



JAINCO POWER LIMITED



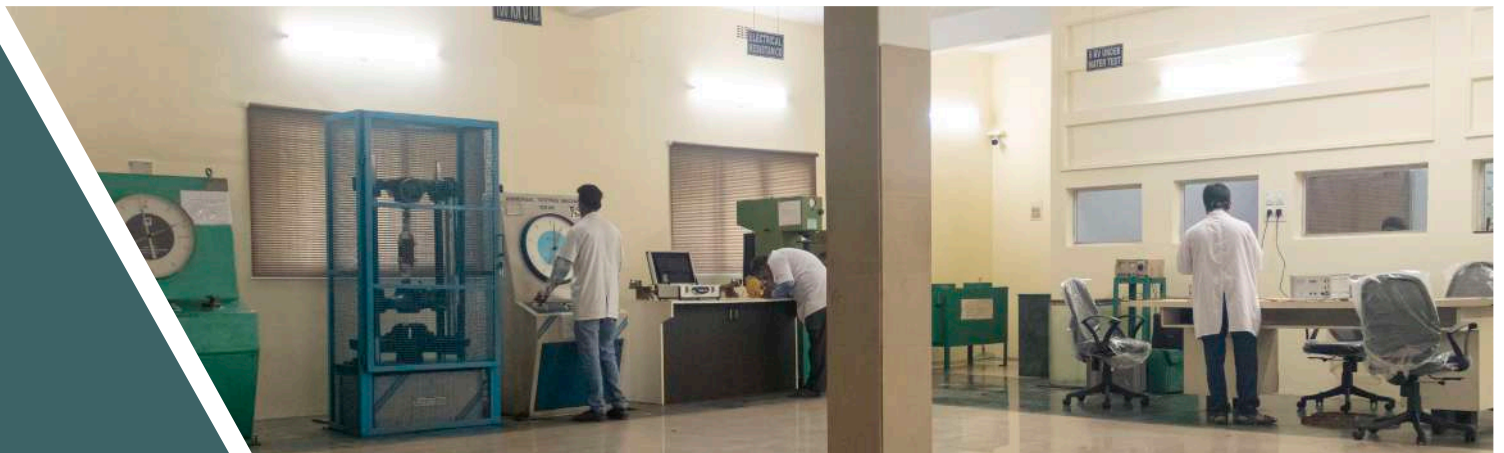
**ADDING QUALITY
TO THE NATION**

FACTORY



FACTORY OFFICE

LABORATORY





// INTRODUCTION

JAINCO POWER LIMITED, a close Associate of JAINCO TRANSMISSION LIMITED, a trusted brand in the manufacturing of Hardware & Accessories for Conductors upto 400kV, Earthing materials, Tower Accessories, pole line fittings and polymer insulators with an admirable track record since 1973, has ventured into Production of Cables and Conductors.

We are in a moment where the growing demand curve of Electrification around the world is on the higher side of the scale. We take pride in the fact that with our huge infrastructure, technical competence, updated Machineries supported by sophisticated Testing Equipments and employing qualified & skilled manpower Jainco Power Limited is the ideal place to fulfill the ever growing need of superior quality of cable and conductor. The timely execution and quality work is the testimony of our work culture which has been one of the guiding forces of our organisation and we draw joy from our happy clientele's trust in us spread across the continents.

// ORGANIZATION & INFRASTRUCTURE

Installed Capacity:

- 2000 kms of LT AB Cable per month
- 800 kms of Multi Strand Conductor per month
- 6,000 kms of 7 Strand Conductor per month
- 7,000 kms of Single Core Service Cable per month
- 500 kms of 2 Core Service Cable per month
- Total Area 1,25,000 sq. feet covered 1,02,000 sq. feet Uncovered 23,000 sq. feet
- Updated Plant & Machinery with Material Handling Equipment's & EOT
- Sophisticated Testing Equipments with individual computer support
- Electricity 1.5 MVA with Captive Generation set 800 kVA for uninterrupted Power supply
- Statutory Registrations with MSME, Pollution Control, IEC, GST
- Certification: ISO for QMS, EMS & OHSAS



MISSION

To provide quality products, services and feasible solutions to our clients, making use of the advanced and emerging technologies, so that, highest level of efficiency in power transmission & distribution could be attained by the end user utilities and the solution providers across the globe.

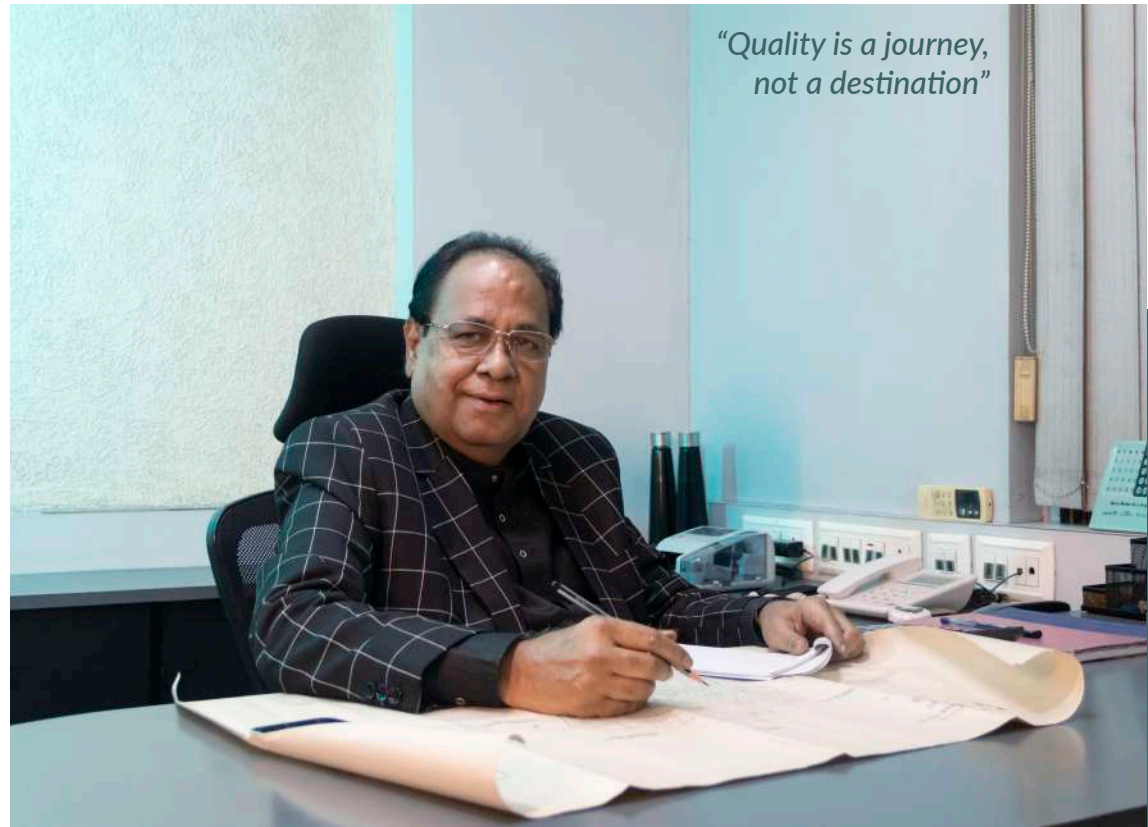
VISION

To provide reliable products and services with high functional integrity that ensures safe, secured and uninterrupted supply of electric power from generation point to the end user through transmission and distribution networks conforming to the health, safety and environmental standards' requirements.

// MANAGEMENT

The Company is being run under the able leadership and guidance of its Chairman Mr. Surendra Kumar Surana, a great visionary and assisted by Young, Energetic & Dynamic Mr. Adarsh Surana, Mr. Atul Surana & Mr. Akshat Surana holding directorships efficiently and effectively.

The management is well supported by Qualified & Experienced Managers & Engineers and a team of skilled, efficient and integrated work force. The responsibilities and authorities of each level / position in the managerial hierarchy are well defined and directed towards the organizational goals and objectives. The judicious application of resources in the organization makes Jainco a self-reliant organization with strong financial base. The channels of communication of the management with employees are well coordinated & effective and constructive communications are highly encouraged. As a result, the employees are well motivated and are proud to be a member of THE JAINCO FAMILY. Any new member introduced to the family are guided and trained effectively by the senior members of the management so that the new-comer is poised to exert his very best in achieving goals of the organisation.



Chairman: Mr. Surendra Kumar Surana

// WHY JAINCO?

Jainco provides a single roof for almost all power transmission and distribution line requirements such as

- Conductor upto 400 KV, Covered Conductor, AB Cable, Service Cable, Copper conductor, Earth Wire etc.
- Transmission Hardware & Conductor Accessories upto 400 KV
- Substation Hardware, Accessories, Clamp & Connector
- Distribution & Pole Line Hardware & Accessories
- AB Cable Fittings
- Helically Fittings
- Polymer Insulators upto 33 KV
- Earthing and Tower & Pole Accessories
- Steel Fabrication Structure for Line & Lattice

We have a highly competent in-house design as well as research & development laboratories with cutting-edge-in-house testing facilities.

We have a sound financial standing to accomplish manufacturing target deadlines.

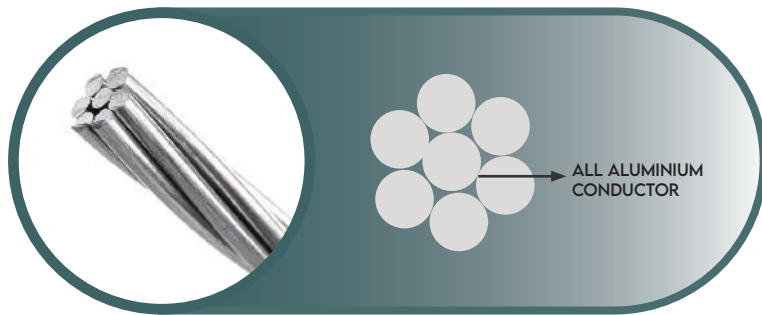
Our manufacturing units are closely connected via seaports, national highways, and railways

We have around 50 years of manufacturing transmission line hardware. We are tried and tested pioneer in manufacturing of Hardware and accessories of conductor upto 400 KV, pole line fabrication, earthing materials and polymer insulators and with Cables and Conductors, thus giving a single shop solution for almost all transmission and distribution line requirements.

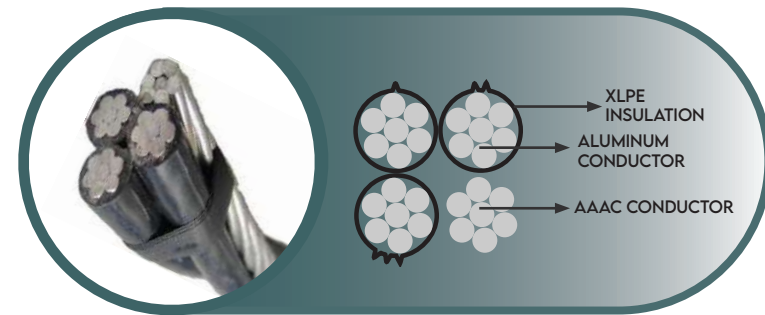




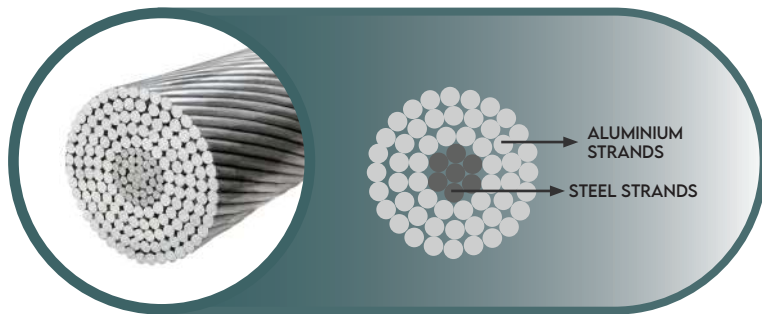
PRODUCT RANGE



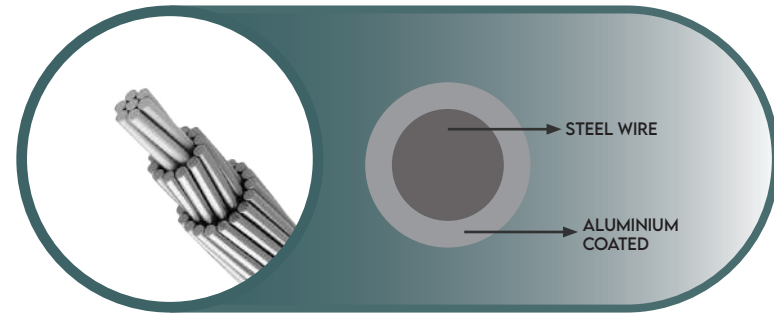
AAC



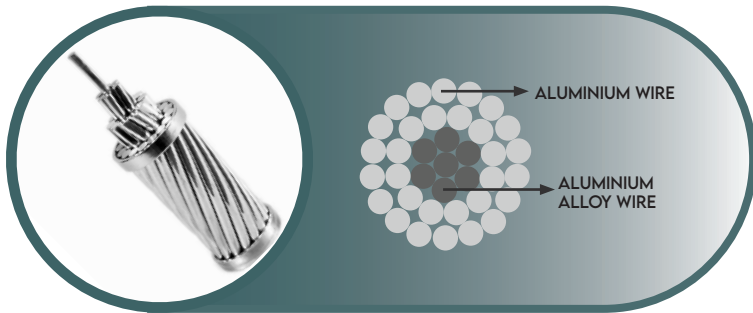
AERIAL BUNCHED CABLE



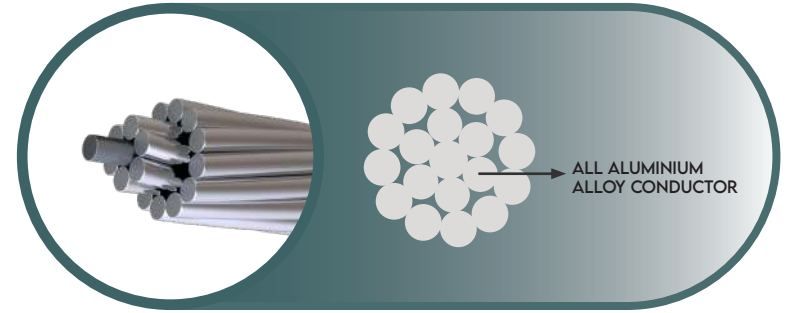
ACSR



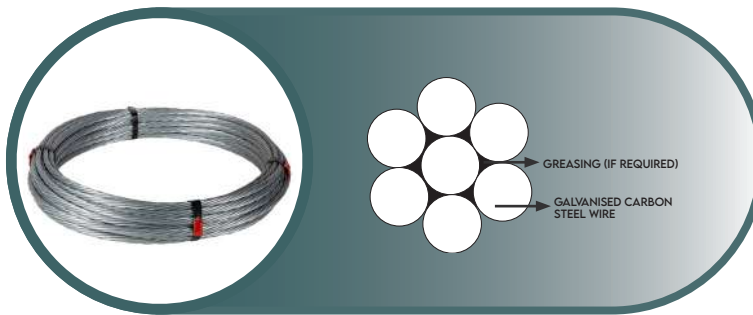
ACSR/AS



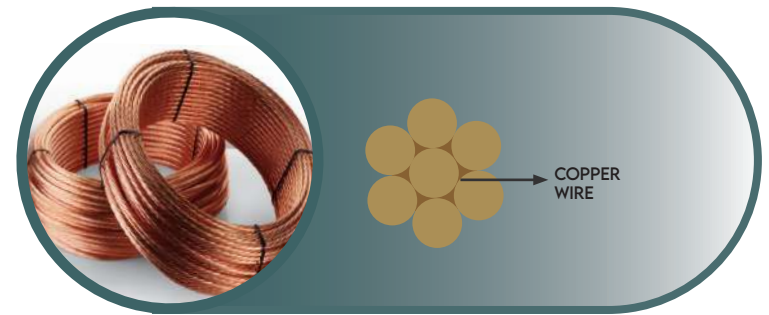
ACAR



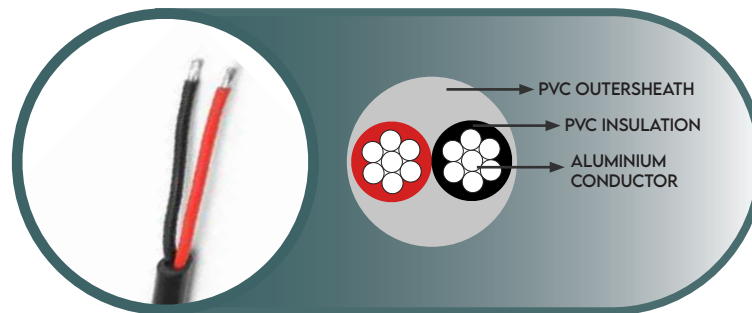
AAAC



EARTH WIRE/ STAY WIRE/ GUY WIRE



COPPER CONDUCTOR



SERVICE CABLE

INTRODUCTION TO OVERHEAD CONDUCTOR

A conductor is one of the most important components of overhead lines. Selecting a proper type of conductor for overhead lines is as important as selecting economic conductor size and economic transmission voltage. A good conductor should have the following properties:

- High electrical conductivity
- High tensile strength in order to withstand mechanical stresses
- Relatively lower cost without compromising much of other properties
- Lower weight per unit volume.

TYPES OF CONDUCTORS

Aluminium conductors have an edge over copper conductors considering combined factors of cost, conductivity, tensile strength, weight etc. Aluminium conductors have completely replaced copper conductors in overhead power lines because of their lower cost and lower weight. Though an aluminium conductor has larger diameter than that of a copper conductor of same resistance, this is actually an advantage when 'Corona' is taken into consideration. Corona reduces considerably with increase in the conductor diameter. Following are five common types of overhead conductors used for overhead transmission and distribution to carry generated power from generating station to the end users. Generally, all types of conductors are in stranded form in order to increase the flexibility. Solid wires, except for very small cross sectional area, are very difficult to handle and, also, they tend to crystallize at the point of support because of swinging in winds.

- AAC : All Aluminium Conductor
- AAAC : All Aluminium Alloy Conductor
- ACSR : Aluminium Conductor, Steel Reinforced
- ACAR : Aluminium Conductor, Alloy Reinforced
- ACAR/AS : Aluminium Conductor, Aluminium Clad Steel Reinforced



CONDUCTOR SELECTION CRITERIA

An ideal conductor selected for a certain transmission line rest on meeting the essential project cost and efficiency. For a certain line design criterion, the ideal conductor & configuration shall be capable of providing :

- The required current carrying capacity.
- The lowest possible line losses (maximum electrical conductivity)
- The required tensile strength to bear the mechanical stresses.
- The smallest possible specific gravity i.e. weight/unit volume
- The lowest possible cost without compromising other requirements.

The choice of the optimal conductor type and size for a specified transmission or distribution line design, necessitates a broad understanding of the characteristics of different available conductor types/technologies. It is not only the current carrying capacity or thermal performance, it essentially to be a system approach that includes further considerations such as: the line stability versus current loading; economic operation versus thermal loading; conductor creep and resultant sag under high temperature and adverse mechanical loading etc.

BASIC CONDUCTOR PARAMETERS

Noticeably, a transmission line final design (supports, fittings, and foundation) will be highly dependent on its conductors' physical, mechanical, electrical and environmental parameters. Basic conductor parameters are:

PHYSICAL PARAMETERS

- Conductor type & materials
(e.g. Aluminum, aluminum alloy, steel core for ACSR, etc.)
- Conductor diameter
- Conductor weight per unit length
- Cross section area

ELECTRICAL CHARACTERISTICS

- DC resistance
- AC resistance
- Conductivity of material/s
- Temperature coefficient of resistance
- Ampacity
- Inductance & inductive reactance
- Shunt capacitance & capacitive reactance

MECHANICAL PARAMETERS

- Modulus of elasticity
- Rated breaking strength
- Coefficients of thermal expansion
- Maximum unloaded design tension
- Resistance to vibration and/or galloping
- Surface shape/drag coefficient
- Fatigue resistance

ENVIRONMENTAL PARAMETERS

- Wind velocity
- Solar Radiations
- Humidity
- Altitude
- Ice & Snow & Rainfall
- Seismic factor
- Lightening
- Soil

In short, there may be conductors which offer some advantages in particular line conditions corresponding to other, Power line engineer should drive a balance between the advantages and needs of the line design. The following factors should be considered.

- Lower electrical resistance resulting in high conductivity
- Lower thermal elongation resulting in less sag
- Higher annealing temperatures allowing in higher ampacity
- Higher tensile strength for larger spans and lower creep
- Superior corrosion resistance top withstanding all weather conditions
- Lower weight to withstand ice loading and wind induced Aeolian vibrations
- Suitability to local geographical terrain.



ALL ALUMINIUM CONDUCTOR

AAC

DESCRIPTION

The conductor consists of hard drawn Aluminium wires stranded in successive layers in opposite direction and the outer layer is in the right hand direction Z. In case required, neutral grease shall be applied between the layers of AAC except the outer layer.

STANDARD

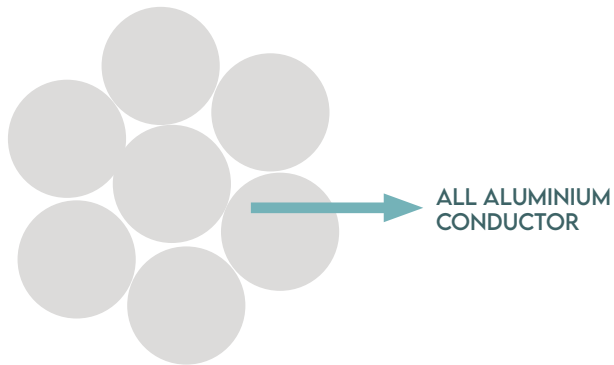
IS 398 part 1, BS 215 part 1, ASTM B231, IEC 61089, EN 50182 and other International Specifications. The requirement/specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

- Wires of same diameters stranded in concentric layers.
- Offers higher amperage with least losses
- Suited as bus bars for substations
- Specially suited for urban areas applications
- Ideal for all types of insulations and coverings.
- Economically viable as compared to Copper Conductors.
- Ideal for PVC insulated cables in urban areas.

APPLICATION

AAC bare conductors are used for overhead power transmission lines having short spans.



ALL ALUMINIUM CONDUCTOR (AAC)

IS 398 PART-I

NOMINAL ALUMINIUM AREA	SECTIONAL AREA	STRANDING		DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20° C	AMPACITY	
		NO. OF ALUMINIUM WIRES	INDIVIDUAL WIRE DIAMETER					@75° C	@85° C
(MM ²)	(MM ²)	(NO)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
25	26.85	7	2.21	6.63	74	4.52	1.0960	109	129
30	52.83	7	3.10	9.30	145	8.25	0.5525	163	196
100	106.00	7	4.39	13.17	290	15.96	0.2752	247	300
150	150.90	19	3.18	15.90	415	23.28	0.1942	303	372
240	237.60	19	3.99	19.95	654	35.74	0.1235	394	488
300	322.70	19	4.65	23.25	888	48.74	0.0911	468	586

BS 215 PART-I

NOMINAL ALUMINIUM AREA	SECTIONAL AREA	STRANDING		DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20° C	AMPACITY	
		NO. OF ALUMINIUM WIRES	INDIVIDUAL WIRE DIAMETER					@75° C	@85° C
(MM ²)	(MM ²)	(NO)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
22	23.33	7	2.06	6.18	64.0	4.52	1.0960	109	129
50	52.83	7	3.10	9.30	145.0	8.25	0.5525	163	196
60	63.55	7	3.40	10.20	174.0	15.96	0.2752	247	300
100	106.00	7	4.39	13.17	290.0	23.28	0.1942	303	372
150	157.60	19	3.25	16.25	434.0	35.74	0.1235	394	488
200	213.20	19	3.78	18.90	587.0	48.74	0.0911	468	586
250	265.70	19	4.22	21.10	731.0	4.52	1.0960	109	129
300	322.70	19	4.65	23.25	888.0	8.25	0.5525	163	196
400	415.20	37	3.78	26.46	1145.0	15.96	0.2752	247	300

ALUMINIUM CONDUCTOR STEEL-REINFORCED

ACSR

DESCRIPTION

The conductor consists of Aluminium wires and Zinc coated steel wires, built up in concentric layers. The centre wire or wires are Zinc coated and the outer layer or layers are of Aluminium. In case required, neutral grease shall be applied between the layers of ACSR except the outer layer.



STANDARD

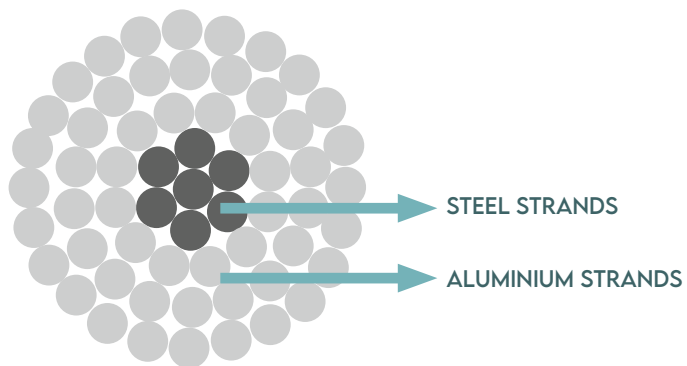
IS 398 part 2 and 5, BS 215 part 2, EN 50182, ASTM B232, IEC 61089 and other International Specifications. The requirement/specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

- Aluminium strand outer layer/layers are formed with centre core of single/stranded galvanized steel wires
- Can be suitably designed for increased mechanical strength needs by increasing number of steel wires
- Can be suitably designed for average mechanical needs by using higher aluminium & lower steel contents
- Suited for large spans with metal towers
- High mechanical strength to weight ratio
- ACSR yield less sag at a given tension
- Toughness is suited to extreme wind loads
- Corona losses are least due to large diameters

APPLICATION

ACSR bare conductors are used for overhead high tension power transmission lines having long spans.



ALUMINIUM CONDUCTOR STEEL-REINFORCED (ACSR)

IS 398 PART-II

NOMINAL AREA	SECTIONAL AREA	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
		NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
		ALUMINIUM	STEEL	ALUMINIUM	STEEL						
(MM ²)	(MM ²)	(NO.)	(NO)	(MM)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
10	12.37	6	1	1.50	1.50	4.05	43	3.97	2.7800	59	69
18	21.12	6	1	1.96	2.59	5.88	73	6.74	1.6180	81	97
20	24.48	6	1	2.11	3.00	6.33	85	7.61	1.3940	89	106
30	36.88	6	1	2.59	3.35	7.77	128	11.21	0.9389	114	136
50	61.70	12	1	3.35	2.79	10.05	214	18.25	0.5524	155	186
80	91.97	6	1	4.09	1.57	12.27	319	26.91	0.3712	196	237
100	118.5	30	7	4.72	2.59	14.15	394	32.41	0.2792	231	282
150	194.9	30	7	2.59	3.35	18.13	726	67.34	0.1871	315	389
200	261.5	30	7	3.00	2.79	21.00	974	89.67	0.1390	374	465
400	425.2	42	7	3.50	3.61	26.88	1281	88.79	0.0731	525	664
420	484.5	54	7	3.18	3.00	28.62	1621	130.32	0.0687	546	693
520	597.0	54	7	3.53	3.86	31.77	1998	159.60	0.0560	612	783
560	591.7	42	7	4.13	3.18	31.68	1781	120.16	0.0523	631	808

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IS 398 PART- V

NOMINAL AREA	SECTIONAL AREA	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
		NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
		ALUMINIUM	STEEL	ALUMINIUM	STEEL						
(MM ²)	(MM ²)	(NO.)	(NO)	(MM)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
520	597.0	54	7	3.53	3.53	31.77	2004	161.20	0.0555	614	786
560	591.7	42	7	4.13	2.30	31.68	1787	120.16	0.0520	633	810
690	724.4	42	7	4.57	2.54	35.04	2187	146.87	0.0424	706	912

ALUMINIUM CONDUCTOR STEEL-REINFORCED (ACSR)

mm²

ASTM B232

CODE NAME	CONDUCTOR AREA	SECTIONAL AREA	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
			NO. OF WIRES		WIRE DIAMETER						@75° C	@85° C
			ALUMINIUM	STEEL	ALUMINIUM	STEEL						
	(MM ²)	(MM ²)	(NO.)	(NO)	(MM)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
ORIOLE	336.4	210.3	30	7	2.69	2.69	18.82	783	76.98	0.1698	333	4111
LINNET	336.4	198.0	26	7	2.89	2.69	18.29	687	62.74	0.1695	331	409
MERLIN	336.4	179.9	8	1	3.47	3.47	17.37	543	38.2	0.1686	330	406
OSTRICH	300.0	176.7	26	7	2.73	2.12	17.27	613	56.51	0.1900	310	382
PATRIDGE	266.8	157.2	26	7	2.57	2.00	16.31	546	50.28	0.2135	290	356
WAXWING	266.8	142.6	18	1	30.09	3.09	15.47	430	30.61	0.2127	288	352
PENGUIN	211.6	125.1	6	1	4.77	4.77	14.30	433	37.16	0.2667	237	289
COCHIN	211.3	169.5	12	7	3.37	3.37	16.87	784	92.11	0.2697	242	298
BRAHMA	203.2	194.9	16	19	2.86	2.48	18.14	1004	126.37	0.2804	240	297
DORKING	190.8	153.1	12	7	3.20	3.20	16.03	708	83.21	0.2986	228	280
DOTTEREL	176.9	141.9	12	7	3.08	3.08	15.42	656	76.98	0.3222	218	267
PIGEON	167.8	99.2	6	1	4.25	4.25	12.75	343	29.46	0.3364	207	251
GUINEA	159.0	127.5	12	7	2.92	2.92	14.3	590	71.20	0.3584	205	251
LEGHORN	134.6	108.0	12	7	2.69	2.69	13.46	499	60.52	0.4234	186	227
QUAIL	133.1	78.6	6	1	3.78	3.78	11.35	272	23.58	0.4242	180	218
MINORCA	110.8	88.9	12	7	2.44	2.44	12.22	411	50.28	0.5142	166	201
RAVEN	105.6	62.5	6	1	3.37	3.37	10.11	216	19.49	0.5341	157	190
PETREL	101.8	81.7	12	7	2.34	2.34	11.71	378	46.28	0.5598	158	191
ROBIN	83.7	49.5	6	1	3.00	3.00	8.99	171	15.80	0.6743	137	164
GROUSE	80.0	54.7	8	1	2.54	4.24	9.32	221	23.14	0.7088	135	162
SPARATE	66.4	42.2	7	1	2.47	3.30	8.26	159	16.20	0.8497	120	144
SPARROW	66.4	39.3	6	1	2.67	2.67	8.03	136	12.68	0.8498	120	143
SWANATE	41.7	26.5	7	1	1.96	2.61	6.53	100	10.50	1.3526	91	108
SWAN	41.7	24.7	6	1	2.12	2.12	6.35	85	8.28	1.3522	91	107
TURKEY	26.2	15.5	6	1	1.68	1.68	5.03	54	5.30	2.1526	68	81
BRANT	397.5	227.5	24	7	3.27	2.18	19.61	61	64.97	0.1433	364	451
CHICKADEE	397.5	212.6	18	1	3.77	3.77	18.87	641	44.23	0.1426	363	449

ALUMINIUM CONDUCTOR STEEL-REINFORCED (ACSR)

ASTM BS 215 PART-2

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CODE NAME	NOMINAL AREA	SECTIONAL AREA	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
			NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
			ALUMINIUM	STEEL	ALUMINIUM	STEEL						
	(MM ²)	(MM ²)	(NO.)	(NO)	(MM)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
GOPHER	25	30.65	6	1	2.36	2.36	7.08	106	9.61	9.61	103	122
WEASEL	30	36.88	6	1	2.59	2.59	7.77	128	11.45	11.45	115	137
FERRET	40	49.48	6	1	3.00	3.00	9.00	172	15.20	15.20	137	164
RABBIT	50	61.70	6	1	3.35	3.35	10.05	214	18.35	18.35	156	188
HORSE	70	116.2	12	7	2.79	2.79	13.95	538	61.20	61.20	194	237
DOG	100	118.5	6	7	4.72	1.57	14.15	394	32.70	32.70	234	285
WOLF	150	194.9	30	7	2.59	2.59	18.13	726	69.20	69.20	319	393
DINGO	150	167.5	18	1	3.35	3.35	16.75	506	35.70	35.70	316	388
LYNX	175	226.2	30	7	2.79	2.79	19.53	842	79.80	79.80	347	430
CARACAL	175	194.5	18	1	3.61	3.61	18.05	587	41.10	41.10	344	425
PANTHER	200	261.5	30	7	3.00	3.00	21.00	974	92.25	92.25	377	470
JAGUAR	200	222.3	18	1	3.86	3.86	19.30	671	46.55	131.90	372	460
ZEBRA	400	484.5	54	7	3.18	3.18	28.62	1621	131.90	46.55	551	700



ALUMINIUM CONDUCTOR STEEL-REINFORCED (ACSR)

ASTM B 232

CODE NAME	CONDUCTOR AREA	SECTIONAL AREA	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
			NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
			ALUMINIUM	STEEL	ALUMINIUM	STEEL						
	(MM ²)	(MM ²)	(NO.)	(NO)	(MM)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
TARN	25	30.65	6	1	2.36	2.36	7.08	106	9.61	9.61	103	122
DRAKE	30	36.88	6	1	2.59	2.59	7.77	128	11.45	11.45	115	137
CUCKOO	40	49.48	6	1	3.00	3.00	9.00	172	15.20	15.20	137	164
COOT	50	61.70	6	1	3.35	3.35	10.05	214	18.35	18.35	156	188
REDWING	70	116.2	12	7	2.79	2.79	13.95	538	61.20	61.20	194	237
STARLING	100	118.5	6	7	4.72	1.57	14.15	394	32.70	32.70	234	285
STILT	150	194.9	30	7	2.59	2.59	18.13	726	69.20	69.20	319	393
GANNET	150	167.5	18	1	3.35	3.35	16.75	506	35.70	35.70	316	388
FLAMINGO	175	226.2	30	7	2.79	2.79	19.53	842	79.80	79.80	347	430
EGRET	175	194.5	18	1	3.61	3.61	18.05	587	41.10	41.10	344	425
SCOTER	200	261.5	30	7	3.00	3.00	21.00	974	92.25	92.25	377	470
GROSBEAK	200	222.3	18	1	3.86	3.86	19.30	671	131.90	131.90	372	460
ROOK	400	484.5	54	7	3.18	3.18	28.62	1621	46.55	46.55	551	700
SWIFT	25	30.65	6	1	2.36	2.36	7.08	106	9.61	9.61	103	122
KINGBIRD	30	36.88	6	1	2.59	2.59	7.77	128	11.45	11.45	115	137
TEAL	40	49.48	6	1	3.00	3.00	9.00	172	15.20	15.20	137	164
WOOD DUCK	50	61.70	6	1	3.35	3.35	10.05	214	18.35	18.35	156	188
SQUAB	70	116.2	12	7	2.79	2.79	13.95	538	61.20	61.20	194	237
PEACOCK	100	118.5	6	7	4.72	1.57	14.15	394	32.70	32.70	234	285
OSPREY	150	194.9	30	7	2.59	2.59	18.13	726	69.20	69.20	319	393
EAGLE	150	167.5	18	1	3.35	3.35	16.75	506	35.70	35.70	316	388
DOVE	175	226.2	30	7	2.79	2.79	19.53	842	79.80	79.80	347	430
PARAKEET	175	194.5	18	1	3.61	3.61	18.05	974	41.10	41.10	344	425
HEN	200	261.5	30	7	3.00	3.00	21.00	587	92.25	92.25	377	470
HAWK	200	222.3	18	1	3.86	3.86	19.30	671	46.55	46.55	372	460

ALL ALUMINIUM ALLOY CONDUCTOR

AAAC

DESCRIPTION

The conductor consists of Aluminium Magnesium - Silicon alloy wires stranded in successive layers in opposite direction and the outer layer is in the right hand direction Z. In case required, neutral grease shall be applied between the layers of AAAC except the outer layer.

STANDARD

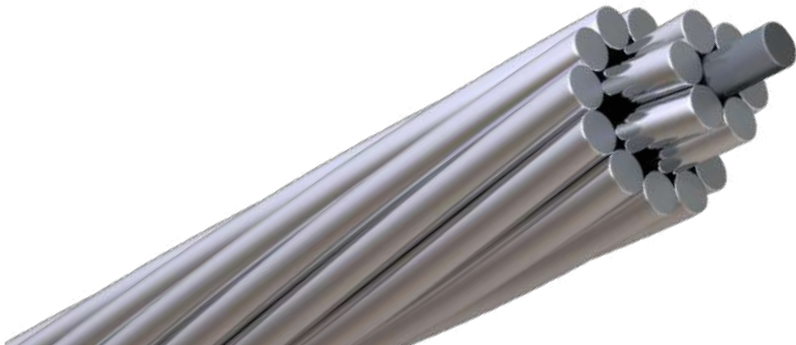
The construction is done as per IS 398 part 4, EN 50182, ASTM B399, IEC 61089 and other International Specifications. The requirement/ specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

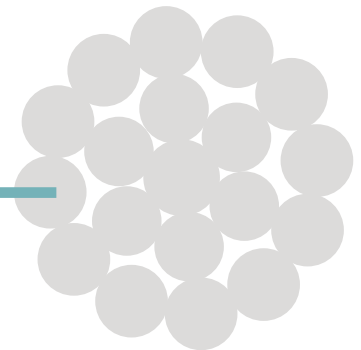
- Strands of same diameter in Aluminium- Magnesium-Silicon group alloys, duly heat treated.
- Has almost double the tensile strength of pure aluminium strands and thereby are ideal for long spans.
- Suited as an alternate to ACSR or AAC depending on line engineer needs.
- Low electrical losses compared to ACSR.
- Superior corrosion resistance.
- Ideal for seacoasts, saline and corrosion prone areas.
- Suited for developing countries in order to avoid pilferage & thefts.

APPLICATION

AAAC bare conductors are used for primary and secondary overhead power transmission lines having long spans and high resistance to corrosion.



ALL ALUMINIUM
ALLOY CONDUCTOR



ALL ALUMINIUM ALLOY CONDUCTOR (AAAC)

IS 398 PART-IV

ACTUAL AREA	STRANDING		DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20° C	AMPACITY	
	NO. OF ALUMINIUM WIRES	INDIVIDUAL WIRE DIAMETER					@75° C	@85° C
(MM ²)	(NO)	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
15	3	2.50	5.39	40.15	4.33	2.3040	73	86
22	7	2.00	6.00	60.16	6.45	1.5410	91	108
34	7	2.50	7.50	94.00	10.11	0.9900	118	141
55	7	3.15	9.45	149.20	16.03	0.6210	156	188
80	7	3.81	11.43	218.26	23.41	0.4250	195	237
100	7	4.26	12.78	272.86	29.26	0.3390	223	271
125	19	2.89	14.45	342.51	36.64	0.2735	254	310
148	19	3.15	15.75	406.91	43.50	0.2290	281	345
173	19	3.40	17.00	474.02	50.54	0.1969	307	378
200	19	3.66	18.30	549.40	58.66	0.1710	334	412
232	19	3.94	19.70	636.67	68.05	0.1471	364	451
288	37	3.15	22.05	794.05	84.71	0.1182	412	515
346	37	3.45	24.15	952.56	101.58	0.0984	457	575
400	37	3.71	25.97	1101.63	117.40	0.0829	503	635
465	37	4.00	28.00	1280.50	136.38	0.0734	539	684
525	61	3.31	29.79	1448.39	146.03	0.0651	576	734
570	61	3.45	31.05	1573.71	158.66	0.0598	603	772
604	61	3.55	31.95	1666.00	167.99	0.0568	620	796
642	61	3.66	32.94	1771.36	178.43	0.0534	641	825
695	61	3.81	34.29	1919.13	192.25	0.0492	670	864
767	61	4.00	36.00	2115.54	213.01	0.0446	705	914

ALL ALUMINIUM ALLOY CONDUCTOR (AAAC)

ASTM B 399

CODE WORD	CONDUCTOR SIZE	SECTIONAL AREA	STRANDING		DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
			NO. OF ALUMINIUM WIRES	INDIVIDUAL WIRE DIAMETER					@75° C	@85° C
	(MM ²)	(MM ²)	NO.	(MM)	(MM)	(KG/KM)	KN	(Ω/KM)	(AMPERE)	(AMPERE)
-	1439.2	729	61	3.90	35.10	1999.00	207.00	0.04597	693	897
-	1348.8	685	61	3.78	34.02	1878.00	194.00	0.04893	671	865
-	1259.6	638	61	3.65	32.85	1751.00	181.00	0.05248	646	831
-	1165.1	590	61	3.51	31.59	1620.00	167.00	0.05675	620	794
-	1077.4	547	61	3.38	30.42	1502.00	156.00	0.06120	595	760
GREELEY	927.2	470	37	4.02	28.14	1289.00	135.00	0.07133	547	694
FLINT	740.8	375	37	3.59	25.13	1028.00	107.00	0.08944	482	607
ELGIN	652.4	331	19	4.71	23.55	908.30	97.00	0.10120	449	564
DARIEN	559.5	284	19	4.36	21.80	778.30	83.10	0.11810	412	514
CAIRO	465.4	236	19	3.98	19.90	648.60	69.20	0.14170	371	461
CANTON	394.5	200	19	3.66	18.30	548.50	58.60	0.16760	337	417
BUTTE	312.8	159	19	3.26	16.30	435.10	46.50	0.21120	295	362
ALLIANCE	246.9	125	7	4.77	14.31	343.20	37.80	0.26780	256	313
AMHERST	195.7	99.3	7	4.25	12.75	272.50	30.00	0.33730	224	272
ANHAEIM	155.4	78.6	7	3.78	11.34	215.60	23.80	0.42640	195	236
AZUSA	123.3	62.4	7	3.37	10.11	171.30	18.90	0.53650	170	205
AMES	77.47	39.2	7	2.67	8.01	107.50	12.40	0.85470	129	154
ALTRON	48.69	24.7	7	2.12	6.36	67.80	7.83	1.35600	98	116
AKRON	30.58	15.5	7	1.68	5.04	42.58	4.92	2.15900	74	88

ALUMINIUM CONDUCTOR ALUMINIUM CLAD STEEL - REINFORCED

ACSR/AS

DESCRIPTION

ACSR/AS is identical to conventional ACSR with only difference in the core where AS wires are substituted for galvanized steel wires.

STANDARD

BS 215 part 2, ASTM B549 and other International Specifications. The requirement/specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

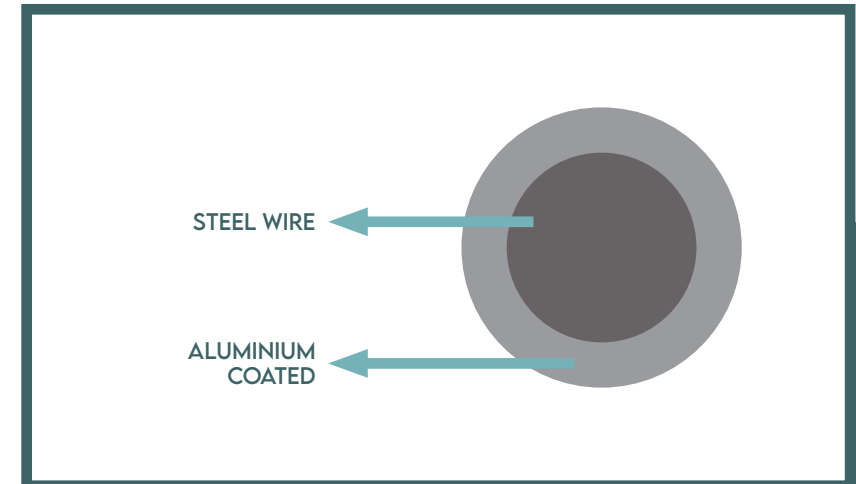
- Reduced power loss.
- High Corrosion resistance.
- Less weight.
- Higher weight to strength ratios.

APPLICATION

Application: Aluminum Conductors, Aluminum-Clad Steel Reinforced (ACSR/AW) can be used in Medium, High and Extra-High voltage transmission lines; also used for earth wires. In comparison with ACSR conductors, ACSR/AW conductors have considerable technical and economical advantages in overhead lines. Its lower weight combined with its higher current carrying capacity and corrosion protection provide a longer life cycle, reduction in energy losses and significant cost saving during the operation of the line.

ITEM	AAC	AAAC	ACSR	ACSR/AS
CORROSION RESISTANCE	BETTER	GOOD	STANDARD	BETTER
TENSILE STRENGTH	POOR	STANDARD	BETTER	BETTER
CONDUCTIVITY	BETTER	GOOD	STANDARD	BETTER
CREEP STRAIN UNDER THE CURRENT LOADING (I.E. HIGH TEMPERATURE)	STANDARD	POOR	STANDARD	GOOD
WEIGHT	BETTER	BETTER	STANDARD	GOOD
SAG CHARACTERISTICS UNDER THE SAME FACTOR TO BREAKING OF CONDUCTOR	POOR	STANDARD	BETTER	BETTER
AVAILABLE MAX. SPAN LENGTH	POOR	STANDARD	BETTER	BETTER

A technical comparison of AAC, AAAC, ACSR and ACSR/AS conductors



ALUMINIUM CONDUCTOR ALUMINIUM CLAD STEEL REINFORCED (ACSR/AW)

ASTM B 549

CODE NAME	CONDUCTOR AREA	SECTIONAL AREA	CLASS	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
				NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
				ALUMINIUM	STEEL	ALUMINIUM	STEEL						
	(CMIL)	(MM ²)		(NO)	(NO.)	(MM)	(MM)	(MM)	(KN)	(KG/KM)	(Ω/KM)	(AMPERE)	(AMPERE)
THRASHER/AW	2324300	1178	AA	76	19	4.43	2.07	45.79	246	3679	0.0243	945	1256
KIWI/AW	2176100	1103	AA	72	7	4.41	2.94	44.10	218	3366	0.0260	914	1210
BLUEBIRD/AW	2173100	1101	AA	84	19	4.07	2.44	44.76	262	3627	0.0258	922	1221
CHUKAR	1795200	910	AA	84	19	3.70	2.22	40.70	220	2996	0.0313	839	1100
FALCON	1609800	816	AA	54	19	4.36	2.62	39.26	236	2917	0.0345	797	1042
LAPWING	1601200	811	AA	45	7	4.78	3.18	38.22	186	2598	0.0349	788	1028
PARROT	1528200	774	AA	54	19	4.25	2.55	38.25	224	2768	0.0363	776	1012
NUTHATCH	1520500	770	AA	45	7	4.65	3.10	37.20	177	2467	0.0369	766	996
PLOVER	1448900	734	AA	54	19	4.14	2.48	37.24	212	2625	0.0383	755	982
BOBOLINK/AW	1440200	730	AA	45	7	4.53	3.02	36.24	167	2336	0.0389	745	967
MARTIN/AW	1367700	693	AA	54	19	4.02	2.41	36.17	201	2478	0.0406	732	949
DIPPER	1360100	689	AA	45	7	4.40	2.93	35.19	158	2207	0.0412	723	935
PHEASANT/AW	1287700	652	AA	45	19	3.90	2.34	35.10	189	2333	0.0513	651	842
BITLERN/AW	1280600	649	AA	45	7	4.27	2.85	34.17	149	2078	0.0438	700	903
SKYLARK/AW	1275400	646	AA	36	1	4.78	4.78	33.46	114	1893	0.0441	689	886
GRACKLE/AW	1206700	611	AA	54	19	3.77	2.27	33.97	179	2188	0.0461	677	881
BUNTING/AW	1201000	609	AA	45	7	4.14	2.76	33.12	139	1948	0.0466	660	872
FINCH/AW	1127800	571	AA	54	19	3.65	2.19	32.85	167	2043	0.0492	653	848
BLUEJAY	1120500	568	AA	45	7	4.00	2.66	31.98	130	1819	0.0499	634	837
CURLEW/AW	1046100	530	AA	54	7	3.51	3.51	31.59	158	1896	0.0529	626	813
ORTOLAN/AW	1040000	527	AA	45	7	3.85	2.57	30.81	121	1688	0.0538	608	801
TANAGER/AW	1035800	525	AA	36	1	4.30	4.30	30.10	94	1537	0.0544	615	784
CARDINAL/AW	966100	490	AA	54	7	3.38	3.38	30.42	146	1752	0.0571	599	777
RAIL/AW	960400	487	AA	45	7	3.70	2.47	29.61	113	1558	0.0583	589	764
CATBRID/AW	956600	485	AA	36	1	4.14	4.14	28.98	87	1420	0.0587	590	750
CANARY/AW	911400	462	AA	54	7	3.28	3.28	29.52	138	1653	0.0606	549	750
RUDDY/AW	906100	459	AA	45	7	3.59	2.40	28.74	107	1470	0.0619	542	738
MALLARY/AW	812700	412	AA	30	19	4.14	2.48	28.96	165	1726	0.0666	564	717
CONDOR/AW	805000	408	AA	54	7	3.08	3.08	27.72	124	1458	0.0687	471	696
TERN/AW	800400	406	AA	45	7	3.38	2.25	27.03	96	1298	0.0699	538	687
DRAKE/AW	807600	409	AA	26	7	4.44	3.45	28.11	136	1549	0.0679	555	704
CUCKOO/AW	805000	408	AA	24	7	4.62	3.08	27.72	122	1460	0.0687	551	698

ALUMINIUM CONDUCTOR ALUMINIUM CLAD STEEL REINFORCED (ACSR/AW)

ASTM B 549

CODE NAME	CONDUCTOR AREA	SECTIONAL AREA	CLASS	STRANDING				DIAMETER OF COMPLETE CONDUCTOR	WEIGHT	RATED STRENGTH	DC RESISTANCE @20 °C	AMPACITY	
				NO.OF WIRES		WIRE DIAMETER						@75° C	@85° C
				ALUMINIUM	STEEL	ALUMINIUM	STEEL					(AMPERE)	(AMPERE)
	(CMIL)	(MM ²)		(NO)	(NO.)	(MM)	(MM)	(MM)	(KN)	(KG/KM)	(Ω/KM)	(AMPERE)	(AMPERE)
COOT/AW	797200	404	AA	36	1	3.77	3.77	26.39	74	3.77	0.0708	532	671
REDWING/AW	730900	370	AA	30	19	3.92	2.35	27.43	149	2.35	0.0740	531	672
STARLING/AW	727400	369	AA	26	7	4.21	3.28	26.68	122	3.28	0.0755	524	661
STILT/AW	725000	367	AA	24	7	4.39	2.92	26.32	110	2.92	0.0761	521	657
GANNET/AW	676600	343	AA	26	7	4.07	3.16	25.76	116	3.16	0.0809	504	635
FLAMINGO/AW	675400	342	AA	24	7	4.23	2.82	25.38	103	2.82	0.0820	499	629
EGRET/AW	650200	329	AA	30	19	3.70	2.22	25.90	133	2.22	0.0833	498	628
SOOTER/AW	650500	330	AA	30	7	3.70	3.70	25.90	130	3.70	0.0831	498	628
GROSBEAK/AW	646100	327	AA	26	7	3.97	3.09	25.15	110	3.09	0.0850	490	617
ROOK/AW	644000	326	AA	24	7	4.14	2.76	24.84	98	2.76	0.0856	487	613
SWIFT/AW	637700	323	AA	36	1	3.38	3.38	23.66	61	3.38	0.0881	471	590
KINGBIRD/AW	639400	324	AA	18	1	4.78	4.78	23.90	67	4.78	0.0873	480	602
TEAL/AW	618400	313	AA	30	19	3.61	2.16	25.24	127	2.16	0.0875	483	608
WOOD DUCK/AW	618800	314	AA	30	7	3.61	3.61	25.27	126	3.61	0.0873	484	609
SQUAB/AW	614600	311	AA	26	7	3.87	3.01	24.51	105	3.01	0.0895	476	598
PEACOCK/AW	612700	310	AA	24	7	4.03	2.69	24.19	93	2.69	0.0903	473	593
EAGLE/AW	569700	289	AA	30	7	3.46	3.46	24.22	119	3.46	0.0951	461	579
DOVE/AW	564800	286	AA	26	7	3.72	2.89	23.55	97	2.89	0.0968	455	570
PARAKEET/AW	564000	286	AA	24	7	3.87	2.58	23.22	86	2.58	0.0979	452	565
OSPRAY/AW	559000	283	AA	18	1	4.47	4.47	22.35	59	4.47	0.0998	445	555
HEN/AW	487900	247	AA	30	7	3.20	3.20	22.40	104	3.20	0.1112	422	527
HAWK/AW	484600	246	AA	26	7	3.44	2.68	21.80	84	2.68	0.1132	417	519
FLICKER/AW	483000	245	AA	24	7	3.58	2.39	21.49	74	2.39	0.1145	413	515
PELICAN/AW	479600	243	AA	18	1	4.14	4.14	20.70	51	4.14	0.1164	407	506
LARK/AW	406000	206	AA	30	7	2.92	2.92	20.44	87	2.92	0.1335	380	472
IBIS/AW	403300	204	AA	26	7	3.14	2.44	19.88	70	2.44	0.1359	375	465
BRANT/AW	403000	204	AA	24	7	3.27	2.18	19.62	63	2.18	0.1372	373	462
CHICKADEE/AW	399200	202	AA	18	1	3.77	3.77	18.85	44	3.77	0.1404	366	453
ORIOLE/AW	343700	174	AA	30	7	2.69	2.69	18.83	74	2.69	0.1573	346	428
LINNET/AW	341300	173	AA	26	7	2.89	2.25	18.31	60	2.25	0.1604	341	421
MERLIN/AW	337800	171	AA	18	1	3.47	3.47	17.35	38	3.47	0.1657	333	409
OSTRICH/AW	304800	154	AA	26	7	2.73	2.12	17.28	54	2.12	0.1798	319	393

ALUMINIUM CONDUCTOR ALLOY - REINFORCED

ACAR

DESCRIPTION

The conductor consists of Aluminium wires and Aluminium alloy wires, built up in concentric layers. The centre wire or wires are Aluminium alloy and the outer layer or layers are of Aluminium. In case required, neutral grease shall be applied between the layers of ACAR except the outer layer.

STANDARD

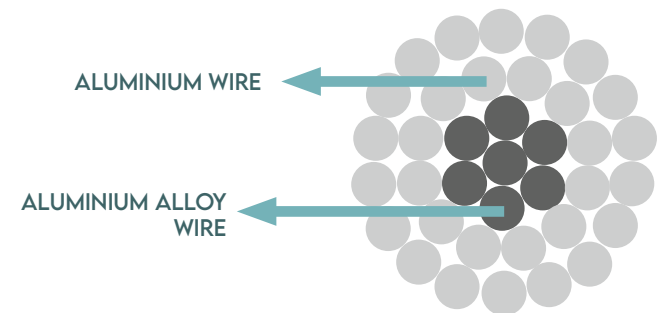
ASTM B524, IEC 61089 and other International Specifications. The requirement/specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

- Aluminium Conductors with central core of Aluminium Alloy wires.
- ACAR offers excellent balance between mechanical & electrical properties.
- Excellent corrosion resistance owing to compatible materials in centre core and outer layers.
- A compromise choice between AAC, ACSR and AAAC and sometimes can be a line engineer's cheer.
- 1350 designates grade of pure Aluminium.
- 6201 designates Aluminium Alloy grade.

APPLICATION

ACAR bare conductors are used for overhead high tension power transmission lines having long spans.



EARTH WIRE/ STAY WIRE / GUY WIRE

DESCRIPTION

Earth wire/Stay wire/Guy wire are galvanised steel wire concentrically stranded over a central wire of Galvanised steel wire.

STANDARD

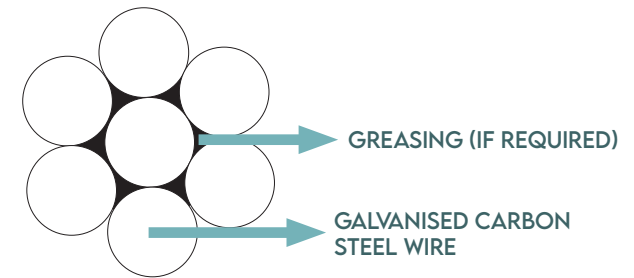
IS 12776, IS 2141, BS 183, ASTM A363 and other International Specifications. The requirement/specifications given by the purchaser are also taken care of.

CHARACTERISTICS :

- Overhead Ground wire or static wire for earthing of the electrical Power Transmission lines.
- Stay or Guy wire strands are produced for use with poles, towers or another form of guying and can be used for telephone, power & CATV sets.
- They are available in class 'A', 'B' and 'C' coating,'A' being the least heavy and 'C' being the most heavy.
Ideal for all types of insulations and coverings.
- Economically viable as compared to Copper Conductors.
- Ideal for PVC insulated cables in urban areas.

APPLICATION

Construction, Overhead, Industrial and Power station.



GALVANIZED STEEL WIRE / STAYWIRE / GUYWIRE

BS 183

SECTIONAL AREA	STRANDING		DIAMETER OF EARTHWIRE	WEIGHT	RATED STRENGTH						
	NO. OF STEEL WIRES	INDIVIDUAL WIRE DIAMETER			GRADE 350	GRADE 480	GRADE 700	GRADE 850	GRADE 1000	GRADE 1150	GRADE 1300
(MM ²)		(MM)	(MM)	(KG/KM)	KN	KN	KN	KN	KN	KN	KN
7.63	3	1.80	3.90	60.00	2.65	3.66	-	-	-	-	-
16.55	3	2.65	5.70	130.00	5.80	7.95	-	-	-	-	-
24.89	3	3.25	7.00	195.00	8.70	11.95	-	-	-	-	-
37.70	3	4.00	8.60	295.00	13.20	18.10	-	-	-	-	-
10.18	4	1.80	4.40	80.00	3.55	4.90	-	-	-	-	-
22.06	4	2.65	6.40	172.00	7.70	10.60	-	-	-	-	-
33.18	4	3.25	7.90	260.00	11.60	15.90	-	-	-	-	-
50.27	4	4.00	9.70	390.00	17.60	24.10	35.20	-	-	-	-
8.84	5	1.50	4.10	69.00	3.10	4.24	6.18	-	-	-	-
12.72	5	1.80	4.90	95.00	4.45	6.10	8.90	-	-	-	-
27.58	5	2.65	7.20	220.00	9.65	13.25	19.30	-	-	-	-
41.48	5	3.25	8.80	320.00	14.50	19.90	29.00	-	-	-	-
68.83	5	4.00	10.80	490.00	22.00	30.15	43.95	-	-	-	-
1.72	7	0.56	1.70	14.00	0.60	0.83	1.20	-	1.70	1.98	2.24
2.77	7	0.71	2.10	28.00	0.97	1.33	1.94	-	2.75	3.19	3.60
3.97	7	0.85	2.60	31.00	1.39	1.90	2.80	-	3.95	4.57	5.15
4.45	7	0.90	2.70	35.00	1.55	2.14	3.10	-	4.45	5.12	5.80
5.50	7	1.00	3.00	43.00	1.92	2.64	3.85	-	5.50	6.32	7.15
8.59	7	1.25	3.80	67.00	3.01	4.10	6.00	-	8.55	9.88	11.15
10.78	7	1.40	4.20	84.00	3.75	5.17	7.54	9.16	10.75	12.35	14.00
11.24	7	1.43	4.30	86.00	3.85	5.28	7.70	9.35	11.00	12.65	14.30
14.07	7	1.60	4.80	110.00	4.90	6.75	9.85	11.95	14.10	16.20	18.30
17.81	7	1.80	5.40	140.00	6.23	8.55	12.45	-	17.80	20.50	23.20
21.99	7	2.00	6.00	170.00	7.70	10.55	15.40	-	22.00	25.30	38.60
30.62	7	2.36	7.10	240.00	10.70	14.70	21.40	-	30.60	35.20	39.80
38.61	7	2.65	8.00	300.00	13.50	18.50	27.00	-	38.60	44.40	50.20
49.48	7	3.00	9.00	392.00	17.30	23.75	34.65	-	49.50	56.90	64.30
54.55	7	3.15	9.50	430.00	19.10	26.20	38.20	-	54.55	62.75	70.90
58.07	7	3.25	9.80	460.00	20.30	27.85	40.65	-	58.05	66.80	75.50
73.24	7	3.65	11.00	570.00	25.60	35.15	51.25	-	73.25	84.20	95.20
87.96	7	4.00	12.00	690.00	30.90	42.20	61.60	-	88.00	101.00	114.00
99.30	7	4.25	12.80	780.00	34.75	47.65	69.50	-	99.30	114.00	129.00
124.04	7	4.75	14.00	970.00	43.40	59.45	86.80	-	124.00	142.70	161.30
14.92	19	1.00	14.00	120.00	5.22	7.16	10.45	-	14.92	17.16	19.40
23.32	19	1.25	5.00	180.00	8.16	11.19	16.32	-	23.32	26.81	30.31
29.25	19	1.40	7.00	230.00	10.24	14.04	14.04	-	29.25	33.64	38.02
38.20	19	1.60	8.00	300.00	13.37	18.34	26.75	-	38.20	43.93	49.46
59.69	19	2.00	10.00	470.00	20.90	28.65	41.78	50.7	59.69	68.64	77.0
93.27	19	2.50	12.50	730.00	32.65	44.80	65.29	79.3	93.27	107.30	121.30
134.30	19	3.00	15.00	1050.00	47.00	64.50	94.00	114.1	134.30	154.50	174.60
188.06	19	3.55	17.80	1470.00	65.80	90.27	131.60	159.	188.00	216.30	244.50
238.76	19	4.00	20.00	1870.00	83.55	114.60	167.10	203.0	238.70	274.60	310.40
336.69	19	4.75	23.80	2630.00	117.85	161.60	235.70	286.0	336.70	387.20	437.70

GALVANIZED STEEL WIRE / STAYWIRE / GUYWIRE

BS 183

SECTIONAL AREA	STRANDING		DIAMETER OF EARTHWIRE	WEIGHT	RATED STRENGTH			
	NO. OF STEEL WIRES	INDIVIDUAL WIRE DIAMETER			COMMON GRADE	HIGH STRENGTH GRADE	EXTRA HIGH STRENGTH GRADE	UTILITY GRADE
(MM ²)		(MM)	(MM)	(KG/KM)	KN	KN	KN	KN
5.95	7	1.04	3.18	48.00	2.402	5.916	8.140	-
9.58	7	1.32	3.97	76.00	3.870	6.539	13.078	-
13.55	7	1.57	4.76	109.00	5.115	12.677	17.748	-
14.97	7	1.65	4.76	119.00				10.676
16.42	3	2.64	5.56	131.00	6.228	15.569	21.796	
18.41	7	1.83	5.56	146.00	6.850	17.126	24.020	
21.92	3	3.05	6.35	174.00	8.274	21.040	29.981	14.01
21.92	3	3.05	6.35	174.00				20.02
22.66	7	2.03	6.35	180.00	8.452	21.129	29.581	
25.66	3	3.30	7.14	204.00	9.252	23.398	33.362	
30.62	7	2.36	7.14	244.00	11.432	28.469	39.812	20.46
31.91	3	3.68	7.94	255.00	11.076	28.246	40.479	
38.32	7	2.64	7.94	305.00	14.234	35.586	49.820	
42.18	7	2.77	7.94	335.00				26.69
41.37	3	4.19	9.52	328.00	14.813	37.187	37.187	37.81
51.14	7	3.05	9.52	402.00	18.905	48.040	48.040	51.16
74.45	7	3.68	11.11	595.00	25.355	64.499	64.499	80.07
96.52	19	4.19	12.70	770.00	32.917	83.627	83.627	111.21
96.52	7	2.54	12.70	751.00	33.895	84.61	84.961	
125.62	19	4.78	14.29	1000.00	42.703	108.981	108.981	
122.92	7	2.87	14.29	949.00	42.881	107.202	107.202	
152.11	19	5.26	15.88	1211.00	51.599	131.667	131.667	
150.90	7	3.18	15.88	1186.00	48.930	124.995	124.995	
216.62	19	3.81	19.05	1721.00	71.172	181.487	181.487	
302.18	19	4.50	22.22	2356.00	97.416	248.211	248.211	
385.10	19	5.08	25.40	3089.00	127.66	325.61	325.61	
382.92	37	3.63	25.40	3065.00	125.89	319.83	319.83	
486.12	37	4.09	28.58	4010.00	160.14	407.46	407.46	
601.61	37	4.55	31.75	4840.00	198.39	505.32	505.32	

ASTM A 363

SECTIONAL AREA	STRANDING		DIAMETER OF EARTHWIRE	WEIGHT	RATED STRENGTH		
	NO. OF STEEL WIRES	INDIVIDUAL WIRE DIAMETER			HIGH STRENGTH GRADE	EXTRA HIGH STRENGTH GRADE	UTILITY GRADE
(MM ²)	NO.	(MM)	(MM)	(KG/KM)	KN	KN	KN
31.91	3	3.68	7.94	255.00	-	-	28.90
38.32	7	2.64	7.94	305.00	35.60	49.8	-
51.14	7	3.05	9.52	407.00	48.00	68.4	51.20
74.45	7	3.68	11.11	595.00	64.50	92.5	-
96.52	7	4.19	12.70	770.00	83.60	119.6	-

DIN 48201

NOMINAL AREA	SECTIONAL AREA	STRANDING		DIAMETER OF EARTHWIRE	WEIGHT	RATED STRENGTH			
		NO. OF STEEL WIRES	INDIVIDUAL WIRE DIAMETER			ST II	ST I	ST III	ST IV
(MM ²)	(MM ²)	NO.	(MM)	(MM)	(KG/KM)	KN	KN	KN	KN
25	24.25	7	2.10	6.30	192.00	8.98	15.90	30.18	36.17
35	34.36	7	2.50	7.50	272.00	12.73	22.52	42.76	51.25
50	49.48	7	3.00	9.00	391.00	18.33	32.43	61.58	73.80
50	48.35	19	1.80	9.00	384.00	17.91	31.69	60.17	72.11
70	65.81	19	2.10	10.50	522.00	24.38	43.14	81.90	98.16
95	93.27	19	2.50	12.50	741.00	34.56	61.14	116.07	139.11
120	116.99	19	2.80	14.00	929.00	43.34	76.69	145.59	174.49

IS 12776

SECTIONAL AREA	STRANDING		DIAMETER OF EARTHWIRE	WEIGHT	RATED STRENGTH		
	NO. OF STEEL WIRES	INDIVIDUAL WIRE DIAMETER			GRADE 1100	GRADE 981	GRADE 1310
(MM ²)	NO.	(MM)	(MM)	(KG/KM)	KN	KN	KN
49.48	7	3.00	9.00	386.00	43.70	49.00	58.30
54.55	7	3.15	9.45	426.00	48.20	54.00	64.30
58.07	7	3.25	9.75	454.00	51.30	57.50	68.50
60.96	7	3.33	9.99	476.00	53.80	60.40	71.90
73.65	7	3.66	10.98	575.00	65.00	72.90	86.80
87.96	7	4.00	12.00	687.00	77.70	87.10	104.00

COPPER WIRES & CONDUCTORS

DESCRIPTION

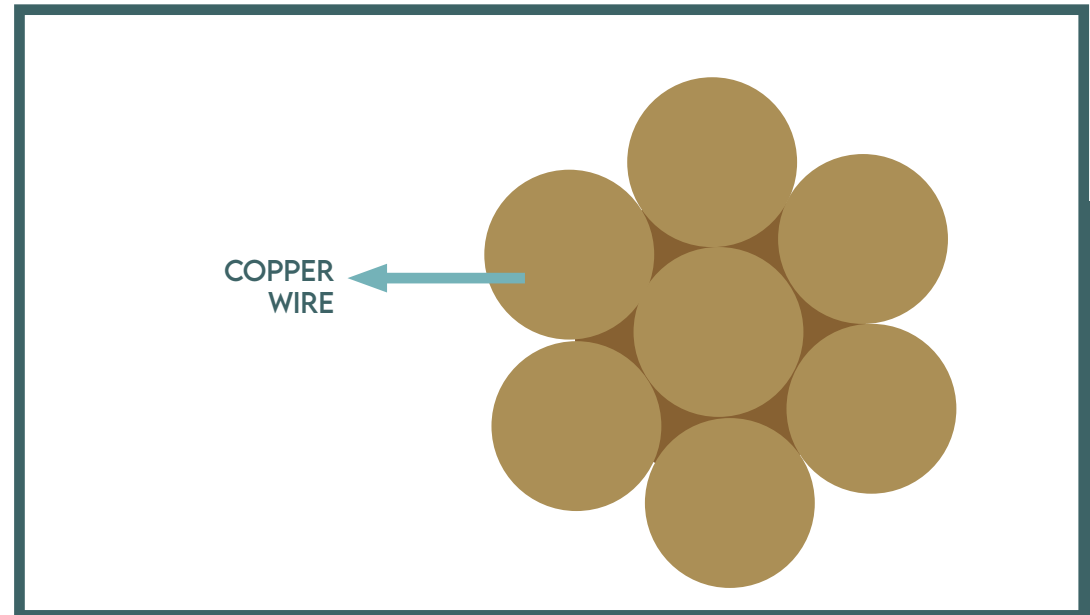
Individual copper wires drawn to size and used as supply in wire condition to the customer. They are also in bare strands of copper conductors and also in insulated cables.

STANDARD

- BS-125- Hard drawn copper wire
- BS- 7884- Hard drawn copper wire and conductors
- BS-128- Annealed copper wire.

APPLICATION

Bare copper conductors are used as ground conductors, uninsulated hook up wires and jumpers.



STANDARD BARE COPPER WIRE

BS 7884

NOMINAL AREA OF CROSS SECTION	WIRE DIAMETER			NOMINAL MASS PER LENGTH	RESISTANCE @20° C		MINIMUM BREAKING LOAD
	NOMINAL	MAX	MIN		NOMINAL	MAX	
(MM ²)	(MM)	(MM)	(MM)	(KG/KM)	(Ω/KM)	(Ω/KM)	N
1.43	1.35	1.364	1.337	12.73	12.41	12.66	583
2.01	1.60	1.616	1.584	17.87	8.838	9.018	818
2.27	1.70	1.717	1.683	20.18	7.829	7.988	923
2.54	1.80	2.818	1.782	22.62	6.983	7.125	1035
3.46	2.10	2.121	2.079	30.79	5.130	5.235	1409
3.96	2.25	2.273	2.226	35.35	4.469	4.558	1618
3.98	2.46	2.484	2.435	42.25	3.739	3.816	1932
4.75	2.50	2.525	2.475	43.64	3.620	3.694	1997
4.91	2.65	2.677	2.624	49.03	3.222	3.286	2244
5.51	2.80	2.826	2.772	54.74	2.886	2.944	2505
6.16	2.90	2.929	2.871	58.72	2690	2.745	2687
6.61	3.00	3.030	2.970	62.84	2.514	2.565	2875
7.07	3.20	3.232	3.166	71.50	2.210	2.254	3271
8.04	3.55	3.586	3.515	87.99	1.795	1.1831	4027
9.90	3.75	3.788	3.713	98.19	1.609	1.641	4494
11.04	4.30	4.350	4.250	129.10	1.224	1.253	5675

STANDARD BARE COPPER CONDUCTOR

BS 7884

NOMINAL AREA	NO. OF WIRES OF CONDUCTOR	NOMINAL DIA OF WIRES IN CONDUCTOR	APPROX CONDUCTOR DIAMETER	CONDUCTOR RESISTANCE @20° C MAX	NOMINAL WEIGHT	BREAKING LOAD (MIN)
(MM ²)		(MM)	(MM)	(Ω/KM)	(KG/KM)	(N)
10	7	1.35	4.05	1.829	89.92	3752
14	7	1.60	4.80	1.303	126.2	5267
16	3	2.65	5.70	1.106	148.3	6194
16	7	1.70	5.10	1.154	142.4	5946
25	7	2.10	6.30	0.7563	217.3	9073
32	3	3.75	8.06	0.5520	296.9	12400
32	7	2.46	7.38	0.5497	298.2	12442
35	7	2.50	7.50	0.5337	308	12860
50	7	3.00	9.00	0.3706	433.5	18520
50	19	1.80	9.00	0.3819	435.8	17700
70	7	3.35	10.65	0.2646	621.1	25930
70	19	2.10	10.50	0.2806	593.2	24090
95	19	2.50	12.50	0.1980	840.7	34140
100	7	4.30	12.90	0.1810	911.2	36540
120	19	2.80	14.00	0.1578	1055	42830
125	19	2.90	14.50	0.1471	1131	45940
150	19	3.20	16.00	0.1208	1377	55940
150	37	2.25	15.75	0.1264	1334	53880
185	19	3.55	17.75	0.09815	1695	68860
185	37	2.50	17.50	0.1024	1647	66490
240	37	2.87	20.09	0.07878	2175	89477

LT AERIAL BUNCH CABLES

1.1 KV Volt Grade, are used for distributing power to individual consumers by utility service providers such as electricity boards and electricity distributing authorities. The cables are suspended overhead using electrical poles. The cables can be tapped intermittently from any required position, enabling them to be used in urban as well as rural areas.

CONFIGURATION

Single Phase or Three Phase systems with or without Street Light line.

CONDUCTOR

Phase or lighting conductor: Electrical grade Aluminium of H2 or H4 grade as per IS: 8130. Messenger conductor: Aluminium Silica and Magnesium Alloy.

INSULATION

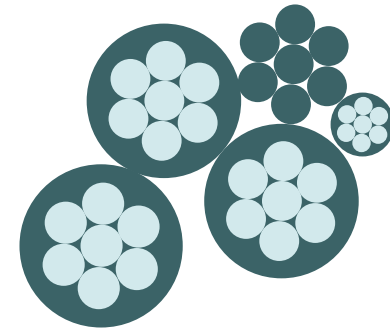
XLPE with Sioplas Technique.

IDENTIFICATION OF PHASE

Ridges provided on the insulation of Phase Conductors: 1 ridge for the 1st phase, 2 ridges for the 2nd phase and 3 ridges for the 3rd phase. The Neutral phase may have 4 ridges if required.

COLOUR OF INSULATION

As the cable remains exposed to environmental elements such as UV rays from sunlight, the insulation is mixed with a small amount of carbon black to prevent the deterioration of polythene.

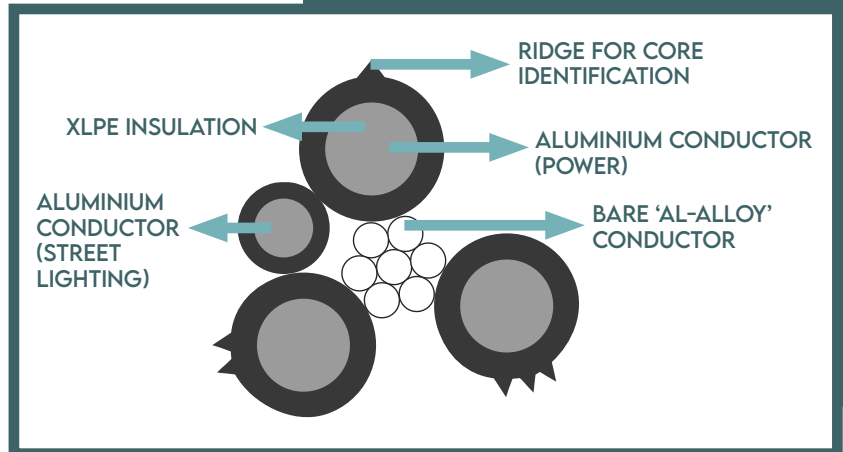


Cross sectional view of Aerial Bunch Cables



CONSTRUCTION OF CABLE

The phase conductor can be of single phase or three phases. A lighting conductor can be also incorporated for street lighting. A messenger conductor supports the weight of the cable and keeps the assembly strung under tension. Phase conductors are made of concentrically stranded Aluminium Wires having 7 or 19 wires. Messenger conductors are made of a specially treated Silica, Magnesium and Aluminium Alloy having 7 or 19 wires. Phase and lighting conductors may be insulated with XLPE compound of Sioplas Technology. Messenger conductors are kept either bare or insulated. Phase and lighting conductors are sometimes twisted around the messenger conductor. In special cases a neutral conductor may also be provided separately. Generally, the messenger acts as earth and neutral.



In comparison to bare overhead distribution lines, ABC has very high reliability in maintaining services because power and neutral conductor are insulated with the best dielectric, resulting in the following advantages

- Less fault rate on account of good protection against line and ground fault by high winds or falling trees or birds especially in hilly areas & forests are encountered in rural distribution networks.
- High insulation to earth in all seasons and polluted atmospheres. Negligible currents and low losses.
- Multiple circuits of Power and Telephone Cables could be strung in the same set of poles or any other supports like walls etc
- Better adaptability to run concurrently with existing overhead bare conductor system without any interference
- High capacitance and low inductance leading to low impedance of lines.
- Lower voltage drop, higher current carrying capacities vis-a-vis better voltage regulation.
- Longer spans and longer distance lines are possible with better system stability.
- ABC cables are much safer than bare conductors.
- It can be over hung in dense vegetation and forests.
- Additional connections can be easily and quickly made with hot line connectors.
- Total line costs are reduced.
- Maintenance is very easy.
- Very difficult to top the ABC Cables, thus reducing theft which leads to lower distribution losses.



TWISTING AND LAYING

THE PHASE CONDUCTORS ARE BEING ALLOWED TO SLIDE FREELY OVER THE MESSENGER CONDUCTOR DURING TEMPERATURE FLUCTUATION. IT IS ALSO TO BE ENSURED THAT DURING SLIDING THE INSULATION SHOULD NOT GET SCRATCHES DUE TO RUBBING EFFECT. DURING EXPANSION AND CONTRACTION, THE PHASE CONDUCTORS TRY TO MOVE THE ENDS EXERTING ADDITIONAL STRESS AT THE TERMINATING POINT OR AT THE CLIPPING POINT. BY SPECIAL TWISTING PROCESS SUCH FORCES ARE NEUTRALIZED. DURING INSTALLATION AND BRANCHING OFF, PHASES CONDUCTORS CAN EASILY BE LOOSENE TO CRIMP TO THE CONNECTORS WITHOUT STRAINING AND DAMAGING THE PHASE

CONDUCTOR. 1.1 KV GRADE STRANDED & COMPACTED ALUMINIUM PHASE CONDUCTOR, AND STRANDED MESSENGER CONDUCTOR WITH ALL ALUMINIUM ALLOY, PHASE CONDUCTOR IS INSULATED WITH XLPE COMPOUND, MESSENGER IS EITHER INSULATED OR BARE. REFERRED SPECIFICATION IS: 14255-1995 UPTO THE LATEST AMENDMENT.

SL NO.	SIZE AND TYPE OF CABLE	NUMBER OF WIRES		THICKNESS OF XLPE INSULATION		APPROX DIA	APPROX WEIGHT OF CABLE	BREAKING LOAD OF MESSENGER	MAXIMUM D.C. RESISTANCE (OHM/KM)		A.C. CURRENT RATING (AMPS)
		PHASE	MESSENGER	PHASE	MESSENGER				PHASE	MESSENGER	IN AIR @40° C
	WITH INSULATED MESSENGER			(MM)	(MM)	(MM)	(KG/KM)	KN (MIN)			
1	3CX16 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	1.2	24.8	363	7	1.91	1.38	62
2	3CX25 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	1.2	27.6	450	7	1.2	1.38	82
3	3CX35 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	1.2	29.9	537	7	0.868	1.38	103
4	3CX50 SQMM+ 35 SQMM+16 SQMM	7	7	1.5	1.2	35.2	702	9.8	0.641	0.986	127
5	3CX70 SQMM+ 50 SQMM+16 SQMM	19	7	1.5	1.5	41.6	941	14	0.443	0.689	154
6	3CX70 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	1.5	42.7	1006	19.7	0.443	0.492	154
7	3CX95 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	1.5	46.9	1246	19.7	0.32	0.492	188
8	3CX120 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	1.5	49.8	1468	19.7	0.253	0.492	218

SL NO.	SIZE AND TYPE OF CABLE	NUMBER OF WIRES		THICKNESS OF XLPE INSULATION		APPROX DIA	APPROX WEIGHT OF CABLE	BREAKING LOAD OF MESSENGER	MAXIMUM D.C. RESISTANCE (OHM/KM)		A.C. CURRENT RATING (AMPS)
		PHASE	MESSENGER	PHASE	MESSENGER				PHASE	MESSENGER	IN AIR @40° C
	WITH BARE MESSENGER			(MM)	(MM)	(MM)	(KG/KM)	KN (MIN)			
1	3CX16 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	0	19.4	335	7	1.91	1.38	62
2	3CX25 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	0	22.7	419	7	1.2	1.38	82
3	3CX35 SQMM+ 25 SQMM+16 SQMM	7	7	1.2	0	25.4	509	7	0.868	1.38	103
4	3CX50 SQMM+ 35 SQMM+16 SQMM	7	7	1.5	0	30.0	670	9.8	0.641	0.986	127
5	3CX70 SQMM+ 50 SQMM+16 SQMM	19	7	1.5	0	35.1	896	14	0.443	0.689	154
6	3CX70 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	0	35.1	951	19.7	0.443	0.492	154
7	3CX95 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	0	40.0	1191	19.7	0.32	0.492	188
8	3CX120 SQMM+ 70 SQMM+16 SQMM	19	7	1.5	0	43.5	1413	19.7	0.253	0.492	218

SL NO.	SIZE AND TYPE OF CABLE	NUMBER OF WIRES		THICKNESS OF XLPE INSULATION		APPROX DIA	APPROX WEIGHT OF CABLE	BREAKING LOAD OF MESSENGER	MAXIMUM D.C. RESISTANCE (OHM/KM)		A.C. CURRENT RATING (AMPS)
		PHASE	MESSENGER	PHASE	MESSENGER				PHASE	MESSENGER	IN AIR @40° C
	WITH INSULATED MESSENGER			(MM)	(MM)	(MM)	(KG/KM)	KN (MIN)			
1	1CX16 SQMM+ 25 SQMM	7	7	1.2	1.2	13.6	162	7	1.91	1.38	72
2	3CX16 SQMM+ 25 SQMM	7	7	1.2	1.2	18.2	296	7	1.91	1.38	64
3	1CX25 SQMM+ 25 SQMM	7	7	1.2	1.2	14.5	190	7	1.2	1.38	99
4	3CX25 SQMM+ 25 SQMM	7	7	1.2	1.2	20.3	380	7	1.2	1.38	84
5	1CX35 SQMM+ 25 SQMM	7	7	1.2	1.2	15.4	220	7	0.868	1.38	120
6	3CX35 SQMM+ 25 SQMM	7	7	1.2	1.2	22.2	470	7	0.868	1.38	105
7	1CX50 SQMM+ 35 SQMM	7	7	1.5	1.5	18.1	297	9.8	0.641	0.986	150
8	3CX50 SQMM+ 35 SQMM	7	7	1.5	1.5	26.1	641	9.8	0.641	0.986	130
9	3CX70 SQMM+ 50 SQMM	19	7	1.5	1.5	30.8	874	14	0.443	0.689	155
10	3CX70 SQMM+ 70 SQMM	19	7	1.5	1.5	31.5	936	19.7	0.443	0.492	155
11	3CX95 SQMM+ 70 SQMM	19	7	1.5	1.5	34.8	1170	19.7	0.32	0.492	190
12	3CX120 SQMM+ 70 SQMM	19	7	1.5	1.5	37.2	1398	19.7	0.253	0.492	220

SL NO.	SIZE AND TYPE OF CABLE	NUMBER OF WIRES		THICKNESS OF XLPE INSULATION		APPROX DIA	APPROX WEIGHT OF CABLE	BREAKING LOAD OF MESSENGER	MAXIMUM D.C. RESISTANCE (OHM/KM)		A.C. CURRENT RATING (AMPS)
		PHASE	MESSENGER	PHASE	MESSENGER				PHASE	MESSENGER	IN AIR @40° C
	WITH BARE MESSENGER			(MM)	(MM)	(MM)	(KG/KM)	KN (MIN)			
1	1CX16 SQMM+ 25 SQMM	7	7	1.2	0	11.5	162	7	1.91	1.38	72
2	3CX16 SQMM+ 25 SQMM	7	7	1.2	0	16.8	296	7	1.91	1.38	64
3	1CX25 SQMM+ 25 SQMM	7	7	1.2	0	12.6	190	7	1.2	1.38	99
4	3CX25 SQMM+ 25 SQMM	7	7	1.2	0	19.0	380	7	1.2	1.38	84
5	1CX35 SQMM+ 25 SQMM	7	7	1.2	0	13.6	220	7	0.868	1.38	120
6	3CX35 SQMM+ 25 SQMM	7	7	1.2	0	20.9	470	7	0.868	1.38	105
7	1CX50 SQMM+ 35 SQMM	7	7	1.5	0	16.3	297	9.8	0.641	0.986	150
8	3CX50 SQMM+ 35 SQMM	7	7	1.5	0	24.9	641	9.8	0.641	0.986	130
9	3CX70 SQMM+ 50 SQMM	19	7	1.5	0	29.2	874	14	0.443	0.689	155
10	3CX70 SQMM+ 70 SQMM	19	7	1.5	0	29.8	936	19.7	0.443	0.492	155
11	3CX95 SQMM+ 70 SQMM	19	7	1.5	0	33.2	1170	19.7	0.32	0.492	190
12	3CX120 SQMM+ 70 SQMM	19	7	1.5	0	35.8	1398	19.7	0.253	0.492	220

TYPICAL LT AERIAL BUNCH CABLE TEMPERATURE & DERATING FACTOR

Ambient Air temperature is 40° C

Conductor operating temperature is 90° C

Short circuit temperature for one second is 250° C

Rating factor for variation in air temperature.

Air Temperature °C	20	25	30	35	40	45	50
Rating Factor	1.32	1.25	1.16	1.09	1	0.9	0.81

*Note Applicable



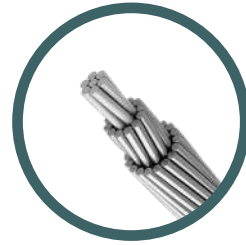
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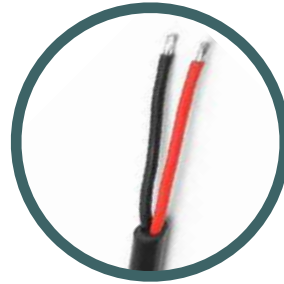
ACAR



AAAC



AERIAL BUNCHED CABLE



SERVICE CABLE



EARTH WIRE/ STAY WIRE/
GUY WIRE



COPPER CONDUCTOR

REGISTERED OFFICE:

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