

## Application

### ACS Aluminium Clad Steel Wire Application

The aluminum clad steel wire used as the core of ACSR/AW, overhead ground conductor, extra high voltage overhead conductor, optical fiber composite overhead ground line, self-damping conductor line, bare overhead conductor, OPGW, ground wire, messenger wire, guy wire formed wire for protecting, terminating and splicing transmission and distribution lines, fence, barber wire and hardware, etc

### ACS Aluminium Clad Steel Wire Standards

Wires ACS manufactured by Uni fulfills the requirements of the main relative international standards, as known: IEC-1232, EN-61.232 and ASTM-B-415.

STANDARD	TITLE
ASTM B416	Standard specification for concentric-lay-stranded Aluminum clad Steel conductors

### EARTH WIRES – ACS 20SA

NO AND SIZE OF WIRES	AREA	DIAMETER	STRANDING	BREAKING LOAD		MAX. RESISTANCE AT 20°C	WEIGHT
	mm <sup>2</sup>	mm	Nº	Ø	daN	Ohm/km	Kg/Km
3 No. 5AWG	50.29	9.96	3	4.62	5447	1.6997	334.1
3 No. 6AWG	39.80	8.86	3	4.11	4575	2.1476	264.4
3 No. 7AWG	31.74	7.91	3	3.67	3859	2.6935	210.8
3 No. 8AWG	25.04	7.03	3	3.26	3188	3.4136	166.3
3 No. 9AWG	19.95	6.27	3	2.91	2540	4.2841	132.5
3 No. 10AWG	15.81	5.58	3	2.59	2012	5.4081	105.0
7 No. 5AWG	117.35	13.86	7	4.62	12040	0.7299	781.1
7 No. 6AWG	92.87	12.33	7	4.11	10113	0.9222	618.1
7 No. 7AWG	74.05	11.01	7	3.67	8530	1.1566	492.9
7 No. 8AWG	58.43	9.78	7	3.26	7046	1.4659	388.9
7 No. 9AWG	46.56	8.73	7	2.91	5615	1.8397	309.9
7 No. 10AWG	36.88	7.77	7	2.59	4448	2.3224	245.5
7 No. 11AWG	29.08	6.9	7	2.3	3507	2.9449	193.6
7 No. 12AWG	23.10	6.15	7	2.05	2786	3.7070	153.8
19 No. 5AWG	318.51	23.1	19	4.62	32680	0.2700	2128
19 No. 6AWG	252.07	20.55	19	4.11	27451	0.3411	1684
19 No. 7AWG	200.99	18.35	19	3.67	23154	0.4278	1343
19 No. 8AWG	158.59	16.3	19	3.26	19126	0.5422	1060
19 No. 9AWG	126.37	14.55	19	2.91	15240	0.6805	844
19 No. 10AWG	100.10	12.95	19	2.59	12072	0.8590	669

### Aluminum Clad Steel Wire/Alumoweld DIN 48201

Code Number	Area	No. of wires	Diameters(mm)		Weight	Rated Strength	DC Resistance
			wire	conductor			
mm <sup>2</sup>	mm <sup>2</sup>				kg/km	kN	ohm/km
25	24.25	7	2.1	6.3	162	31.56	3.546
35	34.36	7	2.5	7.5	229	44.72	2.499
50	49.48	7	3	9	330	64.4	1.736
70	65.81	19	2.1	10.5	441	85.65	1.313
95	93.27	19	2.5	12.5	626	121.39	0.925
120	116.99	19	2.8	14	785	152.26	0.737
150	147.11	37	2.25	15.7	990	191.46	0.587
185	181.62	37	2.5	17.5	1221	236.38	0.476

240	242.54	61	2.25	20.2	1635	299.05	0.357
300	299.43	61	2.5	22.5	2017	369.2	0.289

### EXISTING NORMATIVE RELATED WITH THE PRODUCT

STANDARD	TITLE
ASTM B502B502M	Aluminium-clad steel core wire for use in overhead electrical aluminium conductors
ASTM B415	Hard-drawn aluminium clad steel wire

### ASTM B502

CLASS	DIAMETER (MM)	TENSILE STRENGTH (MPA)MIN	STRESS AT 1% EXTENSION (MPA)MIN
AW2	1.95 to 3.27	1'344	1,206
	3.27 to 3.48	1'310	1'172
	3.48 to 3.66	1'275	1'137
	3.66 to 3.93	1'241	1'103
	3.93 to 4.12	1'206	1'103
	4.12 to 4.39	1'172	1'068
	4.39 to 4.62	1'137	1'034
	4.62 to 4.77	1'103	1'000
	AW3	1.95 to 2.28	1'450
2.28 to 3.04		1'410	1'280
3.04 to 3.55		1'380	1'240
3.55 to 4.77		1'340	1'170

### ASTM B415

DIAMETER	AWG	20%	27%	30%	40%
5.19	4	1'070	862	703	552
4.78		1'100	889	731	579
4.62	5	1'140	917	758	607
4.39		1'170	945	786	634
4.11	6	1'210	972	814	662
3.93		1'240	1,000	841	676
3.67	7	1'280	1,034	869	676
3.48		1'310	1,062	883	686
3.26	8	1'340	1'076	883	686
2.91	9	1'340	1'076	883	686
2.59	10	1'340	1'076	883	686
2.30	11	1'340	1'076	883	686
2.05	12	1'340	1'076	883	686

STANDARD	TITLE
IEC-61232	Aluminium-clad steel wires for electrical purposes
EN-61232	
EN-50540	Conductors for overhead lines – Aluminium conductors steel supported (ACSS)

### CHARACTERISTICS OF ALUMINIUM CLAD STEEL WIRE – EN/IEC

CLASS	DIAMETER (MM)	TENSILE STRENGTH (MPA)MIN.	STRESS AT 1% EXTENSION (MPA)MIN.
14 UHSA	1.75 to 2.25	1965	1580
	2.26 to 3.00	1900	1550
	3.01 to 3.50	1860	1515

CLASS	DIAMETER (MM)	TENSILE STRENGTH (MPA)MIN.	STRESS AT 1% EXTENSION (MPA)MIN.
	3.51 to 4.75	1825	1480
14 EHAS	1.75 to 2.25	1825	1550
	2.26 to 3.00	1790	1500
	3.01 to 3.50	1760	1470
	3.51 to 4.75	1725	1430
20 EHAS	1.75 to 2.28	1620	1390
	2.29 to 3.04	1580	1360
	3.05 to 3.55	1545	1330
	3.56 to 4.82	1515	1300
A-20 SA	1.24 to 3.25	1340	1200
	3.25 to 3.45	1310	1180
	3.45 to 3.65	1270	1140
	3.65 to 3.95	1250	1100
	3.95 to 4.10	1210	1100
	4.10 to 4.40	1180	1070
	4.40 to 4.60	1140	1030
	4.60 to 4.75	1100	1000
	4.75 to 5.50	1070	1000
B- 20SA	1.24 to 5.50	1320	1100
27SA	2.50 to 5.00	1080	800
30SA	2.50 to 5.00	880	650
40SA	2.50 to 5.00	680	500