

Application

The TACSR (thermal resistant aluminum-alloy conductor steel reinforced) could withstand high tensile load to be used mainly for overhead transmission lines, overhead distribution wires.

TACSR (/AW) is used for overhead electric power transmission lines. Big city, seaside district, moisture area etc.

TACSR Conductors are very similar in construction to a conventional ACSR conductor but the EC Grade Aluminum wires are replaced with Hard Drawn Aluminum wires of Heat Resistant Aluminum Alloy (generally known as TAL). TACSR can be safely operated continuously above 150°C enabling to pump more current through the conductor. Where there is a need to transmit higher power but restrictions on getting new power corridors approved, various Types of TAL conductors are one of the best creative solution options to utilities. Ability of the Zirconium doped aluminum alloy to maintain its electrical and mechanical properties at elevated temperatures makes these conductors a very cost effective solution in refurbishing the existing lines with enhanced capacity.

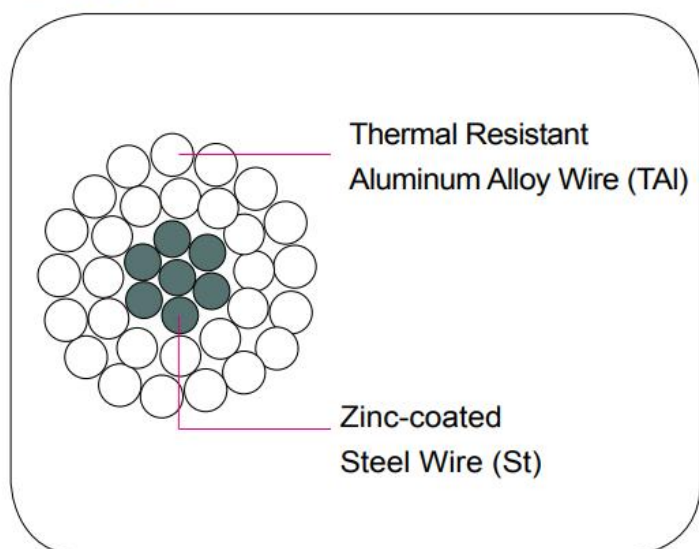
Construction

Core(St, AW): Zinc-coated Steel Wire / Aluminum-clad Steel Wire(AW) : 14% ~ 40% AW

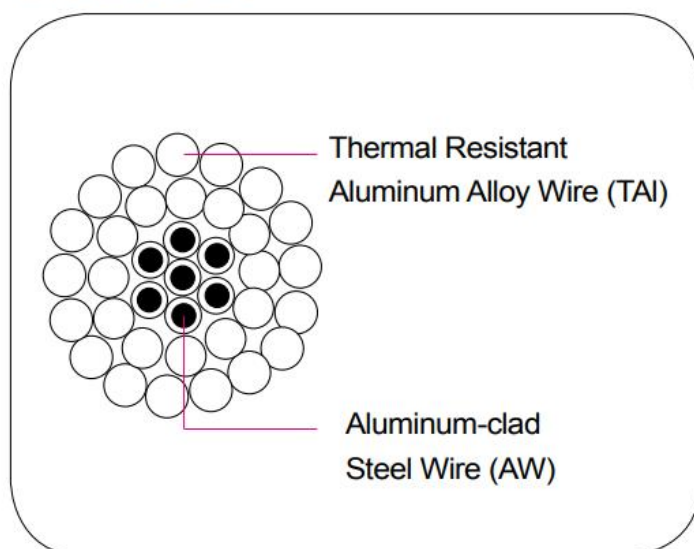
Conductor(TAI) : Thermal Resistant Aluminum HIGH TEMPERATURE CONDUCTOR Alloy Wire used for continuously allowable temperature up to 150°C.

The center wire or wires are of galvanized steel and the outer layer or layers of thermal-resistant aluminum-alloy. TACSR conductors are very similar in construction to a conventional ACSR conductor, but the EC Grade aluminum wires are replaced with hard drawn aluminum wires of heat resistant aluminum alloy (generally known as TAL).

TACSR



TACSR/AW



Characteristics

AW Type has excellent rustless characteristics.

Thermal-resistant Aluminum Alloy Conductors Steel Reinforced used in the 35KV 110KV 220KV 330KV 500KV 750KV 1000KV substation project, the wire alloying, improve high-temperature performance products, wire section, increase the carrying capacity, high temperature resistance, high conductivity, low loss, reduce power loss, improve the safety of equipment operation. Installation and maintenance are the same as ordinary Aluminum Conductors Steel Reinforced installation procedures, without any special tools, installation, convenient maintenance and low cost.

Construction Parameters

TACSR LS Cable & System Standard (60% IACS)

Conduct or Size (mm ²)	Stranding (Nos./mm)		Min. Brea king Load (kgf)	Reference												
				Cross-sectional Area (mm ²)			Overall Diameter (mm)		Weight (kg/km)			DC Resist ance at 20°C (Ω/km)	Modulus of Elas ticity (kgf/mm ²)	Coeffi cient of Linear Expan sion (10-6/°C)	Standard Length (m)	Curre nt Carry ing Capa city (A)
	TAI	ST		TA 1	ST	Tota 1	T AI	S T	TAI	ST	Tot al					
58	6/3.5	1/3.5	1,980	57.73	9.621	67.35	10.5	3.5	158.1	75.04	233.1	0.505	8,400	18.9	1,000	343
80	6/4.2	1/4.2	2,770	83.10	13.85	96.95	12.6	4.2	227.5	108.0	335.5	0.350	8,400	18.9	1,000	430
95	6/4.5	1/4.5	3,810	95.40	15.90	111.3	13.5	4.5	261.2	124.0	385.2	0.306	8,400	18.9	1,000	478
80	15/2.6	4/2.6	4,720	79.64	21.24	100.9	13.0	7.8	219.2	166.5	385.7	0.368	9,390	17.6	2,000	448
100	15/2.9	4/2.9	5,580	99.08	26.42	125.5	14.5	8.7	272.8	207.1	479.9	0.296	9,390	17.6	2,000	517
120	15/3.2	4/3.2	5,550	120.6	32.17	152.8	16.0	9.6	332.2	252.2	584.4	0.243	9,390	17.6	2,000	590
120	30/2.3	7/2.3	5,540	124.7	29.09	153.8	16.1	6.9	345.7	228.0	573.7	0.237	9,080	18.0	2,000	598
160	30/2.6	7/2.6	6,980	159.3	37.16	196.5	18.2	7.8	441.5	291.3	732.8	0.185	9,080	18.0	2,000	706
200	30/2.9	7/2.9	8,640	198.2	46.24	244.4	20.3	8.7	549.3	362.4	911.7	0.149	9,080	18.0	2,000	816
240	30/3.2	7/3.2	10,210	241.3	56.29	297.6	22.4	9.6	668.9	441.3	1,110	0.122	9,080	18.0	2,000	932
330	26/4.0	7/3.1	10,950	326.8	52.84	379.6	25.3	9.3	905.4	414.2	1,320	0.0904	8,360	19.0	2,000	1,128
410	26/4.5	7/3.5	13,910	413.4	67.35	480.8	28.5	10.5	1,145	527.9	1,673	0.0714	8,360	19.0	2,000	1,322
480	45/3.7	7/2.47	11,260	483.8	33.54	517.34	29.6	7.41	1336.1	262.9	1,599	0.0610	7,250	20.8	2,000	1,425
520	54/3.5	7/3.5	15,600	519.5	67.35	586.9	31.5	10.5	1,441	527.9	1,969	0.0569	7,990	19.5	1,600	1,504
610	54/3.8	7/3.8	18,350	612.4	79.38	691.8	34.2	11.4	1,698	622.2	2,320	0.0481	7,990	19.5	1,600	1,682
680	54/4.0	7/4.0	19,810	678.8	87.99	766.8	36.0	12.0	1,882	689.8	2,572	0.0436	7,990	19.5	1,600	1,797
680	45/4.4	7/2.9	15,580	684.5	46.24	730.7	35.1	8.7	1,898	362.4	2,260	0.0431	7,250	20.8	1,600	1,787

Conduct or Size (mm2)	Stranding (Nos./mm)		Min. Brea king Load (kgf)	Reference												
				Cross-sectional Area (mm2)			Overall Diameter (mm)		Weight (kg/km)			DC Resist ance at 20°C (Ω/km)	Modulus of Elas ticity (kgf/mm 2)	Coeffi cient of Linear Expan sion (10-6/ °C)	Standard Length (m)	Curre nt Carry ing Capa city (A)
	TAI	ST			TAI	ST	Tota l	TAI	ST	Tot al						
810	45/ 4.8	7/3. 2	18,48 0	81 4.5	56. 29	870. 8	38 .4	9. 6	2,25 9	44 1.3	2,7 00	0.0363	7,250	20.8	1,600	2,004
1,160	84/ 4.2	7/4. 2	27,83 0	1.1 63	96. 95	1,26 0	46 .2	12 .6	3,23 6	75 9.8	3,9 96	0.0254	7,430	20.5	1,200	2,573
1,520	84/ 4.8	7/4. 8	36,39 0	1.5 20	12 6.7	1,64 7	52 .8	14 .4	4,22 8	99 3.3	5,2 22	0.0195	7,430	20.5	1,200	3,035

TACSR/AW (20.3% Conductivity AW)

Conductor Size (mm ²)	Stranding (Nos./mm)		Min. Breaking Load (kgf)	Reference									
				Cross-sectional Area (mm ²)		Overall Diameter (mm)		Weight (kg /km)	DC Resistance at 20°C (Ω/km)	Modulus of Elasticity (kgf/mm ²)	Coefficient of Linear Expansion (10-6/°C)	Standard Length (m)	Current Carrying Capacity (A)
	TAI	AW		TAI	AW	TAI	AW						
120	30/2.3	7/2.3	5,540	124.7	29.08	16.1	6.9	536.5	0.219	8,100	19.2	2,000	624
160	30/2.6	7/2.6	6,980	159.3	37.16	18.2	7.8	685.4	0.171	8,100	19.2	2,000	734
200	30/2.9	7/2.9	8,640	198.2	46.24	20.3	8.7	852.8	0.138	8,100	19.2	2,000	847
210	30/3.2	7/3.2	10,160	241.3	56.29	22.4	9.6	1,038	0.113	8,100	19.2	2,000	968
330	26/4.0	7/3.1	11,200	326.8	52.84	25.3	9.3	1,252	0.0856	7,620	20.0	2,000	1,159
410	26/4.5	7/3.5	14,230	413.4	67.35	28.5	10.5	1,587	0.0676	7,630	20.0	2,000	1,358
480	45/3.7	7/2.47	11,260	483.84	33.54	29.6	7.4	1,561	0.0595	6,910	21.5	2,000	1,437
520	54/3.5	7/3.5	15,920	519.5	67.35	31.5	10.5	1,883	0.0544	7,390	20.4	1,600	1,537
610	54/3.8	7/3.8	18,730	612.4	79.38	34.2	11.4	2,219	0.0461	7,330	20.4	1,600	1,717
680	45/4.4	7/2.9	15,580	684.5	46.24	35.1	8.7	2,201	0.0422	6,900	21.5	1,600	1,805

Conductor Size (mm ²)	Stranding (Nos./mm)		Min. Breaking Load (kgf)	Reference									
				Cross-sectional Area (mm ²)		Overall Diameter (mm)		Weight (kg/km)	DC Resistance at 20°C (Ω/km)	Modulus of Elasticity (kgf/mm ²)	Coefficient of Linear Expansion (10 ⁻⁶ /°C)	Standard Length (m)	Current Carrying Capacity (A)
	TAl	AW		TAl	AW	TAl	AW						
810	45/4.8	7/3.2	18,730	814.5	56.29	38.4	9.6	2,628	0.0354	6,910	21.5	1,600	2,028
950	84/3.8	7/3.8	23,780	952.6	79.38	41.8	11.4	3,170	0.0302	7,030	21.2	1,200	2,292
1,160	84/4.2	7/4.2	28,720	1,163	96.95	46.2	12.6	3,872	0.0247	7,030	21.2	1,200	2,606
1,520	84/4.8	7/4.8	37,520	1,520	126.7	52.8	14.4	5,060	0.0189	7,030	21.2	1,200	3,075

TACSR/AW (23% Conductivity AW)

Conductor Size (mm ²)	Stranding (Nos./mm)		Min. Breaking Load (kgf)	Reference									
				Cross-Sectional Area (mm ²)		Overall Diameter (mm)		Weight (kg/km)	DC Resistance at 20°C (Ω/km)	Modulus of Elasticity (kgf/mm ²)	Coefficient of Linear Expansion (10 ⁻⁶ /°C)	Standard Length (m)	Current Carrying Capacity (A)
	TAL	AW		TAL	AW	TAL	AW						
120	30/2.3	7/2.3	5,410	124.7	29.08	16.1	6.9	528.9	0.217	7,980	19.4	2,000	625
160	30/2.6	7/2.6	6,810	159.3	37.16	18.2	7.8	675.7	0.170	7,980	19.4	2,000	736
200	30/2.9	7/2.9	8,440	198.2	46.24	20.3	8.7	840.7	0.136	7,980	19.4	2,000	854
210	30/3.2	7/3.2	10,210	241.3	56.29	22.4	9.6	1,024	0.112	7,980	19.4	2,000	973
330	26/4.0	7/3.1	10,950	326.8	52.84	25.3	9.3	1,238	0.085	7,540	20.2	2,000	1,163
410	26/4.5	7/3.5	13,910	413.4	67.35	28.5	10.5	1,570	0.0671	7,550	20.2	2,000	1,363
480	45/3.7	7/2.47	11,110	483.84	33.54	29.6	7.4	1,550	0.0592	6,880	20.6	2,000	1,441
520	54/3.5	7/3.5	15,600	519.5	67.35	31.5	10.5	1,865	0.0541	7,330	20.6	1,600	1,541
610	54/3.8	7/3.8	18,350	612.4	79.38	34.2	11.4	2,198	0.0458	7,320	20.6	1,600	1,722

Conductor Size (mm ²)	Stranding (Nos./mm)		Min. Breaking Load (kgf)	Reference									
				Cross-Sectional Area (mm ²)		Overall Diameter (mm)		Weight (kg/km)	DC Resistance at 20 °C (Ω/km)	Modulus of Elasticity (kgf/mm ²)	Coefficient of Linear Expansion (10 ⁻⁶ /°C)	Standard Length (m)	Current Carrying Capacity (A)
	TAL	AW		TAL	AW	TAL	AW						
680	45/4.4	7/2.9	15,600	684.5	46.24	35.1	8.7	2,189	0.0420	6,860	21.6	1,600	1,809
810	45/4.8	7/3.2	18,480	814.5	56.29	38.4	9.6	2,613	0.0353	6,880	21.6	1,600	2,031
950	84/3.8	7/3.8	23,100	952.6	79.38	41.8	11.4	3,149	0.0300	6,980	21.3	1,200	2,299
1,160	84/4.2	7/4.2	28,270	1,163	96.95	46.2	12.6	3,847	0.0246	6,980	21.3	1,200	2,611
1,520	84/4.8	7/4.8	36,960	1,520	126.7	52.8	14.4	5,027	0.0189	6,980	21.3	1,200	3,075