0.2980	0.4107	362	209	405	247	0.2782	0.2149
AUG - 123	BOXING 6201	18 / 3.50	1 / 3.50	0.1890	0.2273	515	304	579	361	0.2390	0.2034
AUG - 124	DARTS 6201	30 / 3.00	7 / 3.00	0.1450	0.1745	619	373	699	444	0.2247	0.1929
AUG - 125	DIVING 6201	30 / 3.50	7 / 3.50	0.1060	0.1277	756	463	857	554	0.2151	0.1841

TABLE 16 - B

**Note 1 :** The applicable conditions for current calculations of this table are given in page 27

## Aluminium Alloy Conductor Aluminium Coated Steel Reinforced AACSR 6201A / AZ

Reference Standard : AS 3607 : 1989



### Physical & Mechanical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	Conductor OD	Calculated Cross Sectional Area	Equivalent Aluminium Area	Approximate Mass	Breaking Load	Modulus of Elasticity (Calculated)	Coefficient of linear expansion
		No / mm	No / mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kg / km	kN	GPa	x 10 <sup>-6</sup> per °C
AUG - 126	BEAN 6201	6 / 3.00	1 / 3.00	9.00	49.48	36.05	170	19.7	83	19.3
AUG - 127	CABBAGE 6201	6 / 3.75	1 / 3.75	11.25	77.31	56.26	265	30.1	83	19.3
AUG - 128	CARROT 6201	6 / 4.75	7 / 1.60	14.30	120.40	90.42	399	46.0	80	19.9

TABLE 17 - A

### Electrical Characteristics

ACL Item Code	Code Name	Stranding & Wire Diameter of Aluminium	Stranding & Wire Diameter of Steel	DC Resistance at 20°C	AC Resistance at 75°C	SUMMER NOON		WINTER NIGHT		Inductive Reactance for 0.3048m radius (X <sub>L</sub> )	Capacitive Reactance for 0.3048m radius (X <sub>C</sub> )
						Current Carrying capacity at v=1m/s wind & Conductor Temp. 75°C	Current Carrying capacity at still air & Conductor Temp. 75°C	Current Carrying capacity at v=1m/s wind & Conductor Temp. 50°C	Current Carrying capacity at still air & Conductor Temp. 50°C		
		No / mm	No / mm	Ω / km	Ω / km	A	A	A	A	Ω / km	MΩ.km
AUG - 126	BEAN 6201	6 / 3.00	1 / 3.00	0.7850	1.0815	196	108	218	205	0.3073	0.2414
AUG - 127	CABBAGE 6201	6 / 3.75	1 / 3.75	0.5030	0.6931	260	147	285	267	0.2933	0.2287
AUG - 128	CARROT 6201	6 / 4.75	7 / 1.60	0.3130	0.4314	353	204	391	365	0.2782	0.2149

TABLE 17 - B

**Note 1 :** The applicable conditions for current calculations of this table are given in page 27

## Grease Application Methods in case of Bare Conductors

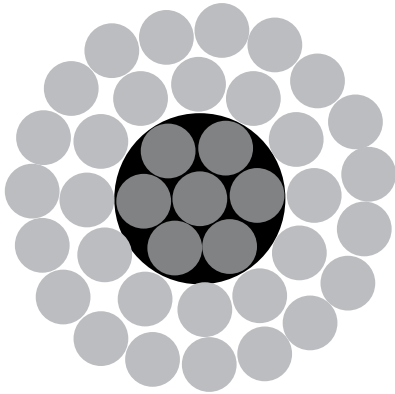


Figure - a (Case 1)

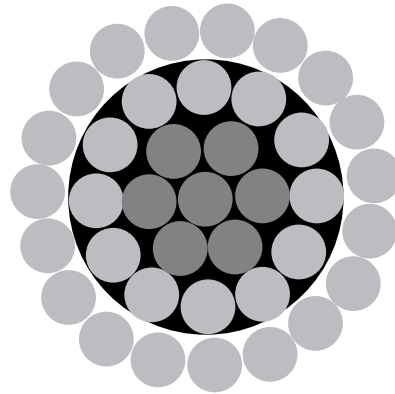


Figure - b (Case 1)

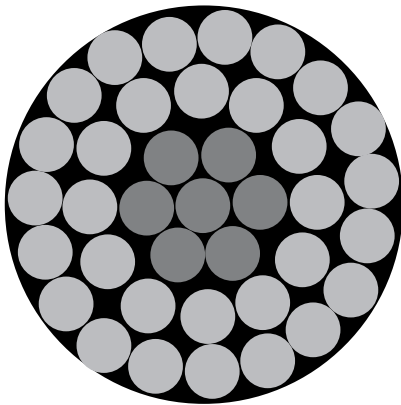


Figure - c (Case 1)

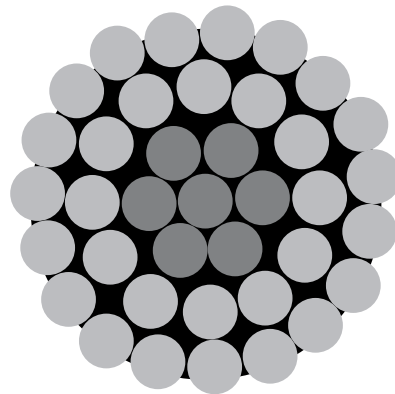


Figure - d (Case 1)

Four Cases of Grease application are :

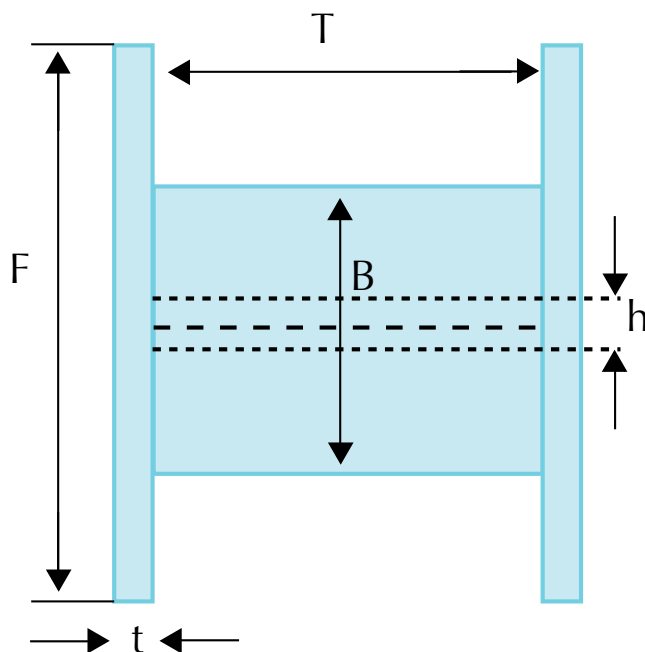
- Case 1 :** Steel core only greased ( Figure - a )
- Case 2 :** All the conductor is greased except the outer layer ( Figure - b )
- Case 3 :** All the conductor is greased including the outer layer ( Figure - c )
- Case 4 :** All the conductor is greased except the outer surface of the wires in the outer layer ( Figure - d )

# DETAILS OF DRUMS USED FOR BARE CONDUCTORS

Drum Sizes in Inches	Drum Sizes in mm	Allowable total weight per drum (kg)	Drums per container			
			(Based on Max. Volume)		(Based on Max. Weight)	
F x B x T	F x B x T	(kg)	20 foot	40 foot	20 foot	40 foot
<b>WOODEN DRUMS</b>						
37 x 20 x 24	940 x 508 x 610	500	33	69	33	47
44 x 20 x 22	1118 x 508 x 559	600	27	57	27	38
44 x 20 x 36	1118 x 508 x 914	750	18	38	18	31
54 x 20 x 23	1372 x 508 x 584	1000	12	24	12	24
54 x 23 x 36	1372 x 584 x 914	800	8	16	8	16
56 x 23 x 36	1422 x 584 x 914	1200	8	16	8	16
60 x 30 x 36	1524 x 762 x 914	2500	7	14	7	9
66 x 40 x 36	1676 x 1016 x 914	3000	6	13	6	7
74 x 40 x 36	1880 x 1016 x 914	3500	6	12	5	6
84 x 40 x 36	2134 x 1016 x 914	4000	5	10	4	5

### STEEL DRUM

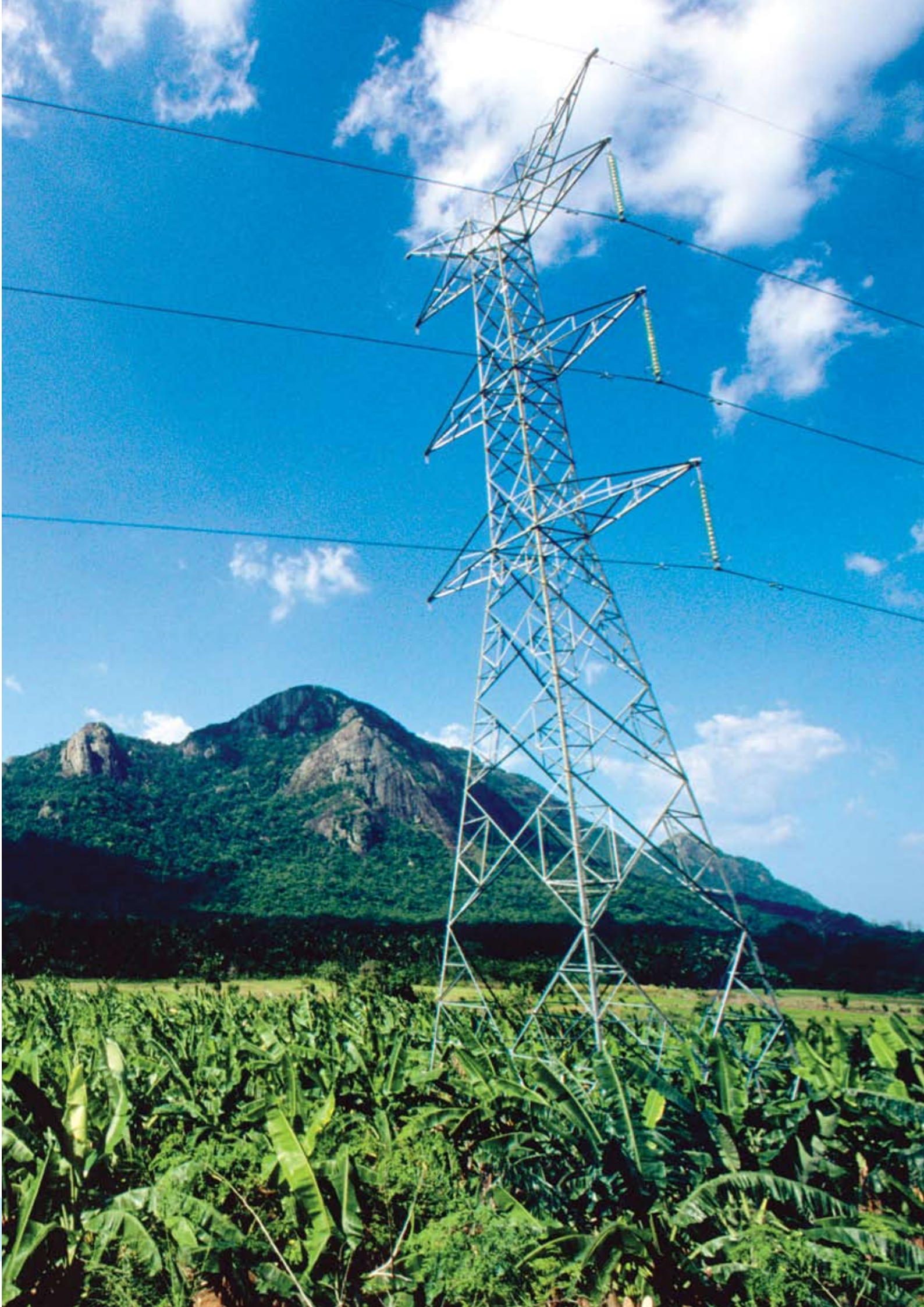
84 x 40 x 36	2134 x 1016 x 914	5000	5	10	3	4
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- F - Flange Diameter
- B - Barrel Diameter
- T - Inner Traverse
- t - Thickness of Flange
- h - Spindle Hole Diameter

#### NOTES :

- Approximately  $t = 76 \text{ mm}$  &  $h = 100 \text{ mm}$  for all above drums.
- Wooden drums are reinforced with steel plates.
- Maximum sustainable weights for 20 foot & 40 foot containers are 22 & 27 MetricTons respectively.



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