

AACSR AACSR/AW - All Aluminium Alloy Conductors Steel Reinforced Constructions

Aluminium Alloy Conductor Steel Reinforced Conductors (AACSR) is a concentrically stranded conductor composed of one or more layers of 6201-T81 Aluminium Alloy (Aluminium-Magnesium-Silicon) wire stranded with a high-strength coated steel core. The core may be single wire or stranded depending on the size. The proportions of aluminium alloy and steel can be varied to obtain the relation between current carrying capacity and mechanical strength best suited to each application.

Core wire for AACSR is available with Class A, B or C-galvanized; "aluminized" (AZ); or aluminium clad (AW) coating to provide protection from corrosion. Additional corrosion protection is available through the application of grease to the core or infusion of the complete cable with grease.

AACSR Conductors have approx. 40% to 60% more strength than comparable standard ACSR with only 8 to 10% decrease in conductivity.

AACSR AACSR/AW Applicable Standard

Aluminium Conductors, Aluminium-Clad Steel Reinforced (AACSR/AW) is designed and tested to meet or exceed the following specifications:

- IEC 61089
- ASTM B711
- DIN 48206
- NF C34-125

AACSR AACSR/AW Applications

The high tensile strength of the 6201-T81 wires combined with the high strength of steel provides an exceptionally high strength conductor with good conductivity, which can be used in long spans. These are used in Transmission and Distribution system to carry the generated electrical energy from the generating station to the end user.

These homogeneous conductors in aluminium alloy show many advantages i.e. lightness, high breaking load allowing long spans, simplicity of the accessories and lastly easy recycling. These conductors are suitable for the long spans network.

The excellent resistance of AACSR conductor to corrosion enables them to be used in coastal areas as well.

AACSR IEC 61089

Code Number	No./Dia. of Alloy Wire	Al No./Dia. of Steel Wire	Overall Diameter of Conductor	Approx. Weight	Max.D.C. Resistance of Conductor at 20°C	Rated Strength	
						A2/S1A Conductor	A2/S3A Conductor
mm ²	No./mm	No./mm	mm	kg/km	Ω/km	kN	kN
16	6/1.98	1/1.98	5.93	74.4	1.7934	9.02	9.88
25	6/2.47	1/2.47	7.41	116.2	1.1478	13.96	15.25
40	6/3.13	1/3.13	9.38	185.9	0.7174	22.02	24.17
63	6/3.92	1/3.92	11.8	292.8	0.4555	34.68	37.58
100	18/2.85	1/2.85	14.3	366.4	0.288	41.24	42.97
125	18/3.19	1/3.19	16	458	0.2304	51.23	53.47
125	26/2.65	7/2.06	16.8	579.9	0.231	69.86	76.42
160	18/3.61	1/3.61	18	586.2	0.18	65.58	68.03
160	26/3.00	7/2.34	19	742.3	0.1805	88.52	96.61
200	18/4.04	1/4.04	20.2	732.8	0.144	81.97	85.04
200	26/3.36	7/2.61	21.3	927.9	0.1444	110.64	120.77
250	22/4.08	7/2.27	23.1	1013.5	0.1154	117.09	124.72
250	26/3.75	7/2.92	23.8	1159.6	0.1155	138.31	150.96
315	45/3.2	7/2.14	25.8	1196.5	0.0917	136.28	143.3
315	26/4.21	7/3.28	26.7	1461.4	0.0917	171.9	188.44
400	45/3.61	7/2.41	28.9	1519.4	0.0722	172.1	180.36
400	54/3.29	7/3.29	29.7	1738.3	0.0723	201.46	218.17

450	45/3.83	7/2.55	30.6	1709.3	0.0642	193.61	203.28
450	54/3.49	7/3.49	31.5	1955.6	0.0643	226.64	245.44
500	45/4.04	7/2.69	32.3	1899.3	0.0578	215.12	225.86
500	54/3.68	7/3.68	33.2	2172.9	0.0578	251.82	269.73
560	45/4.27	7/2.85	34.2	2127.2	0.0516	240.93	252.97
560	54/3.9	19/2.34	35.1	2420.9	0.0516	283.21	305.25
630	72/3.58	7/2.39	35.8	2248	0.0459	249.62	258.08
630	54/4.13	19/2.48	37.2	2723.5	0.0459	318.61	343.4
710	72/3.8	7/2.53	38	2533.4	0.0407	281.32	290.85
710	54/4.39	19/2.63	39.5	3069.4	0.0407	359.06	387.01
800	72/4.04	7/2.69	40.4	2854.6	0.0361	316.98	327.72
800	84/3.74	7/3.74	41.1	3145.1	0.0362	356.03	374.44
900	72/4.28	7/2.85	42.8	3211.4	0.0321	356.6	368.69
900	84/3.96	7/3.96	43.6	3538.3	0.0322	400.53	421.25
1000	84/4.18	19/2.61	45.9	3916.8	0.0289	446.37	471.67
1120	84/4.42	19/2.65	48.6	4386.8	0.0258	499.93	528.27

AACSR ASTM B711

Nominal Cross Section	Alloy Section	Cross Steel Section	Cross	Number of Alloy Wires	Diameter of Alloy Wires	Number of Steel Wires	Diameter of Steel Wires	Overall Diameter	Linear Mass	Rated Tensile Strength	Max.D.C. Resistance at 20°C
mm ²	mm ²	mm ²			mm		mm	mm	kg/km	daN	Ω/km
163	140	23		26	2.62	7	2.04	16.6	560	7500	0.24
173	140	33		30	2.44	7	2.44	17.1	650	8740	0.24
186	160	26		26	2.8	7	2.18	17.7	645	8560	0.21
198	160	38		30	2.61	7	2.61	18.3	740	10600	0.21
209	180	29		26	2.97	7	2.31	18.8	725	9510	0.187
222	180	42		30	2.76	7	2.76	19.3	825	11200	0.187
232	200	32		26	3.13	7	2.43	19.8	800	10600	0.168
247	200	47		30	2.91	7	2.91	20.4	920	12400	0.168
260	224	36		26	3.31	7	2.57	21	900	11800	0.15
276	224	52		30	3.08	7	3.08	21.6	1025	13900	0.15
291	250	41		26	3.5	7	2.72	22.2	1010	12900	0.135
308	250	58		30	3.26	7	3.26	22.8	1145	15600	0.135
326	280	46		26	3.7	7	2.88	23.4	1140	14400	0.12
345	280	65		30	3.45	7	3.45	24.2	1280	17100	0.12
367	315	52		26	3.93	7	3.06	24.9	1276	16300	0.107
387	315	72		30	3.66	19	2.2	25.6	1433	19000	0.107
413	355	58		26	4.17	7	3.24	26.4	1433	18300	0.095
436	355	81		30	3.88	19	2.33	27.2	1614	21100	0.095
465	400	65		26	4.43	7	3.45	28.1	1612	20700	0.0842
491	400	91		30	4.12	19	2.47	28.8	1816	23700	0.0842
509	450	59		54	3.26	19	1.98	29.5	1703	21500	0.0748
563	500	63		54	3.43	19	2.06	30.9	1873	22900	0.0673
631	560	71		54	3.63	19	2.18	32.7	2101	25700	0.0601

710	630	80	54	3.85	19	2.31	34.6	2365	28600	0.0534
800	710	90	54	4.09	19	2.45	36.8	2665	32200	0.0474
901	800	101	54	4.34	19	2.6	39	3000	36300	0.042
973	900	73	84	3.69	19	2.21	40.6	3062	35500	0.0374
1081	1000	81	84	3.89	19	2.33	42.8	3395	39100	0.0337
1211	1120	91	84	4.12	19	2.47	45.3	3803	43900	0.03
1352	1250	102	84	4.35	19	2.61	47.8	4250	49000	0.027

AACSR DIN 48206

Designation	Aluminium		Steel		Cross-sectional Area (mm ²)			OD (mm)	R at 20C (Ohms/km)
	Strands	Wire Diam. (mm)	Strands	Wire Diam. (mm)	Aluminium	Steel	Total		
70/12	26	1.85	7	1.4	69.9	11.4	81.3	11.7	0.479
95/15	26	2.15	7	1.7	94.4	15.3	109.7	13.6	0.355
125/30	30	2.33	7	2.3	127.9	29.8	157.8	16.3	0.262
150/25	26	2.7	7	2.1	148.9	24.2	173.1	17.1	0.225
170/40	30	2.7	7	2.7	171.8	40.1	211.8	18.9	0.195
185/30	26	3	7	2.3	183.8	29.8	213.6	19	0.182
210/50	30	3	7	3	212.1	49.5	261.5	21	0.158
230/30	24	3.5	7	2.3	230.9	29.8	260.8	21	0.145
265/35	24	3.74	7	2.5	263.7	34.1	297.7	22.4	0.127
305/40	54	2.68	7	2.7	304.6	39.5	344.1	24.1	0.11
380/50	54	3	7	3	381.7	49.5	431.2	27	0.088
450/40	48	3.45	7	2.7	448.7	39.5	488.2	28.7	0.075
560/50	48	3.86	7	3	561.7	49.5	611.2	32.2	0.06
680/85	54	4	19	2.4	678.6	86	764.5	36	0.049

AACSR NF C34-125

Designation	Aluminium		Steel		Cross-sectional Area (mm ²)	
	Strands	Wire Diam. (mm)	Strands	Wire Diam. (mm)	Aluminium	Steel
PHLOX 116.2	18	2	19	2	56.5	59.4
PHLOX 147.1	18	2.25	19	2.3	71.6	75.4
PASTEL 147.1	30	2.25	7	2.3	119.3	27.7
PHLOX 181.6	18	2.5	19	2.5	88.4	93.0
PASTEL 181.6	30	2.5	7	2.5	147.3	34.7
PHLOX 228	18	2.8	19	2.8	110.8	111.0
PASTEL 228	30	2.8	7	2.8	184.7	43.0
PHLOX 288	18	3.15	19	3.2	140.3	140.3
PASTEL 288	30	3.15	7	3.2	233.8	54.0
PASTEL 299	42	2.5	19	2.5	206.2	93.0
PHLOX 376	24	2.8	37	2.8	147.8	220.0