BICC® BRAND

TransPowr® TW Overhead Conductor Products

TransPowr®

BICC® Brand TransPowr® TW

>Trapezoidal/TW Overhead Conductors Maximizing Efficiency in Transmission Line Design

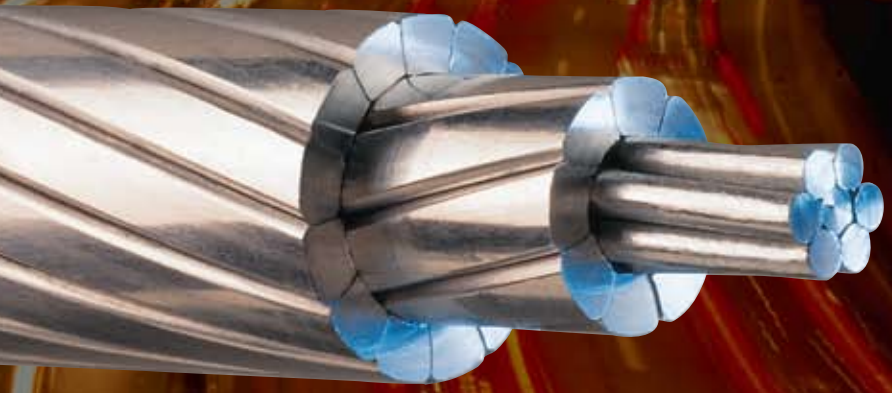
>BICC® Brand TransPowr® TW Conductors are available to complement the diverse line of bare overhead conductors that General Cable manufactures.

General Cable now offers:

>BICC® Brand TransPowr® AAC/TW

>BICC® Brand TransPowr® ACSR/TW

>BICC® Brand TransPowr® ACSS/TW



Equivalent Area / TW

TransPowr® TW conductors utilize aluminum strands that are shaped to provide a smooth outer surface and fit together to allow a smaller overall diameter of conductor. Compared to a conventional conductor with the same aluminum cross-sectional area, the TransPowr® TW product is approximately 10% smaller in diameter. The smaller diameter enables reduced ice loads and lower wind loading parameters. The individual wires are pre-shaped prior to stranding so they fit together to reduce the interstitial empty spaces.

Equivalent Diameter / TW

As an alternative, TransPowr® TW conductors are available with an "overall conductor diameter equivalence" to a conventional conductor. In this case, an equal diameter TransPowr® TW gains a 20-25% increase in aluminum area. This increased cross-sectional area significantly decreases the conductor resistance and increases the current-carrying capacity of the transmission line. Instead of manufacturing a smaller diameter conductor for the "equivalent" circular mil area, the design of the trapezoidal shapes can be enlarged to yield a greater cross-sectional area of aluminum and match the diameter of the original conventional round conductor.

TW Conductor Designs

TransPowr® TW conductors are manufactured to one of the following applicable ASTM standards: ASTM B778, B779, or B857. These published ASTM standards provide the construction basis for a large selection of trapezoidal conductor designs. Additional TransPowr® TW conductor designs are also available and are built to specific customer requirements. TransPowr® ACSR/TW and ACSS/TW conductors are available with aluminum-clad steel, regular, high-strength, extra-high-strength and ultra-high-strength galvanized or zinc-aluminum mischmetal alloy-coated steel core materials. TransPowr® AAAC/TW conductors are also available utilizing 6101-T83 alloy aluminum.

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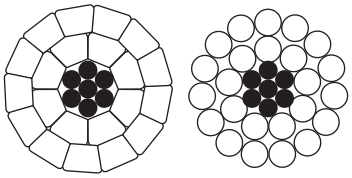
Design Option #1: Equivalent Area - Smaller Overall Diameter

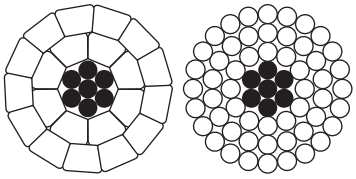


"Equivalent Area" TransPowr® TW Trapezoidal Conductor

Conventional Conductor

The conductor illustration on the far left is an example of an "equivalent area" TransPowr® TW trapezoidal conductor that has the same aluminum cross-sectional area as the conventional conductor on the right, but with a smaller overall diameter. The smaller diameter means lower ice and wind loading factors. This enables a reduction in the design strength requirements for the towers and poles, which for new line construction will save money in construction costs. The "equivalent area" TW conductor is approximately 10% smaller in OD.

Design Option #2: Equivalent Diameter - More kcmil Area of Aluminum



"Equivalent Diameter" TransPowr® TW Trapezoidal Conductor

Conventional Conductor

The conductor illustration on the far left is an example of an "equivalent diameter" TransPowr® TW trapezoidal conductor that has the same diameter as the conventional conductor on the right, but with a much larger aluminum cross-sectional area. You can increase the aluminum content by 20-25%, decrease the AC resistance by 15-20% and significantly increase the current-carrying capacity of the line. "Equivalent diameter" TW conductors can provide energy-saving advantages for consideration in reconductoring projects.

BICC® BRAND TransPowr® TW conductors are available to complement the diverse line of bare overhead conductors that General Cable manufactures. General Cable has developed the trapezoidal compact TW conductors to offer our customers additional options in transmission line design. General Cable offers AAC/TW, ACSR/TW, ACSS/TW and AAAC/TW conductor constructions.

Physical and Electrical Comparisons

Conductor Code Word	Area (kcmil)	Stranding	Steel Core	OD (in.)	Mass (lb/kft)	Rated [a] Strength (lbf)	Type [b]	Conductivity of Aluminum
CARDINAL ACSR	954	54/7	7 x 0.1329"	1.196"	1227	33,800	–	61.2% IACS
CARDINAL ACSS	954	54/7	7 x 0.1329"	1.196"	1227	26,000	–	63.0% IACS
CARDINAL ACSR/TW	954	21/7	7 x 0.1329"	1.08"	1224	33,500	13	61.2% IACS
CARDINAL ACSS/TW	954	21/7	7 x 0.1329"	1.08"	1224	26,000	13	63.0% IACS
HUDSON ACSS/TW	1158.4	25/7	7 x 0.1467" [c]	1.20"	1488	31,100	13	63.0% IACS

Conductor Code Word	Area (kcmil)	Resistance Values DC@20°C (Ω/kft)	AC@75°C (Ω/kft)	AC@200°C (Ω/kft)	GMR (ft)	Inductive Reactance (Ω/kft @1ft radius)	Capacitive Reactance (megΩ-kft @1ft radius)	Amp [d] Rating
CARDINAL ACSR	954	0.0179	0.0230	–	0.0401	0.0739	0.4697	990
CARDINAL ACSS	954	0.0174	0.0225	0.0326	0.0401	0.0739	0.4697	1800
CARDINAL ACSR/TW	954	0.0178	0.0221	–	0.0364	0.0762	0.4851	985
CARDINAL ACSS/TW	954	0.0173	0.0216	0.0305	0.0364	0.0762	0.4851	1805
HUDSON ACSS/TW	1158.4	0.0143	0.0179	0.0252	0.0402	0.0738	0.4697	2050

(a) The rated strength shown is based on Grade GA2 or MA2 steel.
(b) In ACSR/TW and ACSS/TW conductors, the "Type" designation is the approximate ratio of the steel area to the aluminum area in %.
(c) The ratio of aluminum to steel cross-sectional area is maintained by using a larger steel strand wire size.
(d) Ampacity rating based on 25°C ambient, with 96.0 W/ft^2 solar heating and 2ft/sec wind, 75°C (ACSR) or 200°C (ACSS) conductor temperature, 0.5 coefficient of emissivity, 0.5 coefficient of solar absorptivity, at sea level elevation, 61.2% IACS conductivity for ACSR aluminum, 63.0% IACS for ACSS aluminum, and 8.0% IACS for the steel.

Contact your General Cable sales representative to find out more details about the TW trapezoidal overhead conductor products.

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