

*Total Solution* to Power Cable



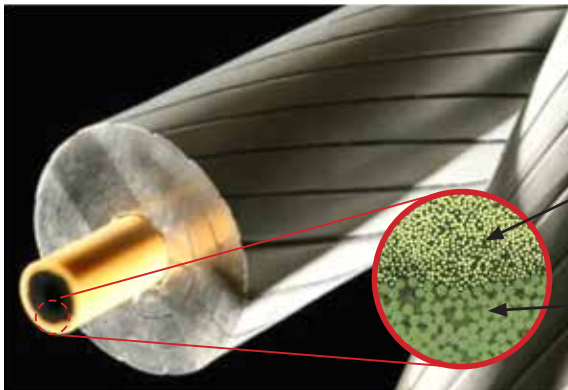
# ACCC CONDUCTOR

The World's Most Efficient High Capacity  
Transmission Conductor



- Twice the Capacity of ACSR
- 30~40% Reduction in Line Losses
- Proven Reliability Worldwide

# ACCC Conductor



**Full Annealed Trapezoidal Aluminum wire**

- High Density (93%)
- High Conductivity (63% IACS)

➔ **High Capacity**  
(Double ampacity compared to ACSR)

**Composite Core**

- Ultra Light (appr. 70% compared to ACSR)
- High Strength
- Low coefficient of Liner Expansion

➔ **Low Sag** ➔ **Long Span over 1,000m Compact Tower**

↳ To Prevent Galvanic Corrosion between Al wire and Carbon fiber

## [ Aluminum Conductor Composite Core / Trapezoidal Wire ]

### Structure

**The Core** consists of a hybrid carbon and glass fiber composite core which utilizes a high-temperature epoxy resin matrix to bind hundreds of thousands of individual fibers into a unified load-bearing tensile member. The central carbon fiber core is surrounded by high-grade boron-free glass fibers to improve flexibility and toughness while preventing galvanic corrosion between the carbon fibers and the aluminum strands.

**Trapezoidal Aluminum** fully annealed aluminum and trapezoidal in shape to provide the greatest conductivity and lowest possible electrical resistance for any given conductor diameter.

### Operation

The operating temperature is up to 180°C (200°C short-term emergency) and operates significantly cooler than round wire conductors of similar diameter and weight under equal load conditions due to its increased aluminum content and higher conductivity aluminum.

### Reference

350 projects utilized over 32,000 km of ACCC in 30 countries.

### Advantage & Application



#### Double the capacity of ACSR

- Application : reconducting line
- Line length : 8.6km
- Voltage : 400kV
- Conductor type : ACCC Oslo
- Energized : 2009



#### Long span with Low sag & High strength

- Application : Crossing river
- Line length : 1,369m Single Span
- Voltage : 132kV
- Conductor type : ACCC ULS Monte Carlo
- Energized : 2013



#### Anti Corrosion

- Application : Corrosive Marine Environment
- Line length : 32km
- Voltage : 230kV
- Conductor type : ACCC Hawk
- Energized : 2009

# ACCC Conductor

## ASTM Sizes

ACCC	Mechanical Specifications									Electrical Specifications			
	Aluminum			Diameter		Weight		Conductor Rated Strength <sup>1)</sup>	Nominal Resistance		AC Current Rating <sup>2)</sup>		
	Nominal Cross-Sectional Area	Layers	Number of Wires	Conductor	Core	Total	Aluminum		DC @ 20°C	AC @ 180°C	100°C	180°C	
ASTM Size	mm <sup>2</sup>	kcmil	-	#	mm	mm	kg/km	kg/km	kN	ohm/km	ohm/km	A	A
PASADENA	154.4	305	2	16	15.65	5.97	478	424.5	68.9	0.1793	0.2968	528	778
LINNET	218.1	430	2	16	18.29	5.97	655	601.3	72.5	0.1277	0.2104	654	968
ORIOLE	222.3	439	2	16	18.82	7.11	689	613	98.3	0.1255	0.2065	665	986
WASO	230.1	454	2	16	19.56	7.75	721	634.7	114.8	0.1212	0.2009	683	1,012
LAREDO	268.5	530	2	16	20.5	7.11	816	740.1	101	0.1038	0.1721	747	1,109
IRVING	308.8	609	2	20	22.4	8.76	965	851.8	147.7	0.0903	0.1499	820	1,222
HAWK	309.8	611	2	16	21.79	7.11	930	853.8	103.2	0.09	0.1452	823	1,231
DOVE	361.6	714	2	20	23.55	7.75	1,083	996.5	122.3	0.0771	0.1273	902	1,346
GROSBEAK	416.2	821	2	20	25.15	8.13	1,245	1,147.00	135.2	0.0672	0.1116	981	1,468
LUBBOCK	458	904	2	20	26.42	8.76	1,375	1,262.20	156.1	0.0608	0.1012	1,045	1,566
GALVESTON	512.5	1,011	3	36	27.69	8.76	1,525	1,412.20	158.8	0.0544	0.0905	1,119	1,681
DRAKE	519.7	1,026	2	22	28.14	9.53	1,565	1,432.60	183.3	0.0536	0.0888	1,134	1,706
CURLEW	523.4	1,033	2	22	28.96	10.54	1,610	1,446.20	218	0.0536	0.0887	1,142	1,722
PLANO	536.9	1,059	3	36	28.63	8.76	1,597	1,484.00	160.1	0.0522	0.087	1,150	1,733
CORPUS CHRISTI	558.9	1,103	3	36	29.11	8.76	1,656	1,543.30	161.5	0.0501	0.0836	1,179	1,777
ARLINGTON	583.2	1,151	3	36	29.9	9.53	1,745	1,612.60	186.4	0.048	0.0801	1,213	1,830
CARDINAL	619.1	1,222	3	36	30.43	8.76	1,823	1,710.20	165	0.0452	0.075	1,258	1,902
FORT WORTH	658.9	1,300	3	36	31.5	9.53	1,952	1,819.60	190.8	0.0425	0.0712	1,305	1,975
EL PASO	684	1,350	3	36	31.8	8.76	2,001	1,888.20	168.6	0.0409	0.0674	1,332	2,018
BEAUMONT	723.9	1,429	3	36	32.87	9.53	2,136	2,003.60	194.4	0.0387	0.065	1,381	2,096
SAN ANTONIO	747.4	1,475	3	36	33.4	9.78	2,212	2,068.60	204.2	0.0375	0.0609	1,432	2,176
BITTERN	801.4	1,582	3	36	34.16	8.76	2,331	2,217.40	175.3	0.0352	0.0589	1,465	2,229
DALLAS	909.5	1,795	3	36	36.88	9.78	2,670	2,527.20	213.1	0.0309	0.052	1,585	2,430
HOUSTON	976.7	1,927	3	46	38.25	10.54	2,878	2,714.10	243.3	0.0285	0.0483	1,660	2,554
LAPWING	987.6	1,949	4	54	38.2	9.78	2,887	2,743.70	217.5	0.0285	0.0485	1,660	2,547
FALCON	1,036.30	2,045	4	56	39.24	10.54	3,043	2,879.60	246.4	0.0271	0.0739	1,719	2,639
CHUKAR	1,135.80	2,242	4	56	40.74	10.03	3,303	3,155.30	234.4	0.0247	0.0423	1,808	2,785
BLUEBIRD	1,388.70	2,741	4	68	44.75	10.54	4,022	3,858.00	266.4	0.0203	0.0356	2,010	3,130

1) Strength at ambient temperature

2) Conditions: 0.61m/s wind, 0m Elevation, 0.5 emission., 0.5 absorption., 40° Ambient temperature, 1033W/sq.m sun radiation

3) Maximum continuous operating temperature of ACCC is 180° and a maximum emergency temperature of 200°

# ACCC conductor

## International Sizes

ACCC	Mechanical Specifications									Electrical Specifications			
	Aluminum			Diameter		Weight		Conductor Rated Strength <sup>1)</sup>	Nominal Resistance		AC Current Rating <sup>2)</sup>		
	Nominal Cross-Sectional Area	Layers	Number of Wires	Conductor	Core	Total	Aluminum		DC @ 20°C	AC @ 180°C	100°C	180°C	
International Size	mm <sup>2</sup>	kcmil	-	#	mm	mm	kg/km	kg/km	kN	ohm/km	ohm/km	A	A
HELSINKI	150.6	297	2	16	15.65	5.97	471	417	68.9	0.1862	0.3064	519	765
COPENHAGEN	219.9	434	2	16	18.29	5.97	661	607	72.8	0.1272	0.2094	656	971
REYKJAVIK	223.1	440	2	16	18.82	7.11	694	618	98.3	0.1256	0.2067	665	986
MONTE CARLO	228.5	451	2	28	20.78	10.54	799	635	201.2	0.123	0.2024	691	1,027
GLASGOW	236.7	467	2	16	19.53	7.75	731	645	115	0.1184	0.1949	692	1,027
CASABLANCA	273.6	540	2	16	20.5	7.11	834	758	101.1	0.1024	0.1686	754	1,120
OSLO	313.8	619	2	20	22.4	8.76	980	867	147.8	0.0893	0.1469	828	1,234
LISBON	315.5	623	2	16	21.79	7.11	948	872	103.5	0.0887	0.1461	823	1,227
AMSTERDAM	367.4	725	2	20	23.55	7.75	1,102	1,016	122.4	0.0762	0.1256	907	1,355
BRUSSELS	421.4	832	2	20	25.15	8.13	1,265	1,167	135.7	0.0666	0.1099	987	1,479
STOCKHOLM2L	463.3	914	2	22	26.4	8.76	1,394	1,281	156.2	0.0605	0.0999	1,049	1,576
STOCKHOLM3L	453.7	895	3	36	26.4	8.76	1,368	1,255	155.7	0.0617	0.1019	1,039	1,560
WARSAW	507.5	1,002	3	36	27.72	8.76	1,520	1,407	158.7	0.0553	0.0914	1,112	1,673
DUBLIN	524.5	1,035	2	36	28.14	9.53	1,583	1,451	183.3	0.0534	0.0883	1,136	1,711
HAMBURG	546.4	1,078	3	36	28.62	8.76	1,627	1,514	160.9	0.0514	0.085	1,163	1,752
KOLKATA	543.5	1,073	3	34	28.62	9.53	1,643	1,511	184	0.0517	0.0855	1,160	1,748
MILAN	567.7	1,120	3	36	29.1	8.76	1,686	1,573	162.1	0.0494	0.0818	1,191	1,797
ROME	592.5	1,169	3	36	29.89	9.53	1,774	1,642	187.1	0.0474	0.0785	1,225	1,850
VIENNA	629.2	1,242	3	36	30.42	8.76	1,852	1,739	165.5	0.0445	0.0738	1,269	1,918
BUDAPEST	668.3	1,319	3	36	31.5	9.53	1,984	1,852	191.4	0.042	0.0697	1,318	1,996
PRAGUE	690.7	1,363	3	36	31.77	8.76	2,030	1,917	169	0.0407	0.0676	1,340	2,032
MUMBAI	685.4	1,353	3	38	31.77	9.53	2,035	1,903	192	0.041	0.0681	1,336	2,025
MUNICH	733.2	1,447	3	36	32.85	9.53	2,170	2,038	195	0.0384	0.0638	1,392	2,113
LONDON	759	1,498	3	36	33.4	9.78	2,248	2,105	204.8	0.037	0.0616	1,424	2,164
PARIS	813.7	1,606	3	36	34.16	8.76	2,365	2,252	175.9	0.0345	0.0576	1,480	2,254
BORDEAUX	880.9	1,738	3	36	35.76	10.54	2,766	2,602	237.9	0.0318	0.0531	1,560	2,381
ANTWERP	944.9	1,865	3	36	36.85	9.78	2,759	2,616	215.2	0.0297	0.0498	1,623	2,483
BERIN (MADRID-ICE)	1,006.50	1,986	3	46	38.2	10.54	2,949	2,785	245	0.0278	0.0467	1,692	2,594
MADRID	1,013.10	1,999	4	54	38.2	9.78	2,948	2,805	219.1	0.0276	0.0464	1,696	2,602
ATHENS	1,409.70	2,782	4	68	44.75	10.54	4,066	3,902	267.6	0.0199	0.0343	2,050	3,189

1) Strength at ambient temperature

2) Conditions: 0.61m/s wind, 0m Elevation, 0.5 emission., 0.5 absorption., 40° Ambient temperature, 1033W/sq.m sun radiation

3) Maximum continuous operating temperature of ACCC is 180° and a maximum emergency temperature of 200°

# ACCC Conductor

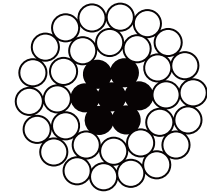
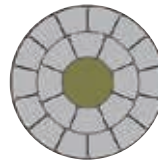
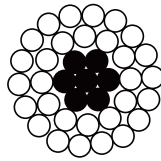
## Comparison of ACCC & ACSR

### A. Same Aluminum Area

\*20% less weight, \*\*2.2times more ampacity, \*\*\*32% less sag

### B. Same Diameter

\*\*2.5times more ampacity, \*\*\*28% less sag, \*\*\*\*30% higher strength



	ACSR Drake	ACCC Drake	ACSR Olive
Aluminum Area (mm <sup>2</sup> )	402.8	519.7	519.4
Diameter (mm)	28.1	28.1	31.5
Rated Strength (kN)	140.1	****183.3	159
Weight (kg per km)	1,627	<b>*1,565</b>	1,959
Operating Temperature (°C)	75	180	75
Ampacity at Operating Temp	677	<b>**1,725</b>	770
DC resistance at 20°C	0.0702	0.0536	0.0550
Sag(m) ◆	12.45	<b>***9.02</b>	13.26

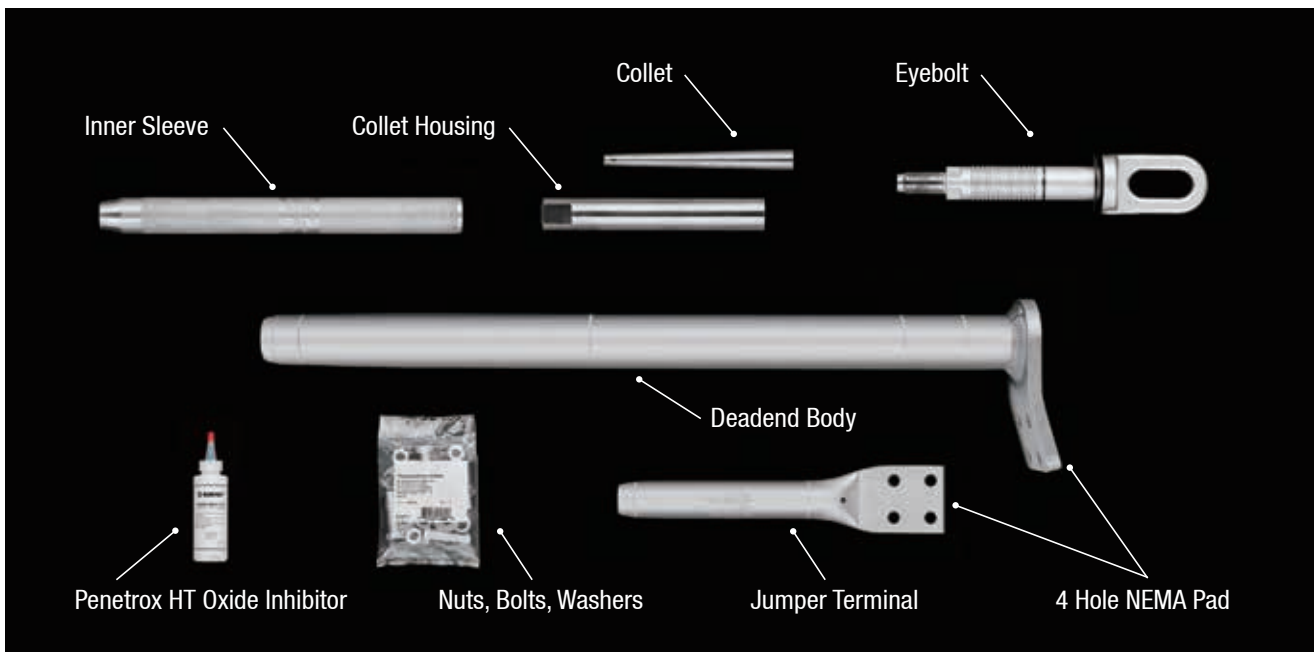
◆ Conditions : 0.6m/s wind, 0m elevation, 0.5 emission, 0.5 absorption, 40°C ambient temperature

※ ACCC conductor saves 20% more life cycle cost when compared to Invar conductor  
(Under the condition of 154kV single conductor, 3bundle 2circuit, Line length 100km, Life cycle 40years)

## Accessories for ACCC

The outer sleeves of the ACCC Conductor is the same type of the compression sleeves used in other types of conductor. But size of that is slightly larger than sleeves for other conductor types in order to accommodate higher operating temperatures.

The inner components of the ACCC conductor dead-ends and splices utilize a collet assembly that grips the composite core to effectively transfer mechanical load to the adjacent component.



< DEAD-END Clamp >

# Global Networks

○ Subsidiary Company / ● Branch Office



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Specifications are subject to improvement or change without notice. Please contact your local agent or TAIHAN to confirm the latest product information.

TAIHAN ELECTRIC is equipped with one of the world's largest cable manufacturing plants to suit global demand for Energy and Telecommunications.

We have the nation's leading environmentally-friendly plant that can manufacture a wide range of Power cables from Low Voltage to Extra High Voltage and also manufacture a variety of industrial products.

With more than 60 years of our core business in Power cables, TAIHAN ELECTRIC is a global leading solutions provider for the cable industry.