OWL WIRE

Product Catalog

OWL Wire & Cable Sales

3127 Seneca Turnpike
Canastota, NY 13032
United States
1-315-697-2011

OWL Wire and Cable LLC
is a Division of

www.internationalwiregroup.com

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OWL WIRE AND CABLE LLC

Catalog Index

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OWL WIRE AND CABLE LLC

Quality People Wired For Safety

Markets We Support

- Industrial
- Energy
- Electronics
- Data Communication
- Consumer Appliance
- Automotive

Owl Wire and Cable LLC was founded in 1954 and has grown to be a world-class manufacturer of uninsulated wire and cable for multiple markets, with three manufacturing facilities totaling over 350,000 square feet of manufacturing space.

OWL Wire and Cable LLC is a subsidiary of International Wire Group, joining in 2019.

Owl Wire and Cable LLC is committed to safely manufacturing the highest quality wire products that satisfy the expectations of our customers. The customers we serve, and their success, is the most vital objective of our company. We will accomplish this objective by continually improving our products, processes, and people.

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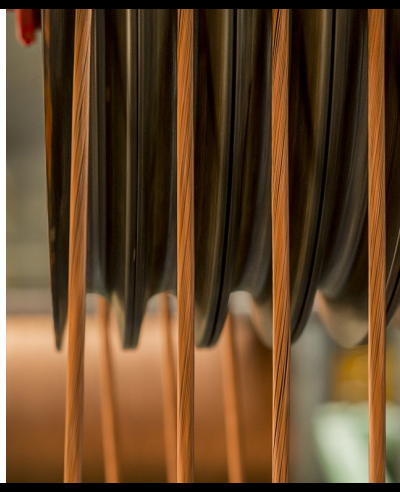

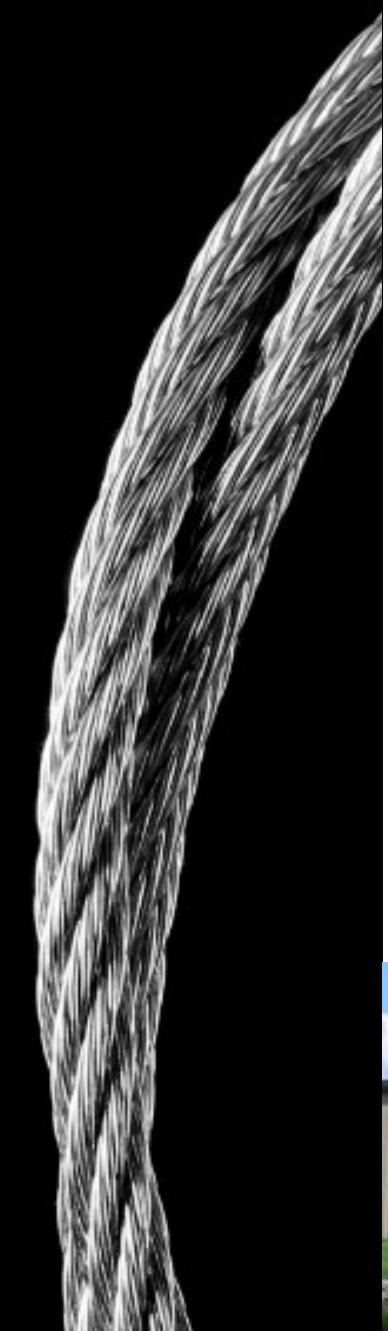

We manufacture Bare Copper and Electroplated Tin Copper wire and cable products within our three manufacturing facilities in New York.

- Our Canastota Plant, also OWL Wire and Cable HQ, primarily produces bunched and specialty wire
- Our Rome Plant specializes in producing copper cables
- Our Boonville Plant specializes in producing single end bare and tinned wire

We guarantee high quality and short lead times.

Product Lines include circuit sizes through MCM sizes in bunched, concentric, unilay, compressed, cables with bunched or concentrically stranded members constructed as unidirectional, reverse lay, and unilay constructions up to 2,000 MCM.

We also offer a wide range of Class B and Class I lightweight conductors meeting the requirements of both ASTM and UL for copper savings.

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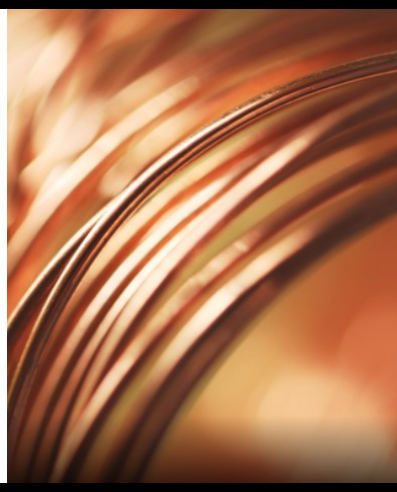

Our Products

Conductor Classification	Min AWG Size		Max AWG Size
B-1 This specification covers hard-drawn round copper wire for electrical purposes.			
• **Hard Bare Copper**	**24 AWG**	**to**	**6 AWG**
B-3 This specification covers drawn and annealed or soft round bare copper wire for electrical purposes.			
• **Soft Bare Copper**	**24 AWG**	**to**	**6 AWG**
B-33 This specification covers tin-coated, round, soft, or annealed copper wire for electrical purposes.			
• **Soft Tin Copper**	**24 AWG**	**to**	**8 AWG**
B-246 This specification covers tin-coated, hard-drawn, and medium-hard drawn round copper wire for electrical purposes.			
• **Hard Tin Copper**	**24 AWG**	**to**	**10 AWG**

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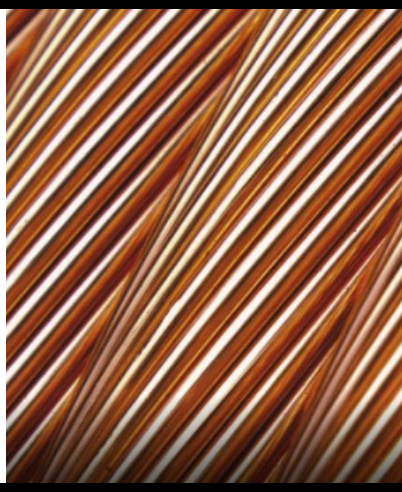

Our Products

Conductor Classification	Min AWG Size		Max AWG Size

B-8 This specification covers bare concentric-lay stranded conductors made from round copper wires, either uncoated or coated with tin, for general use for electrical purposes. These conductors shall be constructed with a central core surrounded by one or more layers of helically laid wires.

• **Class A Bare Copper**	**4 AWG**	**to**	**2,000 MCM**
• **Class A Tin Copper**	**4 AWG**	**to**	**1,000 MCM**
• **Class B Bare Copper**	**18 AWG**	**to**	**2,000 MCM**
• **Class B Tin Copper**	**18 AWG**	**to**	**1,500 MCM**
• **Class C Bare Copper**	**18 AWG**	**to**	**1,500 MCM**
• **Class C Tin Copper**	**18 AWG**	**to**	**1,500 MCM**
• **Class D Bare Copper**	**14 AWG**	**to**	**1,000 MCM**
• **Class D Tin Copper**	**14 AWG**	**to**	**1,000 MCM**

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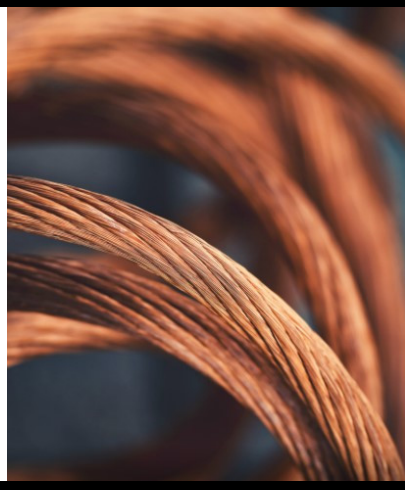

Our Products

Conductor Classification	Min AWG Size		Max AWG Size

B-172 This specification covers bare rope-lay-stranded conductors having bunch-stranded members made from round copper wire, either uncoated or coated with tin, for use as electrical purposes.

• **Class I Bare Copper**	**6 AWG**	**to**	**2,000 MCM**
• **Class I Tin Copper**	**6 AWG**	**to**	**2,000 MCM**
• **Class K Bare Copper**	**9 AWG**	**to**	**1,000 MCM**
• **Class K Tin Copper**	**9 AWG**	**to**	**1,000 MCM**

B-173 This specification covers bare rope-lay-stranded conductors having concentric-stranded members made from round copper wires, either uncoated or coated with tin, for use as electrical conductors.

• **Class G Bare Copper**	**10 AWG**	**to**	**1,500 MCM**
• **Class G Tin Copper**	**10 AWG**	**to**	**1,500 MCM**
• **Class H Bare Copper**	**6 AWG**	**to**	**1,000 MCM**
• **Class H Tin Copper**	**6 AWG**	**to**	**1,000 MCM**

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Our Products

Conductor Classification	Min AWG Size		Max AWG Size

B-174 This specification covers bare bunch-stranded conductors made from round copper wire, either uncoated or coated with tin, for use as electrical purposes.

• **Class I Bare Copper**	**10 AWG**	**to**	**7 AWG**
• **Class I Tin Copper**	**10 AWG**	**to**	**7 AWG**
• **Class J Bare Copper**	**20 AWG**	**to**	**10 AWG**
• **Class J Tin Copper**	**20 AWG**	**to**	**10 AWG**
• **Class K Bare Copper**	**20 AWG**	**to**	**10 AWG**
• **Class K Tin Copper**	**20 AWG**	**to**	**10 AWG**

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Conductor Classification	Min AWG Size		Max AWG Size

B-787 This specification covers bare combination unilay stranded conductors made from round copper wires, either uncoated or coated with tin for electrical purposes. These conductors shall be constructed with a central core wire surrounded by two layers of helically laid wires, resulting in an outer diameter equal to the compressed-stranded equivalent conductor.

• **Bare Copper**	**8 AWG**	**to**	**4/0 AWG**
• **Tin Copper**	**8 AWG**	**to**	**4/0 AWG**

B-496 This specification covers bare compact round concentric-lay-stranded conductors made from uncoated round copper wires for general use for electrical purposes. These conductors shall be constructed with a central core surrounded by one or more layers of helically laid compacted wires.

• **Bare Copper**	**6 AWG**	**to**	**1,000 MCM**

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Our Products

Conductor Classification	Min AWG Size	Max AWG Size

B-286 This specification covers uninsulated metallic-coated copper conductors for use in hookup wire for electronic equipment. We are capable of providing a number of Type II stranded tin-plated conductors.

Customization of constructions is available upon request.

Please contact one of our knowledgeable sales representatives to assist you:

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MADE IN USA ★ USA ★ MADE IN USA

Quality Policy

Owl Wire and Cable LLC is committed to safely manufacturing the highest quality wire products that satisfy the expectations of our customers. The customers we serve, and their success, is the most vital objective of our company. We will accomplish this objective by continually improving our products, processes, and people.

Quality People Wired For Safety

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Glossary of Terms & Conductor Information for Wire & Cable

Alloy: A combination of a metal with one or more elements to form a new material with different properties.
Attenuation: Weakening or reduction of the strength of a transmitted signal through a cable or circuit. It is also a measure of a cable's efficiency to transmit a signal at a given frequency.
Anneal: To subject a material to a heat treatment to remove the effects of cold work, lowering its tensile strength, rendering it softer with greater elongation.
AWG (American Wire Gauge): A standard used to specify the physical size of a solid or stranded conductor primarily used in the United States. Originally called the Brown and Sharpe Gage.
Bird-caging: A phenomenon that occurs during stranding or insulating where the conductor enters a restriction such as a die or extrusion tip. The outer layers of strands back-up, spread out, or otherwise separate away from the core strands. The problem has been attributed to poor stranding techniques and improper tensions during processing.
Break Strength: The maximum load that a specimen attains when tested in tension to fracture.
Bunch Construction: A stranded construction in which the individual strands are randomly laid and twisted in the same lay direction and same length of lay. The strands do not follow a geometric arrangement or pattern.
Capacitance: A measure of a component's opposition to a change of voltage in a circuit, specified in farads.
Cast: The natural curvature of a wire when in an unrestrained state.
CMA (Circular Mil Area): A measure of a round wire's cross-sectional area, calculated by squaring the diameter (in mils) of a strand and multiplying the result by the number of strands. One circular mil (cmil) is equivalent to the area of a circle 0.001 inch in diameter, equal to 7.854 X 10-7 in2.
Concentric Construction: A central wire surrounded by one or more layers of helically laid wires in a geometric pattern. Concentric constructions have 7, 19, 37, 61, etc. strands.
Conductivity: The inverse of resistivity and a measure of a material's ability to conduct electric current. It is usually compared to that of annealed copper, and is generally stated in terms of %IACS.
Elongation: A measure of a material's ability to stretch or elongate prior to fracture. It is expressed as a percentage (increase in length) over a specified gauge length (typically 10 inches for wire).
Equilay Concentric: A central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with alternately reversed lay direction and the same lay length.
Flex Life (or Flex Fatigue Life): The number of cycles a sample can withstand when subjected to a repetitive stress or strain mode before failure.
Flexibility: The capability of being bent when an external force is applied, its pliability or limberness. Low flexibility translates to being more rigid or stiff.
Gauge (or Gage): A term used to designate the physical size of a wire or strand. Some definitions specify "Gage" as a size designation and "Gauge" as a measuring device (such as pressure gauge). These terms are often used interchangeably.
Hard Drawn: A term referring to the temper of conductors that are drawn without annealing to the finish temper.
IACS: International Annealed Copper Standard
Impedance: The analog of resistance in an AC (alternating current) circuit. Impedance depends upon the resistance, inductance, capacitance and frequency of the circuit. The unit of impedance is the ohm.
Inductance: A measure of a component's opposition to a change in the current of a circuit, specified in henries.
Inter-metallic Compound: Two or more metals with a chemical composition based on a definite atomic formula. Inter-metallics may have a fixed stoichiometric or a very narrow range of chemical composition.

Custom constructions are available, please contact our Sales Department

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Glossary of Terms & Conductor Information for Wire & Cable

Lay Direction: The helical direction of the strands or members in any layer of a stranded construction. The two lay directions are usually denoted as "S" (left hand lay) or "Z" (right hand lay).
Lay Factor: The ratio of the lay length to the external diameter of the corresponding layer of wires or members in the stranded conductor.
Lay Length (length of lay): The axial length for one revolution of a strand or member in any layer of a stranded or rope stranded construction.
MCM: An area unit equivalent to 1,000 circular mils. MCM may also be referred to as kcmil.
Ohm: A unit of electrical resistance defined as the resistance necessary to produce 1 ampere of current to flow in a circuit with an applied potential of 1 volt.
Plating Percentage: See Volume Percentage of Plating and Weight Percentage of Plating.
Plating Thickness: The measured thickness of the plated coating on a wire strand. Measurements are usually in micro-inches (millionths of an inch) or microns (millionths of a meter).
Polysulfide Testing: A test method that exposes a sample to a sodium polysulfide solution to qualitatively determine the continuity of the plating on a wire strand. The test method is specified in ASTM B 298 and B 355.
Resistance: A measure of a component's opposition to the flow of electric current, specified in ohms.
Resistivity: The characteristic of a material to impede the flow of electrons (electrical current). It is the material's electrical resistance for a unit volume. This value is specific to a material and not its geometry.
Rope Construction: A conductor composed of separate stranded constructions that are then twisted into the final construction.
Rope Member: A bunched or concentric stranded construction subsequently stranded again to form a rope construction.
Stranding Factor: The increase in weight and electrical resistance of a conductor due to the lay length of the strands or members.
Temperature Coefficient of Resistance: The change in a material's electrical resistance (resistivity) due to a change of one degree in temperature. It is expressed in units per °C (or units per °F).
Tensile Strength: The maximum longitudinal tensile stress that may be applied to a material without fracturing or rupturing, calculated to a reference unit (lbs/in2, kg/mm2, etc.) by dividing the breaking load by the cross-sectional area.
Tensile Stress: Force per unit cross-sectional area applied to a material.
True Concentric: A central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with alternately reversed lay direction and increasing lay length.
Tubular Strander: A type of twisting machine where the payoffs are located inside the tube and the take-up is external.
Unidirectional Concentric: A central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with the same lay direction and an increasing lay length.
Unilay (Unidirectional Equilay Concentric): A central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with the same lay direction and the same lay length.
Volume Percentage of Plating: The ratio of the volume of the plated material to the total volume of the conductor.
Weight Percentage of Plating: The ratio of the weight of the plated material to the total weight of the conductor. Conductor plating percentages usually refer to weight percentage when a distinction is not made.
Weight per Unit Length: A method of specifying the weight of conductor or wire using a standard length. Common lengths of 1,000 feet or 1,000 meters are used, however other lengths may also be specified.

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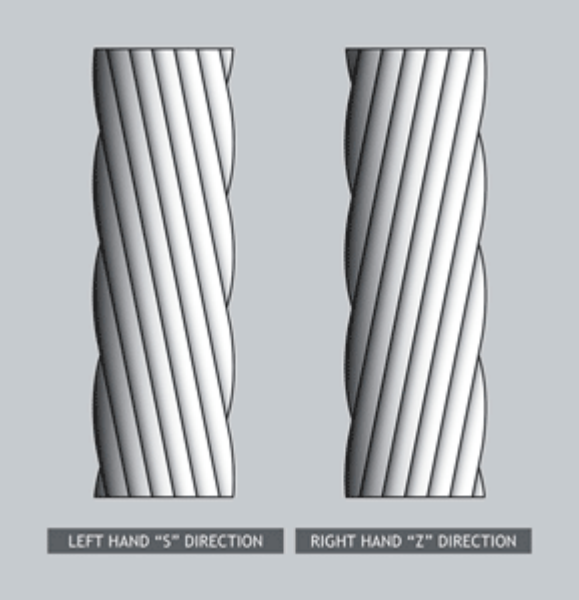
Wire and Cable Facts - Lay Direction and Length

Lay Direction

Stranded conductors are manufactured by twisting strands of non-insulated wire. The direction of twisting is designated as the “lay direction”. The degree of twist per unit length defines the “lay length”.

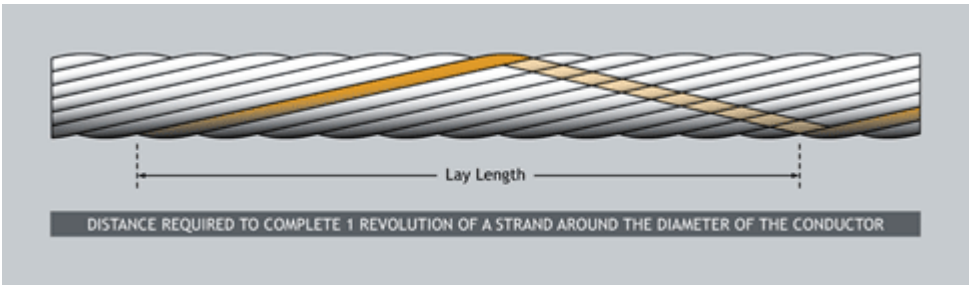


The lay direction is determined by the direction the machine is turning during the stranding operation. The conventional method to determine the lay direction is to observe the upper surface of the stranded conductor with one end pointing toward you and the wire leading away from you:

If the strands turn left leading away from the observer and have the same slant as the middle of the letter “S”, the convention denotes an “S” lay direction.
If the strands turn right leading away from the observer and have the same slant as the middle of the letter “Z”, the convention denotes a “Z” lay direction.

Lay Length

Lay length is defined as the distance required to complete one revolution of the strand around the diameter of the conductor.



When a conductor has more than one layer, it usually refers to the lay length of the outer layer. In the case of Unilay, Equilay and bunch, the lay length of all layers is equal. In True Concentric and Unidirectional, the lay lengths of the inner layers are less, this also holds true for rope constructions.

General Practices

There are some general practices that pertain to the lay direction and lengths of conductor as specified by industry standards such as ASTM, NEMA and military, however, requirements for specific applications vary.

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Wire and Cable Facts - Lay Direction and Length

Direction of the outer layer

The direction away from the outer layer of strands or members is usually S. Inner layer directions depend upon the construction (True concentric, Unilay, etc).The lay length of the outer layer of strands or members varies with different applications.

Length of the outer layer

For most conductor applications, lay lengths of between 8 – 16 times the outer diameter of a given layer are specified in ASTM B 286. In general, lay lengths in the range of 12 – 15 times the outer diameter are used for tighter tolerance and geometric pattern control. Shorter lay lengths of 12 times or less have the disadvantage of slightly higher weight per unit length.

For 7 strand and bunch applications, where tight diameter tolerance is less of a concern, lay lengths in excess of 30 times the outer diameter are common. Longer lay lengths are sometimes preferred by customers for cost, yield and weight considerations.

Stranding Factors

The increase in weight and resistance due to stranding can be calculated mathematically. ASTM refers to this increase as the stranding or "k-factor", defined as "incremental percentage (increase) of weight and electrical resistance." ASTM B 8, B 229, B 231, and others give a method of calculating the "**k**":

$$\mathbf{k = 100\ (m - 1)}$$

Where **k** is the incremental (increase) in mass and electrical resistance, the factor **m** is the ratio of the mass or electrical resistance of a unit length of the stranded conductor to that of a conductor monofilament of the same section or that of the stranded conductor with an infinite length of lay (all the strands run parallel to the axis). The factor **m** of the strand is the average of the factors for each of the individual wires in the conductor including the straight wire core, if any (for which the lay factor is unity).

The lay factor m_{ind} for any given wire in a concentric stranded conductor is calculated as follows:

$$m_{ind} = \sqrt{1 + \left(\frac{9.8696}{n^2}\right)}$$

Where n = (length of lay) + (diameter of helical path of wire)

Example: the lay factor for a 19 strand conductor is the numerical average of the 19 individual strands:

$$\mathbf{m = (1 + 6}m_6 \mathbf{= 12}m_{12}\mathbf{) \div 19}$$

Where $m_6 = m_{ind}$ calculated for each of the 6 strands of the inner layer

and $m_{12} = m_{ind}$ calculated for each of the 12 strands of the outer layer

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Wire and Cable Facts - Strand Configurations

Stranded conductors are composed of un-insulated strands of wire twisted together. The advantages of stranded conductor over a single strand of equal cross-section are increased flexibility and flex-fatigue life. Stranded conductor can be manufactured in a variety of configurations, the most common being concentric, bunched and ropes.

Concentric

When the term "concentric stranding" is used, it refers to the definition of the word "concentric", which is having a "common center".

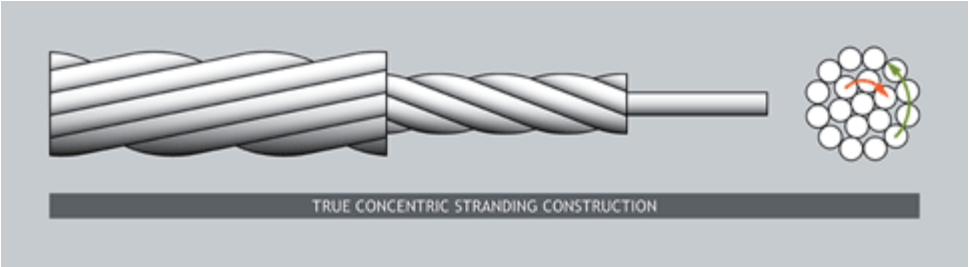
Concentric conductor may be defined as:"***A central wire (strand) surrounded by one or more layers of helically laid wires in a geometric pattern.***"

The geometric pattern requires that concentric constructions can only be produced with 7, 19, 37, 61, (etc.) strands or members, following the pattern that each successive layer has 6 more strands than the layer below it. In all types of concentric constructions, the geometric pattern of the strands is consistent for the entire length of the conductor. That is, the central strand, and the strands in each layer remain in their respective positions from the beginning to the end of its length.

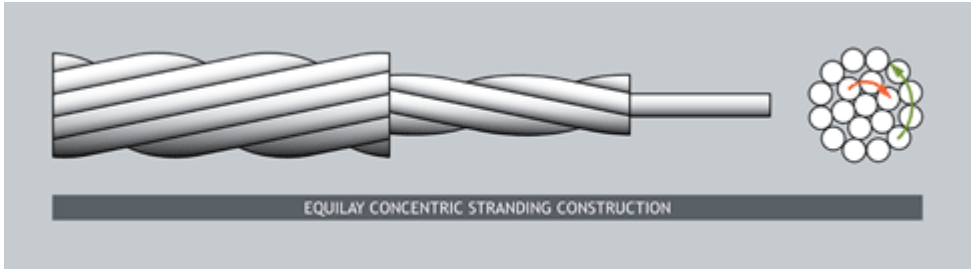
The main advantage of concentric constructions is the close/tight diameter tolerances that can be maintained on the conductor. Concentric constructions have very smooth uniform surfaces that are suited for thin wall insulation in high performance applications.

Concentric Stranding

There are four common types of concentric constructions manufactured for the high performance wire and cable industry. Although there are 4 distinct types, the industry normally refers to "Concentric" as "True Concentric" and will use the terms interchangeably. The other types are referenced as noted.



Concentric or True Concentric characterized by a central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with alternately reversed lay direction and increasing lay



Equilay or Equilay Concentric characterized by a central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with alternately reversed lay direction and the same lay length.

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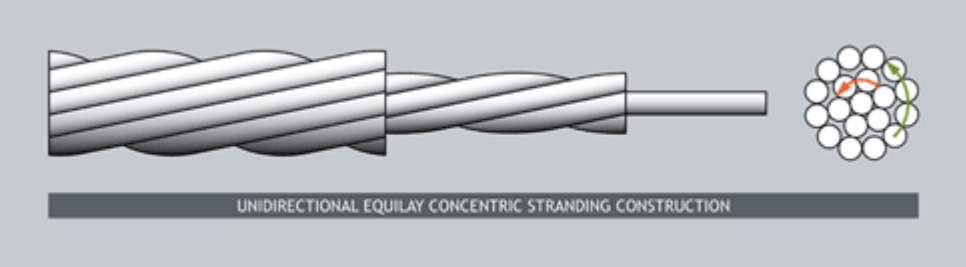
Wire and Cable Facts - Strand Configurations

Unidirectional or Unidirectional Concentric

Wire is characterized by a central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with the same lay direction and an increasing lay length.

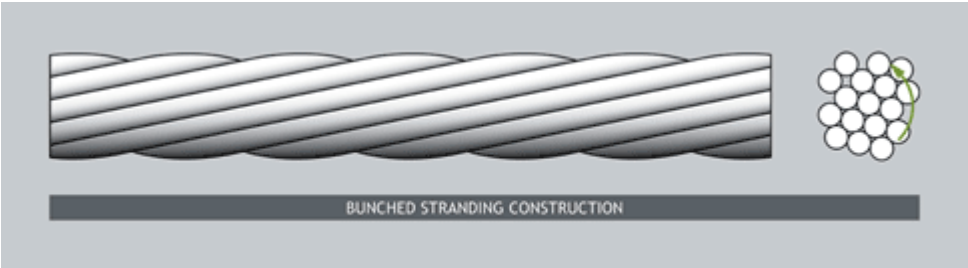


Unilay **or Unidirectional Equilay Concentric**

Wire is characterized by a central wire surrounded by one or more layers of helically laid wires in a geometric pattern, with the same lay direction and the same lay length.

Bunched Stranding

Bunch strand wire contains any number of strands in random pattern. Twisted in one operation, all strands have the same lay direction and same lay length, however, the result is a rougher surface and lower dimensional tolerance than the concentric constructions. The number of strands is determined by the size of the individual strands and the total cross-sectional area required.



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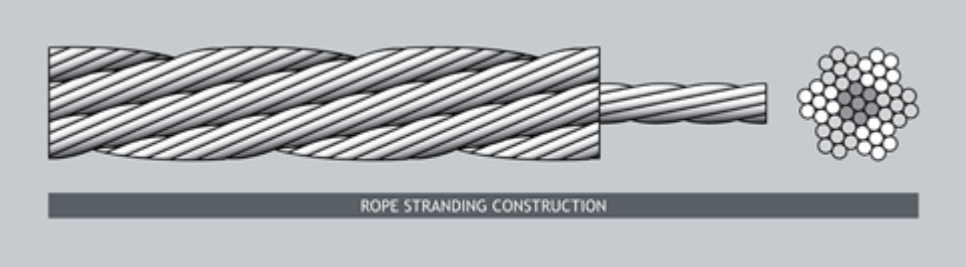
Rope Stranding

Wire constructions consist of single strands assembled together into concentric or bunched configurations. Rope constructions consist of concentric or bunched members stranded together into the final concentric or bunched configuration.



Rope stranding has the advantage of increasing flexibility by using a larger number of finer strands while maintaining a tighter diameter tolerance than a simple bunched construction. Ropes are more evident in the larger AWG sizes, such as 8 AWG and larger, but there also many applications that require the flexibility of rope constructions in the smaller gauges. Constructions vary and can contain hundreds or thousands of strands.

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American Wire Gauge Chart

AWG	Diameter		Area	Resistance		Pounds per 1,000 ft	Feet Per Pound
	(in)	(mm)	(kcmil)	(mΩ/m)	(mΩ/ft)		
0000 (4/0)	0.4600	11.684	212.000	0.1608	0.04901	640.0000	1.56
000 (3/0)	0.4096	10.405	168.000	0.2028	0.0618	509.0000	1.96
00 (2/0)	0.3648	9.266	133.000	0.2557	0.07793	403.0000	2.48
0 (1/0)	0.3249	8.251	106.000	0.3224	0.09827	318.0000	3.14
1	0.2893	7.348	83.700	0.4066	0.1239	256.0000	3.91
2	0.2576	6.544	66.400	0.5127	0.1563	200.0000	5.00
3	0.2294	5.827	52.600	0.6465	0.197	159.0000	6.29
4	0.2043	5.189	41.700	0.8152	0.2485	126.0000	7.94
5	0.1819	4.621	33.100	1.028	0.3133	100.0000	10.00
6	0.1620	4.115	26.300	1.296	0.3951	79.4000	12.59
7	0.1443	3.665	20.800	1.634	0.4982	62.8000	15.92
8	0.1285	3.264	16.500	2.061	0.6282	49.6000	20.16
9	0.1144	2.906	13.100	2.599	0.7921	39.3000	25.45
10	0.1019	2.588	10.400	3.277	0.9989	31.5000	31.75
11	0.0907	2.305	8.230	4.132	1.26	24.9000	40.16
12	0.0808	2.053	6.530	5.211	1.588	19.8000	50.51
13	0.0720	1.828	5.180	6.571	2.003	15.7000	63.69
14	0.0641	1.628	4.110	8.286	2.525	12.4000	80.65
15	0.0571	1.45	3.260	10.45	3.184	9.8700	101.32
16	0.0508	1.291	2.580	13.17	4.016	7.8100	128.04
17	0.0453	1.15	2.050	16.61	5.064	6.2100	161.03
18	0.0403	1.024	1.620	20.95	6.385	4.9200	203.25
19	0.0359	0.912	1.290	26.42	8.051	3.9000	256.41
20	0.0320	0.812	1.020	33.31	10.15	2.9500	338.98
21	0.0285	0.723	0.810	42	12.8	2.4600	406.50
22	0.0253	0.644	0.642	52.96	16.14	1.9500	512.82
23	0.0226	0.573	0.509	66.79	20.36	1.5500	645.16
24	0.0201	0.511	0.404	84.22	25.67	1.2200	819.67
25	0.0179	0.455	0.320	106.2	32.37	0.9700	1,030.93
26	0.0159	0.405	0.254	133.9	40.81	0.7650	1,307.19
27	0.0142	0.361	0.202	168.9	51.47	0.6100	1,639.34
28	0.0126	0.321	0.160	212.9	64.9	0.4800	2,083.33
29	0.0113	0.286	0.127	268.5	81.84	0.3860	2,590.67
30	0.0100	0.255	0.101	338.6	103.2	0.3030	3,300.33
31	0.0089	0.227	0.080	426.9	130.1	0.2410	4,149.38
32	0.0080	0.202	0.063	538.3	164.1	0.1910	5,235.60
33	0.0071	0.18	0.050	678.8	206.9	0.1520	6,578.95
34	0.0063	0.16	0.040	856	260.9	0.1200	8,333.33
35	0.0056	0.143	0.032	1079	329	0.0950	10,526.32
36	0.0050	0.127	0.025	1361	414.8	0.0760	13,157.89
37	0.0045	0.113	0.020	1716	523.1	0.0600	16,666.67
38	0.0040	0.101	0.016	2164	659.6	0.0476	21,008.40
39	0.0035	0.0897	0.013	2729	831.8	0.0377	26,525.20
40	0.0031	0.0799	0.010	3441	1049	0.0299	33,444.82