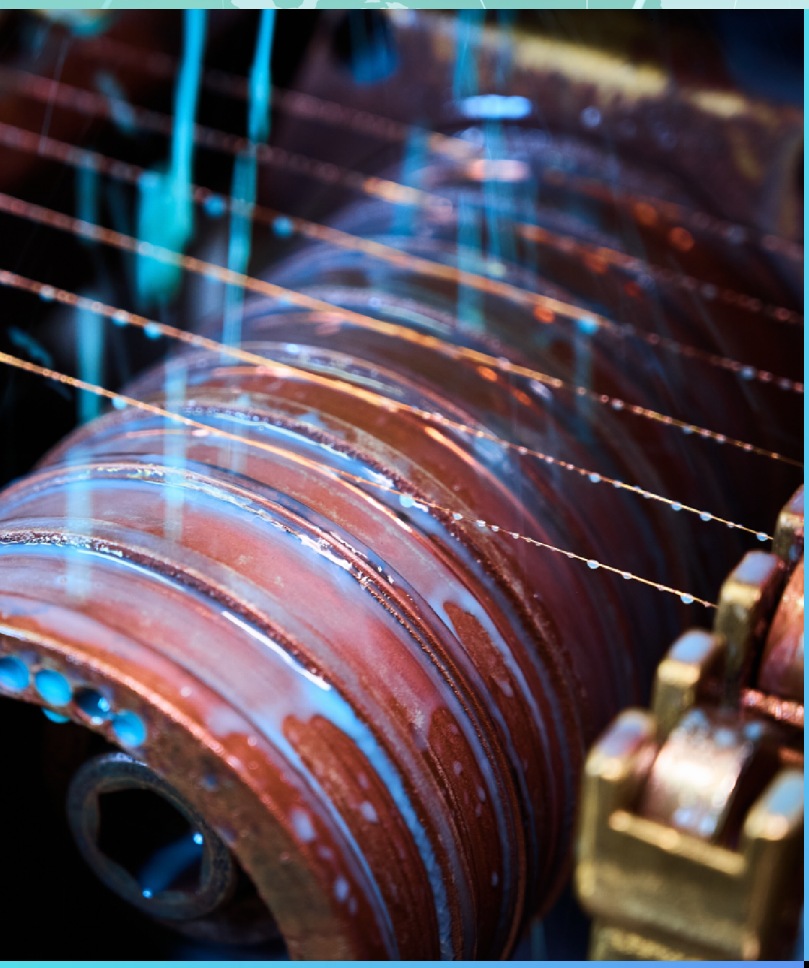
INTERNATIONAL WIRE GROUP

Engineered Wire Division

Product Catalog



INTERNATIONAL WIRE GROUP

12 Masonic Avenue
Camden, New York 13316
United States
1-315-245-2000
sales@internationalwire.com

INTERNATIONAL WIRE
Engineered Wire

www.internationalwire.com

INTERNATIONAL WIRE
Engineered Wire Division

About Us

ENGINEERED WIRE DIVISION

Engineered Wire Division of International Wire Group is a leading manufacturer of bare copper and tin-plated copper wire products used to transmit electrical as well as digital, video and audio signals. We sell our products to a diverse customer base of insulated wire manufacturers and various industrial OEMs for use in computer and data communications products, various energy applications, consumer appliances, automobiles, mass transit, general industrial and numerous others.

Our Products

Metal Types:

Copper Bare (C11040)
Copper Tin Plated (C11040)
Oxygen Free Copper (OF 102)(C10200)
Oxygen Free Copper Tin Plated (OF 102)(C10200)
High Strength Green Alloy (HPC 80EF)
Copper Clad Steel (CCS)
Copper Alloy 220 Bronze (C220)
Galvanized Steel (GCS)
Copper Clad Aluminum (10%)(CCA)
Aluminum (1350/8176)

Contact our Sales Dept. for availability of other metals or products

INTERNATIONAL WIRE
Engineered Wire Division

Product Catalog

Index

INTERNATIONAL WIRE
Engineered Wire Division

Single End Hard and Soft Bare Conductors

44 AWG Up To 1 AWG

AWG	Nominal Diameter Inches	Nominal Diameter mm	Circular Mil Area	Approximate lbs. / mft	Feet per Pound	Break Strength (1) Hard lbs.	Break Strength (1) Soft lbs	Elongation Percent Min Soft Wire (2)	Ohms per 1,000 Ft @ 20° C
1	0.28930	7.348	83690.000	253.3000	4	3688	2432	30	0.1239
2	0.25760	6.543	66360.000	200.9000	5	3002	1928	30	0.1563
3	0.22940	5.827	52620.000	159.3000	6	2439	1529	30	0.1970
4	0.20430	5.189	41740.000	126.3000	8	1970	1213	30	0.2485
5	0.18190	4.620	33090.000	100.2000	10	1590	962	30	0.3133
6	0.16200	4.115	26240.000	79.4400	13	1280	763	30	0.3951
7	0.14430	3.665	20822.000	63.0300	16	1030	605	30	0.4982
8	0.12850	3.264	16512.000	49.9800	20	826	480	30	0.6282
9	0.11440	2.906	13087.000	39.6200	25	661	380	30	0.7921
10	0.10190	2.588	10384.000	31.4300	32	529	314	25	0.9989
11	0.09074	2.305	8234.000	24.9200	40	423	249	25	1.260
12	0.08081	2.053	6530.000	19.7700	51	282	180	25	1.588
13	0.07196	1.828	5178.000	15.6700	64	224	142	25	2.003
14	0.06408	1.628	4106.000	12.4300	80	177	113	25	2.525
15	0.05707	1.450	3257.000	9.8600	101	141	90	25	3.184
16	0.05082	1.291	2583.000	7.8200	128	112	71	25	4.016
17	0.04526	1.150	2048.000	6.2000	161	88	56	25	5.064
18	0.04030	1.024	1624.000	4.9200	203	70	45	25	6.385
19	0.03589	0.912	1288.000	3.8990	256	56	35	25	8.051
20	0.03196	0.812	1021.000	3.0920	323	44	28	25	10.150
21	0.02845	0.723	809.400	2.4500	408	35	22	25	12.80
22	0.02535	0.644	642.600	1.9450	514	28	18	25	16.14
23	0.02257	0.573	509.400	1.5420	649	22	14	25	20.36
24	0.02010	0.511	404.000	1.2230	818	17	11	20	25.67
25	0.01790	0.455	320.400	0.9699	1,031	14	8.8	20	32.37
26	0.01594	0.405	254.100	0.7691	1,300	11	7.0	20	40.81
27	0.01420	0.361	201.500	0.6100	1,639	8.7	5.5	20	51.47
28	0.01264	0.321	159.800	0.4836	2,068	6.9	4.4	20	64.90
29	0.01126	0.286	126.800	0.3838	2,606	5.5	3.5	20	81.83
30	0.01025	0.260	105.100	0.3180	3,144	4.5	2.9	15	103.20
31	0.00893	0.227	79.740	0.2414	4,143	3.4	2.2	15	130.10
32	0.00795	0.202	63.200	0.1913	5,227	2.7	1.7	15	164.10
33	0.00708	0.180	50.130	0.1517	6,591	2.2	1.4	15	206.90
34	0.00631	0.160	39.820	0.1205	8,297	1.7	1.1	15	260.90
35	0.00562	0.143	31.580	0.0956	10,460	1.4	0.87	15	329.00
36	0.00500	0.127	25.000	0.0757	13,214	1.1	0.69	15	414.80
37	0.00445	0.113	19.800	0.0599	16,683	0.86	0.54	15	523.10
38	0.00397	0.101	15.760	0.0477	20,961	0.68	0.43	15	659.60
39	0.00353	0.090	12.460	0.0377	26,512	0.54	0.34	15	831.80
40	0.00315	0.080	9.923	0.0300	33,294	0.43	0.27	15	1049.00
41	0.00280	0.071	7.840	0.0237	42,138	0.34	0.22	15	1322.83
42	0.00249	0.063	6.220	0.0188	53,112	0.27	0.17	15	1672.71
43	0.00222	0.056	4.928	0.0149	67,032	0.21	0.14	15	2104.33
44	0.00198	0.050	3.912	0.0118	84,437	0.17	0.11	15	2645.39

Applicable Specifications: ASTM B-1 (HARD), ASTM B-3 (SOFT)

Sizes not listed here can be manufactured to specific customer requirements

The DC resistivity of copper at 20 °C shall not exceed 10.371 ohms* circular mil/foot

*Elongation in 10" gage length

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Copper Tin Plated Single End (Solid)

44 AWG Up To 6 AWG

AWG	Nominal Diameter Inches	Nominal Diameter mm	Circular Mil Area	Approximate lbs. / mft	Feet per pound	Break Strength lbs. - Hard [1]	Break Strength lbs. - Soft [1]	Elongation % Min. Soft Wire [2]	Nominal Resistance Soft Bare ohm/met @ 20 C
6	0.16200	4.115	26244.000	79.4000	13	1134.00	721.00	25	0.407
7	0.14430	3.665	20822.000	63.0000	16	899.00	572.00	25	0.513
8	0.12850	3.264	16512.000	50.0000	20	713.00	454.00	25	0.647
9	0.11440	2.906	13087.000	39.6000	25	565.00	360.00	25	0.816
10	0.10190	2.588	10384.000	31.4000	32	449.00	285.00	20	1.04
11	0.09074	2.305	8234.000	24.9000	40	356.00	226.00	20	1.31
12	0.08081	2.053	6530.000	19.8000	51	282.00	180.00	20	1.65
13	0.07196	1.828	5178.000	15.7000	64	224.00	142.00	20	2.09
14	0.06408	1.628	4106.000	12.4000	81	177.00	113.00	20	2.63
15	0.05707	1.450	3257.000	9.8600	101	141.00	90.00	20	3.32
16	0.05082	1.291	2583.000	7.8200	128	112.00	71.00	20	4.18
17	0.04526	1.150	2048.000	6.2000	161	88.00	56.00	20	5.27
18	0.04030	1.024	1624.000	4.9200	203	70.00	45.00	20	6.65
19	0.03589	0.912	1288.000	3.8990	257	56.00	35.00	20	8.39
20	0.03196	0.812	1021.000	3.0920	323	44.00	28.00	20	10.58
21	0.02845	0.723	809.400	2.4500	408	35.00	22.00	20	13.34
22	0.02535	0.644	642.620	1.9450	514	28.00	18.00	20	16.82
23	0.02257	0.573	509.400	1.5420	649	22.00	14.00	20	21.22
24	0.02010	0.511	404.010	1.2230	818	17.00	11.00	15	26.76
25	0.01790	0.455	320.410	0.9699	1,031	14.00	8.80	15	34.47
26	0.01594	0.405	254.080	0.7691	1,300	11.00	7.00	15	43.47
27	0.01420	0.361	201.530	0.6100	1,639	8.70	5.50	15	54.82
28	0.01264	0.321	159.770	0.4836	2,068	6.90	4.40	15	69.13
29	0.01126	0.286	126.790	0.3838	2,606	5.50	3.50	15	87.18
30	0.01025	0.260	105.060	0.3180	3,144	4.50	2.90	10	111.1
31	0.00893	0.227	79.745	0.2414	4,143	3.40	2.20	10	140.1
32	0.00795	0.202	63.203	0.1913	5,227	2.70	1.70	10	176.7
33	0.00708	0.180	50.126	0.1517	6,591	2.20	1.40	10	222.9
34	0.00631	0.160	39.816	0.1205	8,297	1.70	1.10	10	281.1
35	0.00562	0.143	31.584	0.0956	10,460	1.40	0.87	10	354.5
36	0.00500	0.127	25.000	0.0757	13,210	1.10	0.69	10	447.1
37	0.00445	0.113	19.803	0.0599	16,680	0.86	0.54	10	563.8
38	0.00397	0.101	15.761	0.0477	20,960	0.68	0.43	10	711.0
39	0.00353	0.090	12.461	0.0377	26,510	0.54	0.34	10	896.7
40	0.00315	0.080	9.923	0.0300	33,290	0.43	0.27	10	1130.9
41	0.00280	0.071	7.840	0.0237	42,140	0.34	0.22	10	1420.0
42	0.00249	0.063	6.220	0.0188	53,110	0.27	0.17	10	1789.9
43	0.00222	0.056	4.928	0.0149	67,030	0.21	0.14	10	2258.9
44	0.00198	0.050	3.913	0.0118	84,440	0.17	0.11	10	2845.5

Applicable Specifications: ASTM B-1, ASTM B-33

Sizes not listed here can be manufactured to specific customer requirements

(1) Break strength based on 55,000 psi for hard wire and 35,000 psi for soft.

(2) Elongation in 10" gage length.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Bobbin Winding

Available from 44 AWG to 28 AWG, with end counts from 1 to 22.

AWG	Nominal Diameter (inches)	Approximate lbs. / mft	Packaging available for 16, 24, 36, 48 carrier braiders:
44	0.0020	0.0120	
42	0.0025	0.0190	**Package Sizes:**
40	0.0032	0.0310	Short Hacoba (SHB)
38	0.0040	0.0480	Long Hacoba (LHB)
37	0.0045	0.0610	Dratek
36	0.0050	0.0760	Spirka
35	0.0056	0.0950	
34	0.0063	0.1200	***Custom size packaging also available.***
33	0.0071	0.1530	**Treatment / Lubricant:**
32	0.0080	0.1940	Isopar G-Fluid
31	0.0090	0.2450	Paraplex G-62
30	0.0100	0.3030	Mineral Oil
28	0.0126	0.4810	Non-treated

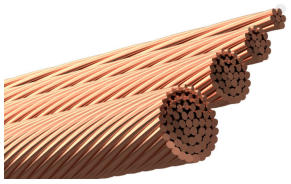
Applicable Specifications: ASTM B-49, B-3 (Soft Bare), ASTM B-49, B-33 (Soft Tin)

Sizes not listed here can be manufactured to specific customer requirements

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Concentric 7 Strand Conductors



AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
29	7/37	142	0.0132	0.411	2432
28	7/36	175	0.0148	0.531	1882
27	7/.0052	189	0.0154	0.575	1739
26	7/34	278	0.0189	0.843	1186
25	7/33	353	0.0210	1.090	918
24	7/.0074	383	0.0215	1.168	856
24	7/.0076	404	0.0228	1.229	814
24	7/.0078	426	0.0235	1.292	774
24	7/32	448	0.0240	1.369	730
23	7/.0085	506	0.0255	1.534	652
22	7/.0096	645	0.0288	1.961	510
22	7/30	700	0.0300	2.160	463
22	7/.0108	816	0.0324	2.490	401
21	7/29	894	0.0337	2.720	368
21	7/.0115	926	0.0340	2.810	356
20	7/.0121	1,025	0.0363	3.130	319
20	7/.0124	1,076	0.0372	3.320	301
20	7/28	1,111	0.0378	3.400	294
19	7/.0136	1,295	0.0000	3.950	253
19	7/.0140	1,372	0.0420	4.240	236
19	7/.0142	1,411	0.0426	4.330	231
18	7/.0152	1,617	0.0456	4.930	203
16	7/.0187	2,448	0.0561	7.490	134
16	7/.0192	2,580	0.0576	7.900	127
16	7/24	2,828	0.0590	8.660	115
15	7/.0214	3,206	0.0640	9.740	103
15	7/.0223	3,481	0.0660	10.630	94
15	7/.0226	3,575	0.0678	10.990	91
14	7/.0242	4,099	0.0726	12.660	79
13	7/.0264	4,879	0.0790	14.910	67
12	7/.0305	6,512	0.0915	19.910	50
11	7/.0335	7,856	0.0980	24.120	42
10	7/.0385	10,376	0.1150	31.760	32
9	7/.0409	11,710	0.1230	35.890	28
9	7/.0411	11,824	0.1230	36.240	28
9	7/.0424	12,584	0.1270	38.520	26
9	7/.0432	13,064	0.1260	39.840	25
8	7/.0486	16,534	0.1460	50.600	20
7	7/.0531	19,737	0.1590	60.450	17
6	7/.0612	26,218	0.1840	80.000	13
6	7/.0641	28,762	0.1900	87.560	11
5	7/.0672	31,611	0.2020	96.700	10
5	7/.0681	32,463	0.2050	99.780	10
4	7/.0772	41,719	0.2310	128.800	8
3	7/.0840	49,392	0.2480	151.200	7
3	7/.0867	52,618	0.2600	160.900	6
2	7/.0974	66,407	0.2920	205.000	5
2	7/.0993	69,023	0.2920	211.100	5
4/0	7/.1739	211,688	0.5220	647.400	2

Concentric Strand Continued on next page...

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-8, ASTM B-286

Concentric - conductor with a central core wire surrounded by one or more layers of helically laid wires, with each wire having a specific position

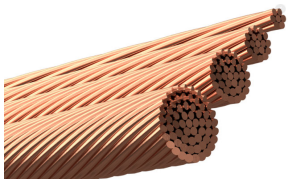
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



Concentric 19 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
11	19/.0210	8,379	0.0000	26.040	38.4
8	19/.0295	16,535	0.1475	51.050	19.6
6	19/.0372	26,293	0.1860	81.180	12.3
4	19/.0469	41,793	0.2350	128.500	7.78
3	19/.0508	49,032	0.2540	150.800	6.63
3	19/.0526	52,568	0.2600	161.700	6.19
2	19/.0591	66,363	0.2955	204.000	4.90
1	19/.0664	83,770	0.3320	257.600	3.88
1/0	19/.0721	98,770	0.2160	304.200	3.29
1/0	19/.0745	105,455	0.3700	324.300	3.08
2/0	19/.0837	133,108	0.4190	409.700	2.44
2/0	19/.0853	138,246	0.4260	424.600	2.36
3/0	19/.0940	167,884	0.4691	514.900	1.94
4/0	19/.1055	211,475	0.5270	650.400	1.54

Concentric 37 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
5	37/.0299	33,078	0.2090	102.100	9.8
4	37/.0336	41,772	0.2350	129.000	7.8
2	37/.0424	66,517	0.2920	204.900	4.9
1	37/.0476	83,833	0.3330	257.700	3.88
1/0	37/.0534	105,508	0.3740	325.800	3.07
2/0	37/.0600	133,200	0.4200	410.400	2.44
3/0	37/.0673	167,584	0.4710	515.400	1.94
4/0	37/.0756	211,468	0.5290	651.600	1.53
250 MCM	37/.0822	250,003	0.5750	769.700	1.30
300 MCM	37/.0900	299,700	0.6300	923.400	1.08
350 MCM	37/.0973	350,290	0.6810	1082.800	0.92
400 MCM	37/.1040	400,192	0.7280	1234.800	0.81
500 MCM	37/.1162	499,590	0.8130	1572.900	0.64

Concentric Strand Continued on next page...

RoHS compliant

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-8, ASTM B-286

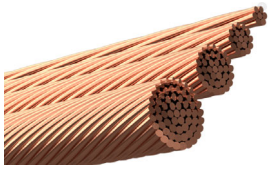
Concentric - conductor with a central core wire surrounded by one or more layers of helically laid wires, with each wire having a specific position

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

INTERNATIONAL WIRE
Engineered Wire Division



Concentric 61 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
4	61/.0253	39,045	0.2280	120.6	8.30
4	61/.0262	41,873	0.2343	129.1	7.74
3	61/.0294	52,726	0.2620	162.8	6.14
1/0	61/.0416	105,564	0.3740	325.6	3.07
2/0	61/.0467	133,034	0.4200	0.4200	2.43
3/0	61/.0510	158,661	0.4500	491.0	2.04
3/0	61/.0524	167,491	0.4720	516.4	1.94
4/0	61/.0589	211,622	0.5200	655.6	1.53
250 MCM	61/.0640	249,856	0.5580	771.6	1.30
350 MCM	61/.0757	349,560	0.6820	1079.7	0.926
400 MCM	61/.0810	400,221	0.7200	1236.7	0.809
500 MCM	61/.0905	499,605	0.8150	1541.8	0.649
600 MCM	61/.0992	600,279	0.8930	1861.0	0.537
700 MCM	61/.1071	699,695	0.9640	2160.3	0.463
750 MCM	61/.1109	750,227	0.9900	2343.6	0.427
1000 MCM	61/.1280	999,424	1.1280	3089.7	0.324

Concentric 91 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
250 MCM	91/.0524	249,864	0.5600	772.1	1.30
350 MCM	91/.0620	349,804	0.6820	1080.9	0.93
500 MCM	91/.0736	492,943	0.7850	1532.9	1532.9
1500 MCM	91/.1284	1,500,277	1.3600	4653.5	0.22

Concentric 127 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
500 MCM	127/.0623	492,924	0.7930	1536.4	0.651
1000 MCM	127/.0887	999,197	1.1250	3115.6	0.321
1550 MCM	127/.1105	1,550,702	1.3900	4825.4	0.207
2000 MCM	127/.1255	2,000,282	1.6100	6256.5	0.160

Concentric 169 Strand Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
2000 MCM	169/.1088	2,000,527			

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-8, ASTM B-286

Concentric - conductor with a central core wire surrounded by one or more layers of helically laid wires, with each wire having a specific position

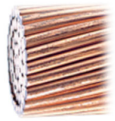
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



Compact Round Concentric Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
8	7/.0486	16,510	0.133	50.54	19.79
6	7/.0612	26,240	0.169	82.40	12.14
4	7/.0772	41,740	0.213	130.30	7.675
3	7/.0867	52,620	0.243	165.70	6.035
2	7/.0974	66,360	0.268	205.00	4.879
1	19/.0664	83,690	0.299	257.10	3.889
1/0	19/.0745	105,600	0.336	322.90	3.097
2/0	19/.0837	133,100	0.376	408.00	2.451
4/0	19/.1055	211,600	0.475	648.60	1.542
250 MCM	37/.0822	250,000	0.520	767.70	1.303
350 MCM	37/.0973	350,000	0.616	1082.80	0.924
500 MCM	37/.1162	500,000	0.736	1533.70	0.652

Applicable Specifications: ASTM B-496

Compacted Cable - starting with round wires, helically laid, compacted to the diameters listed above.

Diameter tolerance is +1% and - 2% from those listed above.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

19-Strand Unilay Conductors Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
27	19/40	195	0.0151	0.594	1683.00
25	19/38	304	0.0191	0.928	1078.00
25	19/.0043	351	0.0209	1.085	922.00
24	19/37	385	0.0214	1.174	852.00
23	19/36	475	0.0240	1.446	692.00
22	19/.0058	639	0.0280	1.949	513.00
21	19/.0061	707	0.0295	2.151	465.00
21	19/34	754	0.0300	2.319	431.00
21	19/.16mm	754	0.0315	2.328	429.00
20	19/.18mm	958	0.0345	2.957	338.00
20	19/33	958	0.0340	2.932	341.00
20	19/.19mm	1,069	0.0343	3.276	305.00
19	19/.0078	1,156	0.0375	3.511	285.00
19	19/32	1,216	0.0380	3.714	269.00
18	19/31	1,505	0.0430	4.592	218.00
18	19/.0090	1,539	0.0000	4.752	210.00
18	19/.23mm	1,573	0.0460	4.790	209.00
18	19/.0092	1,608	0.0440	4.927	203.00
18	19/.0095	1,715	0.0000	5.294	189.00
17	19/30	1,900	0.0480	5.808	172.00
16	19/29	2,426	0.0540	7.436	134.00
16	19/.0117	2,601	0.0550	7.933	126.00
16	19/.0119	2,691	0.0580	8.307	120.00
16	19/.0121	2,782	0.0570	8.509	118.00
16	19/.0122	2,828	0.0590	8.680	115.00
15	19/28	3,016	0.0600	9.274	108.00
14	19/27	3,831	0.0680	11.727	85.00
14	19/.36mm	3,831	0.0680	11.829	85.00
14	19/.0147	4,106	0.0695	12.577	80.00
13	19/.0154	4,506	0.0745	13.820	72.00
13	19/26	4,803	0.0770	14.745	68.00
13	19/.0161	4,925	0.0780	15.188	66.00
12	19/25	6,088	0.0850	18.638	54.00
12	19/.0185	6,503	0.0870	19.924	50.00
12	19/.0186	6,573	0.0895	20.142	50.00
11	19/.0201	7,676	0.0971	23.545	42.00
10	19/.0234	10,404	0.1120	31.917	31.00
10	19/.0242	11,127	0.1165	34.170	29.00
8	19/.0282	15,110	0.1370	46.360	22.00
8	19/.0285	15,433	0.1380	47.308	21.00
8	19/.0295	16,535	0.1420	51.490	19.00
6	19/.0372	26,293	0.1790	80.687	12.00

Applicable Specifications: ASTM B-3, ASTM B-8, ASTM B-286

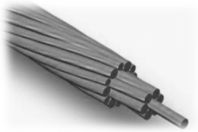
Unilay - Conductor constructed with a central core surrounded by more than one layer of helically laid wires, all layers having a common length and direction of lay.

Unilay conductors feature diameters that are smaller than equivalent gauge sizes of other concentric patterns.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



19-Strand Unilay Conductors Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
27	19/40	195	0.0151	0.594	1683.00
25	19/38	304	0.0190	0.939	1065.00
23	19/36	475	0.0235	1.452	689.00
22	19/0058	639	0.0278	1.960	510.00
21	19/34	754	0.0300	2.246	445.00
20	19/33	958	0.0340	2.920	342.00
20	19/00725	999	0.0346	3.004	333.00
20	19/.0072	985	0.0348	3.016	332.00
20	19/0073	1,013	0.0350	3.101	322.00
20	19/.19MM	1,063	0.0370	3.253	307.00
19	19/.0078	1,156	0.0375	3.546	282.00
19	19/32	1,216	0.0380	3.733	268.00
18	19/.0089	1,505	0.0430	4.654	215.00
18	19/.0092	1,608	0.0440	4.891	204.00
18	19/.0095	1,715	0.0460	5.294	189.00
17	19/30	1,900	0.0480	5.833	171.00
16	19/29	2,409	0.0540	7.436	134.00
16	19/0117	2,601	0.0560	7.979	125.00
16	19/.0119	2,691	0.0580	8.258	121.00
16	19/.0121	2,782	0.0590	8.543	117.00
16	19/.32mm	3,016	0.0600	9.291	108.00
16	19/28	3,016	0.0600	9.274	108.00
15	19/.0130	3,211	0.0630	9.905	101.00
15	19/.0132	3,311	0.0630	10.190	98.00
14	19/27	3,831	0.0670	11.730	85.00
14	19/0147	4,106	0.0700	12.690	79.00
13	19/26	4,803	0.0760	14.830	67.00
12	19/25	6,088	0.0840	18.760	53.00
12	19/0185	6,503	0.0880	19.920	50.00
11	19/.0201	7,676	0.0971	23.545	42.00
10	19/.0234	10,404	0.1120	31.917	31.00
10	19/.0242	11,127	0.1165	34.170	29.00
8	19/.0282	15,110	0.1370	46.360	22.00
8	19/.0285	15,433	0.1380	47.308	21.00
8	19/.0295	16,535	0.1420	51.490	19.00
6	19/.0372	26,293	0.1790	80.687	12.00

RoHS compliant

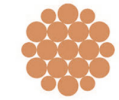
Applicable Specifications: ASTM B-33, ASTM B-8, ASTM B-286

Unilay - Conductor constructed with a central core surrounded by more than one layer of helically laid wires, all layers having a common length and direction of lay.

Unilay conductors feature diameters that are smaller than equivalent gauge sizes of other concentric patterns.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

INTERNATIONAL WIRE
Engineered Wire Division



19-Strand Combination Unilay Conductors

In Sizes 8 AWG to 3 AWG

ASTM B787 - Combination Unilay 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.

AWG	IWG Part Description	Nominal Conductor Diameter (inches)	Nominal Area In^2	Approximate lbs. / mft	Feet / Lb
8	19/.0295	0.1430	0.0130	50.970	19.62
6	19/.0372	0.1790	0.0206	81.050	12.34
4	19/.0469	0.2260	0.0328	128.900	7.76
3	19/.0526	0.2540	0.0413	162.500	6.15

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-787

RoHS compliant

Unilay - Conductor constructed with a central core surrounded by more than one layer of helically laid wires, all layers having a common length and direction of lay.

Unilay conductors feature diameters that are smaller than equivalent gauge sizes of other concentric patterns.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Custom constructions available. Contact your sales representative for specific inquires.

INTERNATIONAL WIRE
Engineered Wire Division

Bare Semi Concentric Stranded Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
26	10/36	250	0.0175	.763	1311
24	10/34	397	0.0218	1.213	824
22	16/34	635	0.0275	1.938	516
20	10/30	1000	0.0360	3.054	327
18	16/30	1620	0.0450	5.063	198

Tinned Copper Semi Concentric Stranded Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
26	10/36	250	0.0175	.763	1311
24	10/34	397	0.0218	1.213	824
22	16/34	635	0.0275	1.938	516
20	10/30	1000	0.0360	3.054	327
18	16/30	1620	0.0450	4.888	205

Applicable Specifications: ASTM B8

Semi-Concentric - non-concentric pattern of wires helically layed, compressed to the diameters listed above.

Sizes not listed here can be manufactured to specific customer requirements

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Topcoat Tin Over Bare Copper Strand Type 1

Type 1 - bare copper, stranded, light bonding (coated with pure tin).

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
30	7/38	112	0.0120	0.346	2892
28	7/.005	175	0.0150	0.532	1881
26	7/34	278	0.0189	0.858	1166
24	7/32	448	0.0242	1.383	723
22	7/30	700	0.0305	2.133	469
22	7/30	700	0.0305	2.161	463
20	10/30	1,000	0.0360	3.400	294
20	7/.0121	1,025	0.0363	3.470	288
20	7/.0126	1,111	0.0380	3.431	291
18	7/.0152	1,617	0.0460	5.510	182
18	16/30	1,620	0.0000	4.940	202
18	7/.0159	1,770	0.0460	5.930	169
16	7/.0192	2,580	0.0575	7.897	127
16	26/30	2,600	0.0585	8.790	114

Prebond - Fray Resistant Flexible Stranded Wire Type 2

Type 2 - tin coated copper, stranded, light bonding (coated with pure tin).

WG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
26	7/34	278	0.0189	0.850	1182
24	7/32	448	0.0231	1.383	723
22	7/30	700	0.0300	2.144	466
20	7/.0121	1,025	0.0360	3.164	316
20	7/28	1,111	0.0000	3.431	291
18	7/.0152	1,580	0.0460	4.993	200
18	16/30	1,600	0.0455	4.940	202
16	26/30	2,600	0.0584	8.028	125

Overcoat Tin Over Tinned Copper Strand Type 3

Type 3 - tin coated copper, stranded, heavy bonding (coated with pure tin).

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
30	7/38	112	0.0120	0.346	2892
28	7/.005	175	0.0150	0.595	1681
26	7/34	278	0.0189	0.940	1063
24	7/32	448	0.0240	1.362	734
22	7/30	700	0.0300	2.370	422
20	7/.0121	1,025	0.0363	3.133	319
20	7/0126	1,111	0.0000	3.431	291
20	10/30	1,000	0.0362	3.069	326
18	7/.0152	1,617	0.0454	5.350	187
18	16/30	1,620	0.0450	5.250	190
17	7/26	1,770	0.0460	5.829	172
16	26/30	2,600	0.0585	8.500	118

Applicable Specifications: ASTM B-33, ASTM B-286, ASTM B-470

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Bunch Stranded Copper Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
30	26/44	104	0.0117	.321	3114.3
29	33/44	132	0.0140	.408	2454.0
28	41/44	164	0.0150	.506	1975.1
27	19/40	195	0.0160	.601	1664.7
26	65/44	260	0.0180	.803	1245.8
25	30/40	307	0.0201	.939	1065.4
24	16/36	400	0.0240	1.235	809.7
24	27/38	432	0.0245	1.401	713.6
24	40/40	410	0.0230	1.265	790.8
24	41/40	420	0.0236	1.296	771.5
24	105/44	420	0.0235	1.297	771.2
22	16/34	635	0.0289	1.961	510.0
22	26/36	650	0.0310	2.007	498.3
22	41/38	656	0.0000	2.025	493.7
22	61/40	625	0.0285	1.929	518.5
22	65/40	666	0.0300	2.055	486.6
21	19/.16mm	754	0.0315	2.292	436.4
21	22/34	873	0.0330	2.696	370.9
20	7/.31mm	1042	0.0360	3.157	316.7
20	7/.0124	1076	0.0376	3.323	300.9
20	7/.0126	1111	0.0380	3.370	296.8
20	7/.32mm	1111	0.0378	3.373	296.5
20	10/30	1000	0.0380	3.088	323.9
20	12/31	951	0.0350	2.935	340.8
20	16/32	1024	0.0365	3.110	321.6
20	19/.18mm	958	0.0350	2.907	344.0
20	19/.19mm	1069	0.0365	3.159	316.5
20	20/.18mm	1008	0.0360	3.026	330.5
20	26/34	1032	0.0360	3.186	313.9
20	41/36	1025	0.0368	3.165	316.0
20	105/40	1075	0.0364	3.320	301.2
19	19/.22mm	1438	0.0430	4.339	230.5
19	56/36	1400	0.0430	4.323	231.3
19	74/38	1184	0.0380	3.656	273.6
19	133/40	1362	0.0424	4.141	241.5
18	7/.378mm	1554	0.0447	4.709	212.4
18	16/.26mm	1665	0.0460	4.744	210.8
18	16/.0098	1537	0.0460	4.744	210.8
18	16/30	1600	0.0480	4.868	205.4
18	19/.23mm	1573	0.0460	4.777	209.3
18	19/.0092	1608	0.0460	4.777	209.3
18	20/31	1584	0.0460	4.891	204.4
18	24/.0079	1498	0.0450	4.625	216.2
18	24/32	1536	0.0450	4.665	214.4
18	30/.0071	1512	0.0450	4.669	214.2
18	30/.18mm	1512	0.0473	4.669	214.2
18	41/34	1627	0.0460	5.024	199.0
18	65/36	1625	0.0460	5.017	199.3
18	114/38	1824	0.0490	5.632	177.6

Bunch Strand Continued on next page...

Applicable Specifications: ASTM B-3 (Bare) B-33 (Tin), ASTM B174

Bunched - several wires twisted together with no specific pattern or positions in relation to each other.

Sizes not listed here can be manufactured to specific customer requirements

INTERNATIONAL WIRE
Engineered Wire Division

Bunch Stranded Copper Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
17	7/.46mm	2293	0.0540	6.875	145.5
17	19/.26mm	1977	0.0480	5.772	173.3
17	19/30	1900	0.0500	5.808	172.2
17	19/.28mm	2299	0.0548	6.980	143.3
17	19/.0110	2299	0.0570	7.098	140.9
17	19/29	2409	0.0570	7.491	133.5
17	22/30	2200	0.0540	6.669	150.0
17	32/.20mm	1997	0.0490	6.011	166.4
17	33/32	2112	0.0530	6.402	156.2
17	37/.185mm	1972	0.0500	5.759	173.7
17	52/34	2064	0.0520	6.372	156.9
17	82/36	2050	0.0560	6.329	158.0
16	19/.0110	2299	0.0560	7.098	140.9
16	19/29	2409	0.0562	7.491	133.5
16	19/.29mm	2469	0.0590	7.624	131.2
16	26/30	2600	0.0590	8.028	124.6
16	28/.26mm	2913	0.0620	8.645	115.7
16	30/31	2376	0.0560	7.337	136.3
16	30/.25mm	2881	0.0590	8.896	112.4
16	30/.0098	2881	0.0630	8.896	112.4
16	37/.21mm	2549	0.0560	7.870	127.1
16	37/.225mm	2931	0.0600	8.449	118.4
16	49/.0075	2756	0.0640	8.510	117.5
16	50/.0071	2521	0.0590	7.664	130.5
16	65/34	2580	0.0580	7.965	125.5
16	80/.15mm	2785	0.0610	8.598	116.3
16	105/36	2625	0.0600	8.105	123.4
14	19/.36mm	3831	0.0699	11.330	88.3
14	19/.0141	3777	0.0705	11.480	87.1
14	19/.0147	4106	0.0740	12.680	78.9
14	37/30	3700	0.0000	11.280	88.6
14	37/.26mm	3849	0.0693	11.890	84.1
14	37/.30mm	5152	0.0780	14.330	69.8
14	41/30	4100	0.0760	12.660	79.0
14	65/32	4160	0.0739	12.840	77.9
14	104/34	4128	0.0740	12.740	78.5
14	105/34	4167	0.0740	12.870	77.7
14	130/.15mm	4525	0.0790	13.970	71.6
13	46/.26mm	4786	0.0800	14.780	67.7
13	50/.25mm	4802	0.0770	14.620	68.4
13	56/30	5600	0.0860	17.050	58.6
12	19/.0176	5885	0.0890	17.950	55.7
12	19/.45mm	5953	0.0876	17.890	55.9
12	19/25	6088	0.0890	18.460	54.2
12	19/.0185	6503	0.0930	20.080	49.8
12	37/.32mm	5874	0.0870	17.850	56.0
12	37/28	5874	0.0880	18.140	55.1
12	41/.32mm	6509	0.0930	19.830	50.4
12	65/30 Bare	6500	0.0900	20.070	49.8
12	105/32	6720	0.0950	20.750	48.2

Applicable Specifications: ASTM B-3 (Bare) B-33 (Tin), ASTM B174

Bunched - several wires twisted together with no specific pattern or positions in relation to each other.

Sizes not listed here can be manufactured to specific customer requirements

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Bunch Stranded Copper Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
11	19/.57mm	9533	0.1050	28.360	35.3
11	19/.0221	9280	0.1125	28.460	35.1
10	19/.0223	9449	0.1130	28.940	34.5
10	19/.0226	9704	0.0113	29.480	33.9
10	19/.0234	10404	0.1120	31.920	31.3
10	65/.32mm	10319	0.1170	31.860	31.4
10	82/.0117	11225	0.1220	34.660	28.9
10	84/.30mm	11696	0.1230	36.110	27.7
10	104/30	10400	0.1170	31.750	31.5
10	105/30	10500	0.1180	32.420	30.8
10	110/30	11000	0.1210	33.410	29.9
8	37/24	14948	0.1410	46.150	21.7
8	49/25	15700	0.1420	47.400	21.1
8	49/.0184	16589	0.1472	51.220	19.5
8	50/25	16021	0.1460	49.460	20.2
8	65/26	16433	0.1480	49.470	20.2
8	96/28	15241	0.1450	47.060	21.3
7	63/.45mm	19737	0.1590	60.940	16.4
6	49/.0224	24586	0.1800	75.910	13.2
6	49/.0231	26147	0.1850	80.730	12.4
6	49/.0233	26602	0.1870	82.130	12.2
6	65/24	26261	0.1840	81.080	12.3
6	96/26	24270	0.1850	74.930	13.3
6	101/26	25534	0.1800	76.870	13.0
5	37/21	30053	0.1990	91.910	10.9
4	47/21	38176	0.2350	116.700	8.6
4	49/.0281	38691	0.2300	118.300	8.4
4	49/.0292	41779	0.2336	129.000	7.8
4	96/24	38785	0.2550	119.000	8.4

Applicable Specifications: ASTM B-3 (Bare) B-33 (Tin), ASTM B174

Bunched - several wires twisted together with no specific pattern or positions in relation to each other.

Sizes not listed here can be manufactured to specific customer requirements

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Smooth Bunch Stranded Copper Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
22	26/36	550	0.0270	1.985	504
20	22/34	873	0.0320	2.696	371
20	26/34	1,032	0.0340	3.152	317
20	41/36	1,025	0.0350	3.144	318
20	42/.0052	1,136	0.0360	3.489	287
18	16/30	1,600	0.0450	4.888	205
18	41/34	1,627	0.0430	4.993	200
18	42/.0059	1,462	0.0420	4.510	222
18	65/36	1,625	0.0440	4.985	201
17	32/32	2,048	0.0485	6.273	159
16	26/30	2,600	0.0550	8.046	124
16	37/.21mm	2,549	0.0530	7.956	126
16	41/32	2,624	0.0540	8.116	123
16	65/34	2,580	0.0540	7.925	126
14	41/30	4,100	0.0700	12.580	79.5
14	65/32	4,160	0.0690	12.840	77.9
14	104/34	4,128	0.0685	12.720	78.6
13	37/29	4,725	0.0750	14.510	68.9
13	46/.26 mm	4,786	0.0760	14.890	67.1
13	65/.24mm	5,743	0.0825	17.730	56.4
12	37/.31mm	5,689	0.0834	17.570	56.9
12	37/28	5,874	0.0900	18.140	55.1
12	37/.0133	6,545	0.0900	20.210	49.5
12	65/30	6,500	0.0860	20.090	49.8
11	56/.30mm	7,797	0.0960	24.070	41.5
11	56/28	8,891	0.1035	27.260	36.7
11	90/30	9,000	0.1020	27.740	36.0
10	37/26	9,354	0.1070	28.880	34.6
10	37/.0167	10,319	0.1120	31.630	31.6
10	65/28	10,319	0.1120	31.900	31.3
10	105/30	10,500	0.1090	32.270	31.0
10	105/.254mm	10,500	0.1090	32.360	30.9
9	37/.503mm	14,505	0.1320	44.650	22.4
8	37/24	14,948	0.1360	46.390	21.6
8	37/.0211	16,473	0.1420	50.860	19.7
7	37/.0226	18,898	0.1520	58.500	17.1
7	37/.0237	20,783	0.1590	63.920	15.6
6	37/.0258	24,629	0.1730	76.380	13.1
6	37/.0266	26,180	0.1850	80.830	12.4
6	65/24	26,261	0.1780	80.830	12.4
6	84/25	26,914	0.1760	81.880	12.2

Applicable Specifications: ASTM B-3 (Bare), B33 (Tin), ASTM B-8, ASTM B174 (As Applicable)

Smooth Bunch - conductor with a central core wire surrounded by one or more layers of helically laid wires, with each wire having a specific position and lay direction.

Recommended lay lengths range from 8 to 12 times the conductor diameter.

Custom constructions available. Contact your sales representative for specific inquires.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Water Block Strand / Anti-Capillary - Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
23	7/31	554	0.0267	1.687	592.70
22	7/30	700	0.0310	2.133	468.80
20	7/.0121	1,025	0.0363	3.164	316.00
18	7/.0152	1,617	0.0460	4.944	202.30
17	19/30	1,900	0.0480	5.833	171.40
16	7/.0192	2,580	0.0580	7.897	126.60
16	19/29	2,409	0.0540	7.477	133.70
14	7/.0242	4,099	0.0725	12.532	79.80
14	19/27	3,831	0.0690	11.727	85.30
10	7/.0385	10,376	0.1150	31.907	31.30
7	7/.0432	13,064	0.1300	39.947	25.00
7	7/.0545	20,792	0.1630	63.352	15.80
6	7/.0612	26,218	0.1840	80.156	12.50

Water Block Strand / Anti-Capillary - Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
22	7/30	700	0.0300	2.144	466.40
20	7/.0121	1,025	0.0360	3.133	319.19
20	7/0126	1,111	0.0380	3.400	294.13
20	7/.32MM	1,111	0.0378	3.388	295.19
20	19/.19MM	1,063	0.0370	3.473	287.91
18	7/.0152	1,617	0.0460	4.971	201.15
18	7/26	1,770	0.0480	5.415	184.67
18	16/30	1,600	0.0450	4.907	203.81
18	26/32	1,664	0.0430	5.109	195.72
17	19/30	1,900	0.0480	5.833	171.44
16	19/29	2,409	0.0540	7.436	134.48
16	7/.0192	2,580	0.0580	7.865	127.15
16	7/.0201	2,828	0.0603	8.664	115.42
14	7/.0242	4,099	0.0730	12.532	79.80
14	19/27	3,831	0.0690	11.727	85.27
12	7/.0305	6,512	0.0920	19.859	50.36

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-8

RoHS compliant

Water Block Stranding - wires flooded / coated with a water blocking silicone compound.

Water Blocking Compound: Formulated to GE 9034N25

Custom constructions available. Contact your sales representative for specific inquires.

Available in the following coverages:

Light - Several interstices filled, Barber Pole effect

Full - All interstices filled

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

INTERNATIONAL WIRE
Engineered Wire Division

Copper Clad Steel Wire Bunched Rope Conductors

AWG	IWG Part Description (Bunch Rope Composite)	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
19	7x (15/40 Tin Copper & 1/36 Hard Tin CCS)	1,250	0.0450	3.58	279.50
19	7x (14/40 Bare Copper & 1/36 Hard Bare CCS)	1,179	0.0420	3.62	276.30
16	7x10 (9/34 Bare Copper & 1/34 Hard Bare CCS)	2,778	0.0650	8.56	116.81
16	7x (19/38 Bare Copper & 4/36 Hard Bare CCS)	2,828	0.0690	8.75	114.30
14	7x24 (19/36 Bare Copper & 5/36 Hard Bare CCS)	4,200	0.0850	13.03	76.75
12	7x37 (29/36 Bare Copper & 8/36 Hard Bare CCS)	6,475	0.1040	19.99	50.03
12	7x37 (32/36 Tin Copper & 5/36 Hard Bare CCS)	6,475	0.1040	20.19	49.53
12	7x37 (32/36 Bare Copper & 5/36 Hard Bare CCS)	6,475	0.1040	20.34	49.16
11	7x43 (38/36 Bare Copper & 5/36 Hard Bare CCS)	7,525	0.1170	23.95	41.76
19	7x (100/40 Bare Copper & 15/40 Hard Bare CCS)	8,243	0.1160	26.18	38.20
10	7x59 (47/36 Bare Copper & 12/36 Hard Bare CCS)	10,325	0.0000	32.59	30.68
10	7x59 (51/36 Bare Copper & 8/36 Hard Bare CCS)	10,325	0.1330	32.63	30.65
9	7x75 (59/36 Bare Copper & 16/36 Hard Bare CCS)	13,125	0.1470	41.20	24.27
9	7x75 (65/36 Bare Copper & 10/36 Hard Bare CCS)	13,125	0.1510	41.29	24.22
11	7x17/32 Hard Tin CCS	7,616	0.1120	21.97	45.51
13	7x7/30 Hard Tin CCS	714	0.0918	14.17	70.56

Copper Clad Steel Concentric Stranded Conductors

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
6	7/34 Hard Bare CCS	278	0.0189	0.78	1289.30
25	19/38 Hard Bare CCS	304	0.0193	0.86	1168.90
19	19/32 Hard Tin CCS	1,216	0.0390	3.42	292.20
25	3/33 Tin Copper & 4/33 Hard Tin CCS	353	0.0213	1.04	964.30
22	6/30 Tin Copper & 1/30 Hard Tin CCS	714	0.0300	2.12	471.70

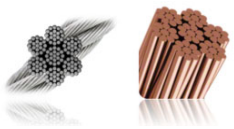
Applicable Specifications: ASTM B452 and Others as Applicable to Construction Type
Sizes not listed here can be manufactured to specific customer requirements

RoHS compliant

Products available in:
40HS (1022), 40% Conductivity, Hard Drawn
40A (1006), 40% Conductivity, Annealed
30HS (1022), 30% Conductivity, Hard Drawn
30A (1022), 30% Conductivity, Annealed

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B173 Class G Concentric Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
14	7x7/.0092	4,147	0.080	12.69	78.8
10	7 x 7/.0146	10,445	0.127	32.37	30.9
9	7 x 7/0164	13,179	0.146	40.78	24.5
8	7 x 7/.0179	15,700	0.160	48.46	20.6
8	7 x 7/0184	16,589	0.162	51.29	19.5
7	7x7/.0206	20,794	0.183	64.55	15.5
6	7x7/.0223	24,367	0.201	74.81	13.4
6	7 x 7/0231	26,147	0.208	80.89	12.4
4	7 x 7/.0292	41,779	0.255	129.3	7.73
2	7 x 7/0350	60,025	0.315	191.8	5.21
2	7 x 7/.0368	66,358	0.331	205.3	4.87
250 MCM	37x7/.0311	250,507	0.627	774.9	1.29
300 MCM	37 x 7/0340	301,168	0.700	960.0	1.04
350 MCM	37x7/0368	350,748	0.742	1092	0.915
400 MCM	37x7/0393	400,023	0.800	1257	0.796
500 MCM	37 x 7/0439	499,147	0.885	1555	0.643
600 MCM	61x7/0375	600,469	0.995	1876	0.533
650 MCM	61x7/0390	649,467	1.025	2057	0.486
750 MCM	61x7/0419	749,645	1.131	2345	0.426
800 MCM	61x7/0433	800,578	1.170	2500	0.400
900 MCM	61x7/0459	899,608	1.240	2848	0.351
1000 MCM	61x7/.0484	1,000,273	1.260	3125	0.320

ASTM B173 Class G Concentric Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
10	7x7/.0146	10,445	0.127	32.37	30.9
8	7x7/25	15,700	0.153	48.51	20.6
8	7x7/.0184	16,589	0.162	51.29	19.5
7	7x7/.0206	20,794	0.183	64.78	15.4
6	7x7/.0231	26,147	0.208	80.75	12.4
4	7x7/.0292	41,779	0.255	129.3	7.73
2	7x7/.0368	66,358	0.331	205.3	4.87
250 MCM	37x7/.0311	250,507	0.627	776	1.29
350 MCM	37x7/.0368	350,748	0.742	1094	0.914
500 MCM	37x7/.0439	499,147	0.885	1554	0.644
750 MCM	61x7/.0419	749,645	1.131	2383	0.420

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-173

Concentric Ropes: rope-lay-stranded conductors having concentric-stranded members.

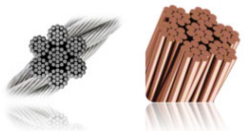
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B173 Class H Concentric Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
8	19 x 7/29	16,983	0.1630	52.64	19.000
6	19x7/27	26,818	0.2050	82.79	12.100
4	19 x 7/0177	41,668	0.2570	129.30	7.730
3	19 x 7/.0199	52,669	0.2930	163.30	6.120
2	37 x 7/.0160	66,304	0.3260	206.70	4.840
1	37x7/.0180	83,916	0.3650	261.00	3.830
1/0	37 x 7/24	105,682	0.4080	337.00	2.970
2/0	37 x 7/0227	133,460	0.4580	414.50	2.410
3/0	37 x 7/0254	167,096	0.5200	532.80	1.880
4/0	37 x 7/.0286	211,852	0.5770	672.20	1.490
4/0	37 x 7/.0286	211,852	0.5770	656.20	1.520
250 MCM	61x7/.0242	250,068	0.6400	785.20	1.270
300 MCM	61 x 7/0265	299,861	0.7000	959.20	1.040
350 MCM	61x7/.0286	349,269	0.7410	1088.00	0.919
400 MCM	61x7/0306	399,826	0.8150	1266.00	0.790
450 MCM	61 x 7/0325	451,019	0.8650	1426.00	0.701
500 MCM	61x7/0342	499,436	0.8950	1558.00	0.642
600 MCM	37 x 19/.0292	599,406	1.0100	1895.00	0.528
650 MCM	37x19/.0304	649,684	1.0500	2021.00	0.495
750 MCM	37x19/0327	751,711	1.1100	2331.00	0.429
800 MCM	37x19/0337	798,390	1.1500	2512.00	0.398
1000 MCM	37x19/0377	999,167	1.2900	3169.00	0.316
1250 MCM	37x19/.0422	1,251,931	1.4150	3963.00	0.252
1500 MCM	37x19/0462	1,500,511	1.6170	4680.00	0.214
2000 MCM	61x19/.0415	1,996,088	1.8520	6339.00	0.158

ASTM B173 Class H Concentric Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
8	19 x 7/29	16,983	0.1630	52.57	19.000
6	19x7/27	26,818	0.2050	85.54	11.700
5	19x7/.0161	34,475	0.2310	107.00	9.340
4	19x7/.0177	41,668	0.2570	129.30	7.730
3	19x7/24	53,733	0.2930	167.70	5.960
2	37x7/.0160	66,304	0.3260	206.40	4.840
1	37x7/.0180	82,986	0.3650	259.70	3.850
1/0	37x7/24	104,639	0.4080	327.00	3.060
2/0	37x7/.0227	133,460	0.4580	417.40	2.400
3/0	37x7/22	165,783	0.5200	516.20	1.940
250 MCM	61x7/.0242	250,068	0.6400	782.60	1.280
300 MCM	61x7/.0265	299,861	0.7000	932.20	1.070
350 MCM	61x7/.0286	349,269	0.7410	1092.00	0.916
500 MCM	61x7/.0342	499,436	0.8950	1587.00	0.630

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-173

Concentric Ropes: rope-lay-stranded conductors having concentric-stranded members.

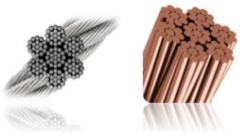
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B173 Miscellaneous Concentric Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
5	37x7/.0118	36,063	0.2350	111.90	8.940
2	19x7/.0223	66,140	0.3240	204.80	4.880
1/0	19x7/.0282	105,767	0.4260	331.50	3.020
2/0	19x7/.0308	126,169	0.4620	392.00	2.550
2/0	19x7/.0316	132,808	0.4620	415.40	2.410
3/0	19x7/.0355	168,559	0.5250	522.70	1.910
4/0	19x7/.0399	211,737	0.5900	658.40	1.520
250 MCM	19x7/.0433	249,360	0.6500	787.30	1.270
300 MCM	37x19/.0207	301,228	0.7090	939.40	1.060
350 MCM	37x19/.0223	349,595	0.7750	1106.00	0.904
400 MCM	37x19/.0238	398,207	0.8330	1266.00	0.790
400 MCM	19x7/.0548	399,404	0.8200	1243.00	0.804
400 MCM	37x19/.0267	501,162	0.9280	1572.00	0.636
550 MCM	37x19/21	571,012	0.9600	1803.00	0.555

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-173

Concentric Ropes: rope-lay-stranded conductors having concentric-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class I - 24 AWG Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
5	7x13/24	36,765	0.2460	113.84	8.780
4	7x15/24	42,421	0.2620	131.18	7.620
3	7x19/24	53,733	0.3040	165.12	6.060
2	7x24/24	67,874	0.3250	210.34	4.750
2	7x25/24	70,702	0.3350	219.49	4.560
1	7x30/24	84,842	0.3320	261.13	3.830
1/0	19x13/24	99,790	0.4040	310.49	3.220
1/0	7x37/24	104,639	0.4150	323.17	3.090
1/0	12x22/24	106,659	0.4060	329.89	3.030
2/0	12x27/24	130,899	0.4100	404.16	2.470
3/0	12x35/24	169,684	0.4700	524.16	1.910
4/0	12x43/24	208,469	0.5350	645.87	1.550
4/0	19x28/24	214,933	0.5600	665.44	1.500
4/0	19x29/24	222,610	0.5850	689.67	1.450
250 MCM	19x32/24	245,638	0.6050	759.76	1.320
250 MCM	19x33/24	253,314	0.6100	781.73	1.280
250 MCM	37x17/24	254,122	0.6500	787.69	1.270
300 MCM	37x20/24	298,967	0.7050	925.97	1.080
300 MCM	19x39/24	299,371	0.7070	929.67	1.080
350 MCM	19x44/24	337,752	0.7020	1051.21	0.951
350 MCM	19x45/24	345,429	0.7150	1071.02	0.934
350 MCM	37x24/24	358,761	0.7550	1116.38	0.896
450 MCM	37x30/24	448,451	0.7750	1393.16	0.718
500 MCM	37x32/24	478,348	0.8800	1486.33	0.673
500 MCM	37x33/24	493,296	0.8900	1559.77	0.641
500 MCM	7x7x25/24	494,912	0.9900	1553.68	0.644
500 MCM	19x65/24	498,952	0.8750	1541.14	0.649
500 MCM	37x34/24	508,245	0.9050	1579.07	0.633
550 MCM	37x36/24	538,141	0.9360	1670.17	0.599
600 MCM	37x40/24	597,935	0.9750	1903.16	0.525
650 MCM	37x44/24	657,728	1.0370	2062.02	0.485
750 MCM	37x50/24	747,419	1.1330	2320.81	0.431
800 MCM	37x52/24	777,315	1.1100	2422.82	0.413
800 MCM	37x53/24	792,264	1.1400	2465.33	0.406
900 MCM	61x38/24	936,495	1.2200	2914.14	0.343
1000 MCM	7x19x19/24	1,020,933	1.4100	3267.44	0.306
1100 MCM	61x45/24	1,109,007	1.3700	3466.40	0.288
1200 MCM	7x19x22/24	1,182,133	1.5370	3752.58	0.266
1500 MCM	7x19x28/24	1,504,533	1.7700	4753.70	0.210
1550 MCM	61x63/24	1,552,610	1.5400	4882.57	0.205
1900 MCM	7x19x36/24	1,934,400	1.9750	6106.04	0.164

Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class I - 24 AWG Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
6	7x7/24 over 12/24	24,645	0.198	76.17	13.130
6	7 x 9/24	25,453	0.207	79.33	12.610
5	7x13/24	36,765	0.242	113.29	8.830
4	7x15/24	42,421	0.262	131.18	7.620
4	7x16/24	45,249	0.265	146.04	6.850
3	7x18/24	50,905	0.284	157.43	6.350
3	7x19/24	53,733	0.300	164.81	6.070
3	7x21/24	59,389	0.318	183.71	5.443
2	7x23/24	65,046	0.310	200.08	4.998
2	7x24/24	67,874	0.315	210.01	4.762
1	7x28/24	79,186	0.351	254.32	3.932
1	19x11/24	84,438	0.366	262.09	3.816
1	7x32/24	90,498	0.375	279.99	3.572
1/0	7x36/24	101,811	0.398	326.15	3.066
1/0	7x37/24	104,639	0.422	323.01	3.096
1/0	7x38/24	107,467	0.427	331.45	3.017
1/0	19x14/24	107,467	0.413	334.31	2.991
1/0	19x14/24	107,467	0.415	336.95	2.968
1/0	7x39/24	110,295	0.410	340.74	2.935
2/0	19x17/24	130,495	0.470	406.19	2.462
2/0	7x47/24	132,919	0.460	410.92	2.434
2/0	19x18/24	138,171	0.468	428.12	2.336
2/0	19x20/24	153,524	0.490	476.71	2.098
3/0	7x59/24	166,856	0.510	514.47	1.944
3/0	19x22/24	168,876	0.518	524.68	1.906
3/0	19x24/24	184,229	0.541	572.72	1.746
4/0	19x28/24	214,933	0.594	665.24	1.503
4/0	19x29/24	222,610	0.600	690.21	1.449
4/0	19x30/24	230,286	0.605	709.90	1.409
250 MCM	19x33/24	253,314	0.635	787.26	1.270
250 MCM	19x34/24	260,990	0.650	806.77	1.240
300 MCM	19x39/24	299,371	0.685	929.67	1.076
300 MCM	37x21/24	313,916	0.711	972.65	1.028
300 MCM	37x23/24	343,813	0.730	1065.91	0.938
350 MCM	37x24/24	358,761	0.755	1113.99	0.898
400 MCM	37x27/24	403,606	0.803	1257.76	0.795
450 MCM	19x58/24	445,219	0.792	1378.94	0.725
450 MCM	37x30/24	448,451	0.860	1395.88	0.716
500 MCM	37x33/24	493,296	0.890	1536.51	0.651
550 MCM	37x36/24	538,141	0.940	1681.57	0.595
600 MCM	37x40/24	597,935	0.970	1864.43	0.536
650 MCM	37x43/24	642,780	1.010	1999.59	0.500
750 MCM	37x50/24	747,419	1.110	2320.81	0.431
800 MCM	37x52/24	777,315	1.118	2415.76	0.414
900 MCM	61x38/24	936,495	1.220	2914.14	0.343
1100 MCM	61x45/24	1,109,007	1.328	3526.16	0.284
1500 MCM	61x61/24	1,503,321	1.544	4707.55	0.212

Applicable Specifications: ASTM B-33, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 - 25 AWG Bunch Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
7	7x9/.0177	19,737	0.184	60.35	16.57
6	7x12/25	26,914	0.208	83.07	12.04
5	113/.0177	35,402	0.217	107.6	9.293
4	7x17/25	38,129	0.258	117.3	8.522
4	7x19/.0177	41,668	0.253	128.8	7.765
4	7x19/25	42,615	0.260	131.4	7.612
2	7 x 28/25	62,800	0.315	193.6	5.165
2	7x30/25	67,286	0.335	207.6	4.817
1	7x35/25	78,500	0.355	241.9	4.134
1	7x37/25	82,986	0.368	257.3	3.887
1/0	7x45/25	100,929	0.400	311.0	3.216
2/0	7x 58/25	130,086	0.455	401.3	2.492
3/0	7x75/25	168,215	0.520	518.8	1.928
3/0	7x84/25	188,401	0.550	581.8	1.719

ASTM B172 - 27 AWG Bunch Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
8	7x12/27	16,938	0.1710	52.09	19.200
6	7x17/27	23,995	0.2050	73.63	13.580
6	7x19/27	26,818	0.2080	82.35	12.140
4	7x30/27	41,160	0.2610	126.20	7.922
4	19x11/27	42,143	0.2600	130.60	7.655
3	7x37/27	52,225	0.2950	160.90	6.214
2	19x16/27	61,299	0.3100	190.70	5.243
1	19x22/27	84,286	0.3800	260.50	3.839
2/0	7x97/27	133,084	0.4700	411.20	2.432
2/0	19x36/27	134,064	0.4800	416.90	2.399
3/0	19x40/27	153,246	0.4950	473.60	2.112
4/0	19x52/27	199,220	0.5800	617.00	1.621
250 MCM	19x66/27	252,857	0.6500	784.80	1.274
400 MCM	19x108/27	402,192	0.7950	1252.50	0.798
800 MCM	37x109/27	790,468	1.1300	2463.60	0.406

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 - 28 AWG Bunch Ropes Copper

ASTM B174 Class J As Applicable

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
9	7x14/.312mm	14,826	0.144	45.71	21.87
8	7x16/28	17,781	0.165	54.59	18.32
7	7x17/28	18,892	0.171	60.52	16.52
7	7x19/28	21,115	0.186	65.08	15.36
6	7x22/28	24,449	0.210	75.01	13.33
6	7x23/28	25,560	0.210	78.66	12.71
6	7x24/28	26,672	0.210	82.09	12.18
6	19x9/28	27,148	0.214	83.19	12.02
4	7x34/28	37,785	0.252	116.1	8.611
4	19x13/28	39,214	0.240	121.1	8.261
4	7x37/28	41,119	0.261	126.8	7.889
3	19x19/28	57,312	0.300	175.9	5.684
2	7x61/28	67,791	0.331	209.9	4.763
1/0	7x7x15/28	116,689	0.490	371.1	2.695

ASTM B172 - 29 AWG Bunch Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
10	7x12/.0118	11,696	0.135	36.18	27.64
8	7x17/29	14,927	0.161	46.67	21.43
8	7x19/.0111	16,387	0.159	50.59	19.77
8	7x19/29	16,983	0.167	52.32	19.11
7	7x21/.0114	19,104	0.162	58.61	17.06
6	7x32/.0114	29,111	0.199	89.55	11.17
5	7x37/29	33,072	0.225	103.3	9.677
4	7x50/.0114	45,486	0.255	140	7.141
2	7x70/.0114	63,680	0.296	196.3	5.094
1	7x101/.0114	91,882	0.355	283.7	3.525
3/0	19x70/.0114	172,847	0.493	537.5	1.86
4/0	19x88/.0114	217,293	0.559	676.4	1.478
250 MCM	19x110/.0114	271,616	0.63	846.8	1.181
350 MCM	19x136/.0114	335,817	0.678	1060.5	0.943
450 MCM	19x176/.0114	434,586	0.788	1374.3	0.728
550 MCM	19x7x31/.0114	535,825	0.887	1696.9	0.589

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

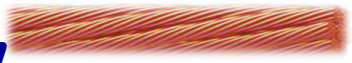
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B172 Class K- 30 AWG Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
11	7x12/30	8,400	0.118	26.02	38.43
9	7x20/30	14,000	0.150	43.17	23.16
8	7x24/30	16,800	0.167	51.66	19.36
7	7x28/30	19,600	0.172	60.34	16.57
7	7x30/30	21,000	0.184	65.25	15.33
6	7x37/30	25,900	0.202	79.81	12.53
6	7x38/30	26,600	0.210	81.95	12.20
5	7x48/30	33,600	0.235	103.5	9.657
4	7x57/30	39,900	0.249	122.6	8.153
4	7x59/30	41,300	0.260	130.3	7.677
4	7x60/30	42,000	0.260	129.7	7.711
3	19x27/30	51,300	0.304	159.4	6.275
3	7x75/30	52,500	0.290	161.9	6.177
2	7x90/30	63,000	0.322	194.0	5.154
2	7x95/30	66,500	0.325	207.7	4.814
2	19x35/30	66,500	0.3250	205.40	4.868
1	19x41/30	77,900	0.3460	240.00	4.166
1	7x119/30	83,300	0.3600	255.30	3.917
1	19x44/30	83,600	0.3600	258.20	3.873
1/0	19x52/30	98,800	0.3920	307.60	3.251
1/0	19x53/30	100,700	0.3900	314.40	314.400
1/0	14x72/30 Herringbone	100,800	0.4100	316.80	3.156
1/0	19x55/30	104,500	0.4100	324.40	3.083
1/0	7x3x50/30	105,000	0.4400	326.10	3.066
1/0	19x56/30	106,400	0.4110	333.80	2.996
1/0	7x7x22/30	107,800	0.4600	339.40	2.947
2/0	19x66/30	125,400	0.4320	385.80	2.592
2/0	19x67/30	127,300	0.4400	393.40	2.542
2/0	19x69/30	131,100	0.4400	405.90	2.464
2/0	19x69/30 Herringbone	131,100	0.4550	410.30	2.437
2/0	7x3x63/30	132,300	0.4800	415.90	2.404
2/0	7x7x27/30	132,300	0.4800	410.90	2.434
2/0	19x70/30	133,000	0.4600	414.80	2.411
2/0	14x98/30 Herringbone	137,200	0.4550	429.70	2.327
2/0	37x39/30 Herringbone	144,300	0.5000	451.90	2.213
2/0	14x107/30 Herringbone	149,800	0.4800	469.10	2.132
3/0	14x108/30 Herringbone	151,200	0.5040	473.00	2.114
3/0	19x84/30	159,600	0.4900	491.20	2.036
3/0	19x86/30	163,400	0.5200	506.00	1.976
3/0	14x118/30 Herringbone	165,200	0.5040	521.00	1.920
3/0	19x88/30	167,200	0.5300	518.30	1.929
3/0	19x89/30	169,100	0.5150	520.10	1.923
4/0	14x142/30	198,800	0.5780	621.30	1.609

Continued On Next Page...

RoHS compliant

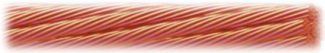
Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.



ASTM B172 Class K- 30 AWG Bunch Ropes Bare Copper (Continued)

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
4/0	19x109/30	207,100	0.5400	638.60	1.566
4/0	19x110/30	209,000	0.5680	651.90	1.534
4/0	7x7x43/30	210,700	0.6250	662.10	1.510
4/0	19x111/30	210,900	0.5800	651.50	1.535
4/0	19x113/30 Herringbone	214,700	0.5600	667.20	1.499
250 MCM	7x7x50/30	245,000	0.6600	765.80	1.306
250 MCM	14x178/30 Herringbone	249,200	0.6200	771.40	1.296
250 MCM	7x7x51/30	249,900	0.6400	779.40	1.283
250 MCM	37x68/30	251,600	0.6200	776.70	1.287
300 MCM	7x7x60/30	294,000	0.7550	916.60	1.091
300 MCM	7x7x61/30	298,900	0.755	933.8	1.071
350 MCM	37x93/30	344,100	0.695	1058.3	0.945
350 MCM	19x7x26/30	345,800	0.809	1076.8	0.929
350 MCM	37x94/30	347,800	0.735	1079.2	0.927
350 MCM	7x7x72/30 Herringbone	352,800	0.775	1104.1	0.906
400 MCM	19x7x29/30	385,700	0.878	1199.7	0.834
400 MCM	7x19x30/30	399,000	0.875	1264.8	0.791
400 MCM	7x19x31/30 Herringbone	412,300	0.85	1298.5	0.77
500 MCM	19x7x37/30	492,100	0.95	1537.6	0.65
500 MCM	7x19x38/30 Herringbone	505,400	0.97	1591	0.629
500 MCM	19x7x38/30	505,400	0.95	1581.9	0.632
600 MCM	19x7x44/30	585,200	1.125	1820.1	0.549
600 MCM	7x19x45/30	598,500	1.067	1900.2	0.526
600 MCM	7x19x45/30 Herringbone	598,500	1.06	1889.7	0.529
700 MCM	19x7x52/30	691,600	1.15	2169	0.461
750 MCM	7x19x56/30	744,800	1.2	2342.2	0.427
750 MCM	7x19x57/30 Herringbone	758,100	1.1500	2403.50	0.416
750 MCM	19x7x57/30	758,100	1.1500	2378.80	0.420
1000 MCM	7x19x75/30	997,500	1.3500	3166.80	0.316
1000 MCM	7x19x75/30 Herringbone	997,500	1.3700	3171.60	0.315
1000 MCM	19x7x75/30	997,500	1.3100	3177.70	0.315
1000 MCM	37x7x39/30	1,010,100	1.3900	3182.90	0.314
1200 MCM	7x19x90/30 Herringbone	1,197,000	1.4500	3780.60	0.265
1500 MCM	7x19x113/30	1,502,900	1.6600	4764.00	0.210
1500 MCM	7x19x113/30 Herringbone	1,502,900	1.6500	4763.50	0.210
1600 MCM	19x7x117/30	1,556,100	1.6400	4963.70	0.201
1600 MCM	37x7x61/30	1,579,900	1.7050	5046.80	0.198
2000 MCM	7x19x151/30 Herringbone	2,008,300	1.9100	6363.60	0.157

Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

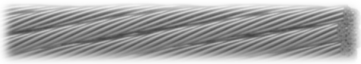
Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B172 Class K- 30 AWG Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
10	7x15/30	10,500	0.130	32.28	30.98
8	7x19/.0108	15,513	0.155	47.46	21.07
9	7x20/30	14,000	0.147	44.63	22.41
8	7x22/.26mm	16,022	0.162	49.60	20.16
8	7x24/30	16,800	0.168	51.85	19.29
7	7x27/.26MM	19,664	0.169	61.21	16.34
6	7x37/30	25,900	0.206	80.70	12.39
6	7x38/30	26,600	0.201	83.05	12.04
5	7x48/30	33,600	0.228	103.5	9.657
4	19x20/30	38,000	0.256	122.4	8.167
4	7x59/30	41,300	0.262	127.5	7.843
4	7x60/30	42,000	0.260	129.7	7.711
3	7x85/30	59,500	0.320	189.6	5.275
2	7x95/30	66,500	0.329	204.2	4.897
2	19x35/30	66,500	0.325	205.7	4.862
1	19x43/30	81,700	0.363	253.2	3.95
1	19x44/30	83,600	0.365	259.2	3.859
1/0	19x55/30	104,500	0.403	326.2	3.066
1/0	19x56/30	106,400	0.403	331.3	3.018
1/0	7x7x22/30	107,800	0.460	339.4	2.947
2/0	7x7x27/30	132,300	0.501	411.0	2.433
2/0	19x70/30	133,000	0.460	414.8	2.411
3/0	7x7x31/30	151,900	0.555	485.7	2.059
3/0	37x45/30	166,500	0.515	515.8	1.939
3/0	7x7x34/30	166,600	0.590	537.2	1.862
3/0	19x88/30	167,200	0.533	518.3	1.93
4/0	7x7x43/30	210,700	0.627	662.2	1.51
4/0	19x111/30	210,900	0.585	652.3	1.533
4/0	37x57/30	210,900	0.577	653.7	1.53
250 MCM	7x7x51/30	249,900	0.682	781.6	1.279
250 MCM	37x68/30	251,600	0.600	776.7	1.288
250 MCM	19x7x19/30	252,700	0.675	787.1	1.27
250 MCM	37x70/30	259,000	0.640	804.7	1.243
262 MCM	37x71/30	262,700	0.680	818.0	1.222
274 MCM	7x7x56/30	274,400	0.710	858.4	1.165
300 MCM	7x7x61/30	298,900	0.758	1026.0	0.9746
350 MCM	7x19x26/30	345,800	0.809	1099.6	0.9094
350 MCM	19x7x26/30	345,800	0.815	1082.0	0.9242
350 MCM	37x94/30	347,800	0.720	1069.7	0.9348
450 MCM	19x7x34/30	452,200	0.933	1426.3	0.7011
500 MCM	19x7x38/30	505,400	0.950	1577.6	0.6339
500 MCM	61x83/30	506,300	0.895	1569.5	0.6371
550 MCM	19x7x40/30	532,000	0.950	1681.5	0.5947
650 MCM	61x106/30	646,600	1.040	2018.9	0.4953
750 MCM	7x19x57/30	758,100	1.190	2386.3	0.4191
1000 MCM	7x19x75/30	997,500	1.365	3157.7	0.3167
1100 MCM	37x7x43/30	1,113,700	1.490	3495.9	0.286
1200 MCM	7x19x91/30	1,210,300	1.500	3824.0	0.2615

Applicable Specifications: ASTM B-33, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 - 32 AWG Bunch Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
13	7x11/32	4,928	0.094	15.30	65.36
11	7x17/32	7,616	0.116	23.86	41.91
10	7x24/32	10,752	0.132	32.97	30.33
10	7x25/32	11,200	0.143	36.14	27.67
8	7x35/32	15,680	0.168	49.51	20.20
8	6x45/.008	17,280	0.170	53.54	18.68
7	7x42/32	18,816	0.169	57.96	17.25
7	7x45/.21mm	19,165	0.165	58.36	17.14
7	7x 46/32	20,608	0.186	66.90	14.95
7	7x47/32	21,056	0.186	64.90	15.41
6	7x60/32	26,880	0.215	85.74	11.66
6	7x61/32	27,328	0.218	87.59	11.42
5	7x68/32	30,464	0.229	99.92	10.01
5	7x73/32	32,704	0.230	106.0	9.431
5	7x81/32	36,288	0.245	118.5	8.438
4	7x85/32	38,080	0.247	121.8	8.212
3	19x42/.21mm	48,550	0.27	148.9	6.714
2	19x49/32	59,584	0.318	192.2	5.204
1	7x3x70/32	94,080	0.435	301.3	3.319

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class M- 34 AWG Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
14	7x15/34	4,167	0.083	12.76	78.34
12	7x24/34	6,668	0.106	20.43	48.96
11	7x30/34	8,335	0.105	25.68	38.94
10	7x37/34	10,280	0.132	31.56	31.68
10	7x40/34	11,113	0.131	34.17	29.26
9	7x48/34	13,336	0.146	40.99	24.39
8	7x59/34	16,392	0.158	50.27	19.89
8	7x60/34	16,670	0.162	51.34	19.48
6	7x90/34	25,005	0.207	79.66	12.55
6	19x35/34	26,394	0.195	82.60	12.11
6	7x95/34	26,394	0.198	81.20	12.32
5	19x44/34	33,181	0.240	102.6	9.751
4	19x55/34	41,476	0.250	126.9	7.882
4	7x150/34	41,675	0.252	127.9	7.818
4	7x3x50/34	41,675	0.255	129.3	7.732
4	19x56/34	42,230	0.2540	130.10	7.688
2	19x87/34	65,608	0.3160	202.50	4.939
2	7x7x34/34	66,124	0.3350	204.90	4.879
2	19x88/34	66,362	0.3200	204.80	4.882
2	7x7x36/34	70,013	0.3500	216.90	4.611
1	7x7x43/34	83,627	0.4030	281.00	3.559
1/0	7x7x54/34	105,020	0.4100	324.60	3.080
1/0	37x72/34	105,734	0.3870	329.40	3.036
2/0	19x7x25/34	131,969	0.4400	409.10	2.445
2/0	37x90/34	132,168	0.4300	409.20	2.444
2/0	7x7x68/34	132,247	0.4900	437.40	2.286
3/0	19x7x32/34	168,921	0.5600	529.40	1.889
3/0	7x7x87/34	169,198	0.4900	525.10	1.905
4/0	7x7x106/34	206,150	0.6000	636.60	1.571
4/0	19x7x40/34	211,151	0.6250	665.40	1.503
4/0	61x88/34	213,056	0.5450	664.00	1.506
250 MCM	19x7x48/34	253,381	0.6650	799.00	1.251
500 MCM	37x7x49/34	503,706	0.9600	1584.90	0.631
1000 MCM	61x7x59/34	999,910	1.3500	3152.30	0.317
1000 MCM	19x7x3x70/34	1,108,542	1.4000	3295.30	0.304

Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class M- 34 AWG Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
14	7x15/34	4,167	0.081	12.81	78.04
12	7x24/34	6,668	0.102	20.99	47.64
10	7x37/34	10,280	0.130	31.56	31.69
8	7x59/34	16,392	0.160	51.57	19.39
8	7x60/34	16,670	0.160	51.34	19.48
6	19x35/34	26,394	0.214	81.40	12.29
4	19x55/34	41,476	0.250	126.9	7.882
4	19x56/34	42,230	0.262	131.8	7.587
3	7x7x27/34	52,510	0.328	162.8	6.144
2	7x7x34/34	66,124	0.339	210.1	4.760
2	7x7x35/34	68,068	0.352	216.6	4.617
1	37x57/34	83,706	0.375	260.1	3.844
1/0	19x7x20/34	105,575	0.440	327.8	3.051
2/0	19x7x25/34	131,969	0.505	409.7	2.441
2/0	7x7x68/34	132,247	0.44	408.4	2.449
4/0	7x7x108/34	210,039	0.64	678.6	1.474
4/0	19x7x40/34	211,151	0.597	664.4	1.505

Applicable Specifications: ASTM B-33, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class O - 36 AWG Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
18	7x9/36	1,575	0.0520	4.875	205.1
18	6x9/36 & 1x11/36	1,625	0.0480	5.024	199.1
16	3x35/36	2,625	0.0700	8.075	123.8
16	7x15/36	2,625	0.0635	8.039	124.4
15	7x20/36	3,500	0.0737	10.76	92.97
14	5x33/36	4,125	0.0840	12.68	78.86
14	3x56/36	4,200	0.0850	12.89	77.60
14	7x24/36	4,200	0.0810	12.86	77.76
13	7x33/36	5,775	0.0960	18.79	53.22
12	7x37/36	6,475	0.1050	20.33	49.18
12	3x87/36	6,525	0.1060	20.00	50.00
11	7x43/36	7,525	0.1100	23.63	42.31
10	7x59/36	10,325	0.1300	31.66	31.58
10	3x138/36	10,350	0.1250	31.50	31.75
10	7x60/36	10,500	0.1340	32.27	30.99
9	7x75/36	13,125	0.1490	41.92	23.860
8	7x95/36	16,625	0.1670	52.77	18.950
7	7x119/36	20,825	0.1860	66.32	15.080
6	7x150/36	26,250	0.2070	84.04	11.900
6	7x7x22/36	26,950	0.2200	83.76	11.940
5	7x7x25/36	30,625	0.2500	101.00	9.902
5	7x7x27/36	33,075	0.2600	107.80	9.278
4	7x7x34/36	41,650	0.2860	129.40	7.726
4	19x88/36	41,800	0.2600	128.90	7.758
4	7x7x37/36	45,325	0.2930	146.90	6.807
3	7x3x100/36	52,500	0.3050	171.70	5.825
3	7x7x48/36	58,800	0.3450	193.40	5.170
2	19x139/36	66,025	0.3200	205.90	4.856
2	7x7x54/36	66,150	0.3470	216.00	4.630
2	7x7x55/36	67,375	0.3500	221.50	4.514
2	19x146/36	69,350	0.3300	216.80	4.612
2	7x7x59/36	72,275	0.3630	233.90	4.275
1	7x7x68/36	83,300	0.3800	276.80	3.613
1/0	7x7x86/36	105,350	0.4150	327.60	3.052
1/0	7x7x95/36	116,375	0.4550	396.00	2.525
2/0	7x7x108/36	132,300	0.5020	445.40	2.245
4/0	19x7x64/36	212,800	0.6560	729.80	1.370
250 MCM	19x7x75/36	249,375	0.6650	849.00	1.178
250 MCM	7x19x76/36	252,700	0.7546	842.00	1.188
400 MCM	7x19x121/36	402,325	0.8760	1261.80	0.793
750 MCM	19x7x4x55/36	731,500	1.2000	2457.80	0.407
750 MCM	19x7x3x75/36	748,125	1.1500	2446.60	0.409
1000 MCM	19x7x3x100/36	997,500	1.3400	3285.70	0.304
1200 MCM	19x7x3x120/36	1,197,000	1.4400	3961.40	0.252

Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

Non-Compressed and Compressed versions available for all constructions above.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class O - 36 AWG Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
18	7x9/36	1,575	0.0490	4.869	205.4
18	7x10/36	1,750	0.0520	5.421	184.5
16	7x15/36	2,625	0.0630	8.090	123.6
14	7x24/36	4,200	0.0850	12.91	77.46
12	7x37/36	6,475	0.1080	21.13	47.32
10	7x59/36	10,325	0.1240	31.83	31.42
9	7x75/36	13,125	0.1470	41.92	23.85
8	7x93/36	16,275	0.1560	49.89	20.04
8	19x35/36	16,625	0.1600	51.31	19.49
8	7x95/36	16,625	0.1690	52.95	18.89
7	7x119/36	20,825	0.1890	66.66	15.00
7	7x130/36	22,750	0.1970	76.38	13.09
6	7x150/36	26,250	0.2100	84.17	11.88
6	7x7x22/36	26,950	0.2280	87.81	11.39
5	7x7x25/36	30,625	0.2500	101.0	9.902
4	37x45/36	41,625	0.2700	128.10	7.809
4	7x7x34/36	41,650	0.2900	136.90	7.304
4	19x88/36	41,800	0.2600	128.90	7.758
4	7x7x37/36	45,325	0.3070	152.00	6.580
3	7x3x100/36	52,500	0.3150	171.70	5.825
3	7x7x44/36	53,900	0.3280	183.70	5.442
2	7x7x54/36	66,150	0.3550	205.70	4.861
2	7x7x59/36	72,275	0.3980	242.90	4.117
1	7x7x68/36	83,300	0.4000	278.20	3.594
1/0	7x7x86/36	105,350	0.4500	327.80	3.051
1/0	7x7x95/36	116,375	0.4710	363.00	2.755
2/0	7x7x108/36	132,300	0.5040	445.20	2.246
3/0	19x7x54/36	179,550	0.5950	560.70	1.783
4/0	19x7x64/36	212,800	0.6470	733.50	1.363
400 MCM	19x7x3x40/36	399,000	0.7900	1342.20	0.745
750 MCM	19x7x3x75/36	748,125	1.0600	2446.60	0.409
900 MCM	19x7x3x90/36	897,750	1.1600	3026.80	0.330

Applicable Specifications: ASTM B-33, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

Non-Compressed and Compressed versions available for all constructions above.

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class Q - 40 AWG Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
22	2x33/40	676	0.0310	2.199	454.7
22	3x22/40	676	0.0305	2.063	484.8
21	7x11/40	788	0.0320	2.440	409.9
21	3x27/.08mm	829	0.0370	2.611	383.0
20	7x13/40	932	0.0410	2.877	347.6
20	3x33/40	1,014	0.0400	3.154	317.1
20	3x35/40	1,075	0.0430	3.301	303.0
20	7x15/40	1,075	0.0400	3.320	301.2
18	7x21/40	1,505	0.0460	4.664	214.4
18	3x50/40	1,536	0.0480	4.745	210.7
18	5x33/40	1,690	0.0550	5.379	185.9
18	7x24/40	1,720	0.0500	5.275	189.6
18	4x4x11/40	1,802	0.0560	5.816	171.9
17	7x27/40	1,935	0.0540	6.063	164.9
17	7x30/40	2,150	0.0570	6.761	147.9
17	7x33/40	2,365	0.0580	7.45	134.200
16	7x37/40	2,652	0.0650	8.18	122.300
16	7x38/40	2,724	0.064	8.646	115.7
16	7x41/40	2,939	0.072	9.327	107.2
16	3x100/40	3,072	0.067	9.651	103.6
15	7x44/40	3,154	0.0736	9.907	100.9
15	7x45/40	3,226	0.072	10.19	98.17
15	7x50/40	3,584	0.076	11.29	88.6
15	4x4x22/40	3,604	0.0850	12.31	81.250
14	7x53/40	3,799	0.0720	12.16	82.220
14	7x56/40	4,014	0.082	12.68	78.89
14	7x58/40	4,157	0.077	12.96	77.14
14	7x59/40	4,229	0.0785	13.46	74.27
14	7x61/40	4,372	0.084	14.2	70.45
13	7x66/40	4,731	0.087	14.77	67.69
13	7x68/40	4,874	0.0906	15.18	65.86
13	7x75/40	5,376	0.0900	17.34	57.670
12	7x95/40	6,810	0.1040	21.52	46.480
12	7x100/40	7,168	0.11	22.52	44.4
12	4x4x44/40	7,209	0.113	25.28	39.55
11	7x3x40/40	8,602	0.115	27.82	35.94
10	7x150/40	10,752	0.128	34.43	29.04
10	7x3x50/40	10,752	0.13	35.95	27.82
9	7x3x56/40	12,042	0.166	39.62	25.24
9	7x180/.08mm	12,902	0.1415	40.83	24.490
8	7x7x34/40	17,060	0.1960	55.45	18.030
7	7x7x43/40	21,576	0.191	73.29	13.64
5	7x7x65/40	32,614	0.24	108.8	9.195
4	7x4x133/40	38,134	0.255	118.3	8.452
4	7x7x89/40	44,657	0.27	148.7	6.724
2	7x7x130/.08 mm	65,229	0.375	212.1	4.714
1	7x7x3x50/40	75,264	0.345	249.4	4.01
1/0	7x7x3x65/40	97,843	0.4120	325.20	3.075
2/0	7x7x7x35/40	122,931	0.4890	392.80	2.546

Applicable Specifications: ASTM B-3, ASTM B-172

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B172 Class Q - 40 AWG Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
22	3x22/40	676	0.0350	2.066	483.9
21	3x27/40	829	0.0370	2.607	383.5
20	7x13/40	932	0.0410	2.877	347.6
20	3x33/40	1,014	0.0400	3.154	317.1
20	3x35/40	1,075	0.0390	3.295	303.5
20	7x15/40	1,075	0.0420	3.302	302.9
18	7x21/40	1,505	0.0480	4.680	213.7
18	7x22/40	1,577	0.0500	4.909	203.7
18	3x56/40	1,720	0.0540	5.319	188.0
18	7x24/40	1,720	0.0526	5.284	189.2
17	7x28/40	2,007	0.0560	6.180	161.8
17	7x30/40	2,150	0.0600	6.761	147.9
16	7x37/40	2,652	0.0670	8.177	122.3
16	7x40/40	2,867	0.0690	9.000	111.1
15	7x42/40	3,011	0.0710	9.278	107.8
14	7x59/40	4,229	0.0850	13.59	73.600
13	7x72/40	5,161	0.0942	16.08	62.200
12	7x95/40	6,810	0.1080	21.40	46.720
12	19x35/40	6,810	0.1040	21.34	46.860
19	7x3x40/40	8,602	0.1220	27.66	36.150
10	7x130/40	9,318	0.1210	29.65	33.720
7	7x7x38/40	19,067	0.1850	63.01	15.870
4	7x7x89/40	44,657	0.2830	148.70	6.724
2	7x7x130/.08mm	65,229	0.3750	212.10	4.714

Applicable Specifications: ASTM B-33, ASTM B-172

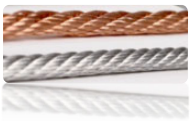
Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division



ASTM B738 Class R - 42 AWG Fine Wire Bunch Ropes Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
22	7x15/42	656	0.0336	2.016	496.1
20	7x22/42	963	0.0420	2.999	333.5
19	7x30/42	1,313	0.0470	4.030	248.2
18	7x37/42	1,619	0.0500	5.051	198.0
16	7x60/42	2,625	0.0630	8.319	120.2
14	7x95/42	4,156	0.0800	13.14	76.09
14	19x35/42	4,156	0.0816	12.86	77.74
13	7x115/42	5,031	0.0850	15.95	62.71
12	7x150/42	6,563	0.1060	20.60	48.54
12	7x7x24/42	7,350	0.1100	23.62	42.34

RoHS compliant

Applicable Specifications: ASTM B-3 (Bare), ASTM B-33 (Tinned), ASTM B-738

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B738 Class S - 44 AWG Ultra Fine Wire Bunch Ropes Bare Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
29	3x11/44	132	0.0155	0.4011	2493.1
27	3x17/44	204	0.0190	0.6204	1611.9
26	4x16/44	256	0.0201	0.7798	1282.4
25	3x25/44	300	0.0240	0.9144	1093.6
24	2x50/44	400	0.0230	1.256	796.4
24	3x35/44	420	0.0288	1.276	783.8
24	7x15/44	420	0.0280	1.283	779.2
24	7x17/44	476	0.0280	1.456	686.7
23	7x18/44	504	0.0285	1.546	646.7
23	3x44/44	528	0.0307	1.615	619.4
23	7x20/44	560	0.0305	1.708	585.5
22	3x50/44	600	0.0330	1.861	537.3
22	7x22/44	616	0.0310	1.900	526.4
22	7x24/44	672	0.0330	2.076	481.7
21	5x40/44	800	0.0370	2.501	399.8
21	7x30/44	840	0.0360	2.582	387.4
20	7x36/44	1,008	0.0410	3.092	323.4
20	7x37/44	1,036	0.0410	3.180	314.5
20	7x38/44	1,064	0.0420	3.241	308.5
20	7x40/44	1,120	0.0425	3.458	289.2
19	7x43/44	1,204	0.0450	3.716	269.1
19	7x47/44	1,316	0.0440	4.104	243.7
19	5x72/44	1,440	0.0490	4.530	220.8
18	7x56/44	1,568	0.0500	4.889	204.6
18	7x59/44	1,652	0.0510	5.149	194.2
18	7x63/44	1,764	0.0550	5.509	181.5
17	7x72/44	2,016	0.0560	6.389	156.5
16	7x95/44	2,660	0.0640	8.228	121.5
15	7x110/44	3,080	0.0680	9.745	102.6
15	7x115/44	3,220	0.0740	10.30	97.13
14	6x3x56/44	4,032	0.0820	13.01	76.87
14	7x150/44	4,200	0.0880	13.15	76.03
14	7x3x50/44	4,200	0.0830	13.41	74.56
13	7x3x56/44	4,704	0.0880	15.51	64.46
13	7x3x61/44	5,124	0.0970	16.72	59.80
13	4x4x81/44	5,184	0.1010	17.51	57.10
12	7x7x31/44	6,076	0.0985	19.26	51.93
12	7x7x34/44	6,664	0.1100	21.70	46.08
11	7x7x38/44	7,448	0.1200	24.22	41.28
11	7x7x47/44	9,212	0.1220	29.48	33.92
10	7x7x48/44	9,408	0.1240	30.08	33.24
10	7x7x54/44	10,584	0.1360	34.69	28.82
10	7x7x55/44	10,780	0.134	35.44	28.21
9	7x7x69/44	13,524	0.156	44.49	22.47
8	7x7x87/44	17,052	0.189	55.43	18.04
7	19x7x38/44	20,216	0.182	65.12	15.36
7	7x7x108/44	21,168	0.2	69.62	14.36
7	7x7x115/44	22,540	0.203	76.46	13.08
6	7x7x7x19/44	26,068	0.228	98.5	10.15
6	7x7x7x20/44	27,440	0.235	96.36	10.38

Applicable Specifications: ASTM B-3, ASTM B-738

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

ASTM B738 Class S - 44 AWG Ultra Fine Wire Bunch Ropes Tinned Copper

AWG	IWG Part Description	Nominal Circular Mil Area	Nominal Conductor Diameter (inches)	Approximate lbs. / mft	Feet / Lb
26	4x16/44	256	0.0201	0.7798	1282.4
24	3x35/44	420	0.0270	1.284	779.1
23	7x15/44	463	0.0260	1.418	705.2
22	3x50/44	600	0.0320	1.842	543.0
22	7x22/44	616	0.0320	1.891	529.0
22	7x24/44	672	0.0340	2.077	481.4
21	7x30/44	840	0.0360	2.582	387.4
20	7x38/44	1,064	0.0210	3.272	305.6
20	7x40/44	1,120	0.0460	3.459	289.1
19	7x47/44	1,316	0.0440	4.104	243.7
18	7x59/44	1,652	0.0520	5.158	193.9
18	7x63/44	1,764	0.0520	5.509	181.5
13	7x7x24/44	4,704	0.0960	15.06	66.38

Applicable Specifications: ASTM B-33, ASTM B-738

Bunch Ropes: rope-lay-stranded conductors having bunch-stranded members.

Custom constructions available. Contact your sales representative for specific inquires.

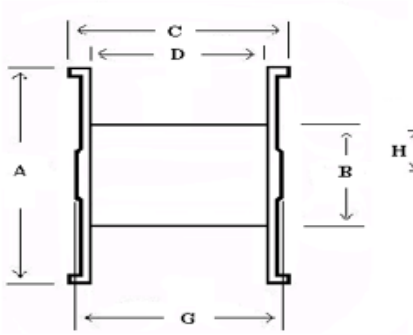
Lay lengths range from ASTM recommended 8 to 16 times the conductor diameter or can be manufactured to customer specification.

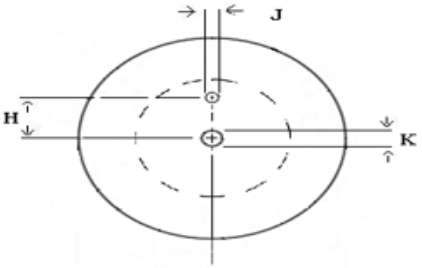
RoHS compliant

INTERNATIONAL WIRE
Engineered Wire Division

Reel Dimensions

Check with our Sales Department for Reels Not Listed or Customer Supplied Dimension Requirements





Reel	Code	A Flange Diameter (inches)	B Reel Hub (inches)	C Overall Width (inches)	D Traverse Width (inches)	G Overall Width at Arbor (inches)	H Arbor to Reel Lock (inches)	J Reel Lock Diameter (inches)	K Arbor Diameter (inches)	Nominal Reel Capacity (lbs.)
16 Carrier Hacoba Bobbin	SHB	2.50	1.360	3.100	2.750	n/a	n/a	n/a	0.625	2
24 Carrier Hacoba Bobbin	LHB	2.50	1.360	4.450	4.100	n/a	n/a	n/a	0.625	3
6.5x3.5x5/8 Plastic	065P	6.50	3.500	4.375	3.500	4.375	1.125	0.625	0.625	10
8x6x3 Plastic	86PL	8.00	4.600	7.375	6.000	7.375	2.000	0.375	3.000	35
12" Plywood	12PY	12.00	6.000	7.000	6.000	7.000	n/a	n/a	1.500	50
12X7X1.25" Plastic Negev	12PN	11.63	5.500	8.250	7.000	n/a	n/a	n/a	1.250	50
12X7X3" Plastic Negev	12N7	11.63	6.500	8.250	7.000	n/a	n/a	n/a	3.000	50
16" Plywood	16PY	16.00	8.000	9.000	8.000	9.000	n/a	n/a	1.500	150
16x8" Steel	16ST	16.00	8.000	8.750	8.000	n/a	n/a	n/a	1.250	250
16x11" Steel	1611	16.00	9.000	12.375	11.000	12.375	3.313	0.750	5.000	250
18" Plastic	18PL	18.00	11.000	12.375	9.625	12.375	3.313	0.750	5.000	275
22x11" Steel	22ST	22.00	14.000	12.750	11.000	13.000	3.313	0.750	5.000	450
22X11" Plastic	22PL	22.00	14.000	14.000	11.000	14.000	3.375	0.750	5.000	500
22x13" Plastic Negev	2213	22.00	13.375	16.000	13.000	16.000	3.375	0.750	5.000	450
22x15" Plastic	2215	22.00	14.000	18.000	15.000	18.000	3.375	0.750	5.000	500
24" Plywood	24PY	24.00	10.000	13.000	11.000	13.000	n/a	n/a	2.313	500
24" Wood/Metal	24WM	24.00	14.000	9.500	6.000	9.500	n/a	n/a	1.500	200
630 Din Steel	D630	24.75	12.570	18.000	16.500	18.000	3.560	0.380	5.000	800
630 Plastic	630P	24.75	14.000	18.750	15.500	18.750	4.000	1.000	5.000	800
25" Plastic/Metal Negev	25PM	24.75	13.000	17.625	14.750	n/a	n/a	n/a	5.000	750
30x11x5" Steel	3011	30.00	16.000	13.000	11.000	13.000	5.000	1.000	5.000	1,000
30x15x2.25" Steel	30ST	30.00	17.000	16.250	15.000	16.250	6.000	1.500	2.313	1,000
30" Plastic	30PL	30.00	16.000	17.500	14.000	17.500	4.875	1.500	5.000	1,000
30x15x5" Steel	30ST	30.00	17.000	16.250	15.000	16.250	6.000	1.500	5.000	1,000
36x18x5" Steel	36SC	36.00	16.000	19.750	18.000	19.750	5.500	1.000	5.000	2,000
36x21x3" Steel	36ST	36.00	16.000	20.000	18.000	20.000	5.000	1.000	3.000	2,000
48" Steel	48ST	48.00	24.000	37.000	29.625	n/a	8.000	1.500	3.000	4,000
48" Steel	48ST	48.00	24.000	31.000	24.000	n/a	8.000	1.500	3.000	4,000
48" Wood/Metal	48WM	48.00	18.000	23.500	20.000	n/a	n/a	n/a	3.000	3,500
54" Steel Torodial	54ST	54.50	32.000	36.000	32.000	38.000	8.000	1.25"	3.000	6,000
60" Steel Torodial	60ST	60.00	32.000	35.500	32.000	38.000	8.000	1.250	3.000	8,000
72" Steel Torodial	72ST	72.00	32.000	37.000	32.000	39.000	6.000	1.620	3.250	10,000

Contact our Sales Department for spools and reels not listed or if you have Customer Packaging.

INTERNATIONAL WIRE
Engineered Wire Division

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

INTERNATIONAL WIRE
Engineered Wire Division

Engineering Resources

With decades of experience and technical expertise we know every nook and cranny of Wire and Cable manufacturing — from providing cabling and harness solutions for top automotive makers to helping engineers in mining operations, oil exploration and renewable energy, you will find us there.

Our vast Engineering resouces are available to provide you with the best solution to meet your wire and cable needs including:

- ✓ **Custom Design**
- ✓ **Troubleshooting at the Customer or Jobsite**
- ✓ **Technical expertise**

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
The information provided on this page is for reference purposes only.
International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwiregroup.com

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.

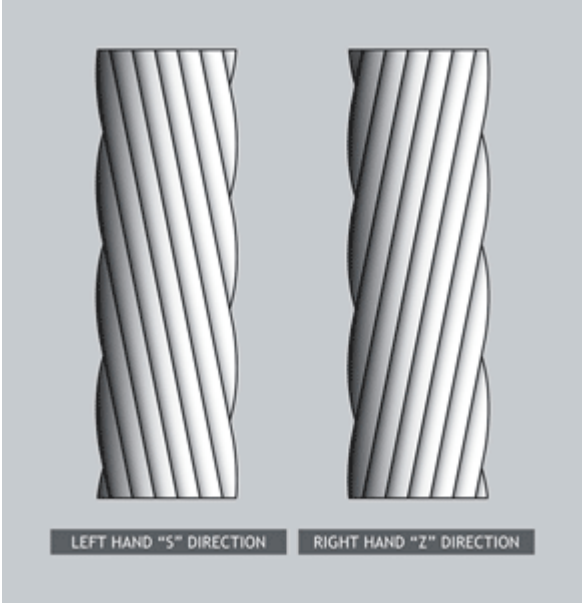
Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.
International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwiregroup.com

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”.

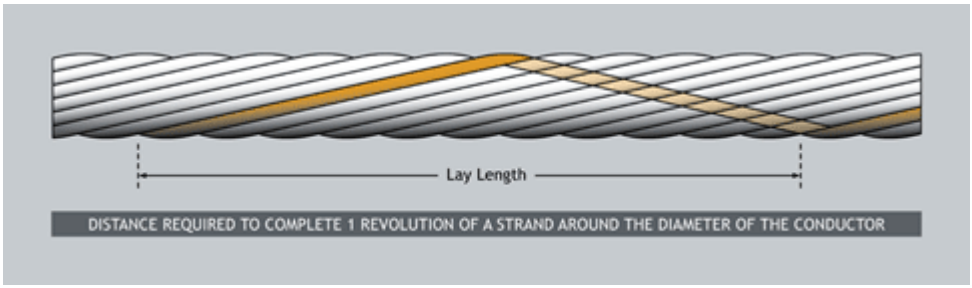


The lay direction is determined by the direction the machine is turning during the stranding operation. The conventional method to determine the lay direction is to observe the upper surface of the stranded conductor with one end pointing toward you and the wire leading away from you:

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.

Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.

International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwiregroup.com

Wire 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**":

$$k = 100\ (m - 1)$$

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:

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

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

Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.

International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.

Phone: 315-245-2000 • Web: www.internationalwiregroup.com

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".

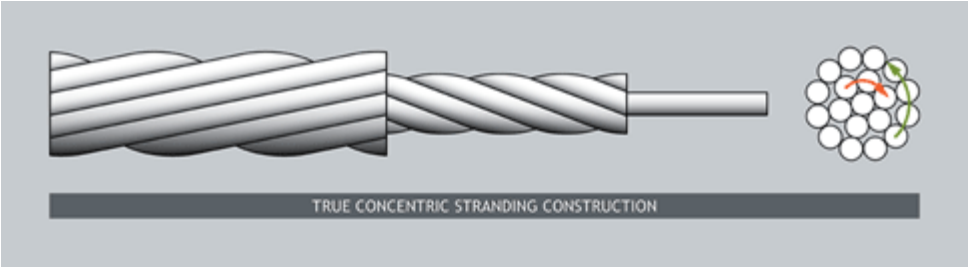
Concentric conductor may be defined as:"***A central wire (strand) surrounded by one or more layers of helically laid wires in a geometric pattern.***"

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.

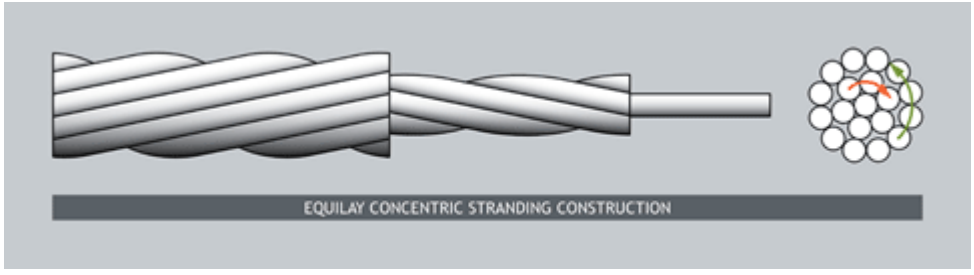
The main advantage of concentric constructions is the close/tight diameter tolerances that can be maintained on the conductor. Concentric constructions have very smooth uniform surfaces that are suited for thin wall insulation in high performance applications.

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.

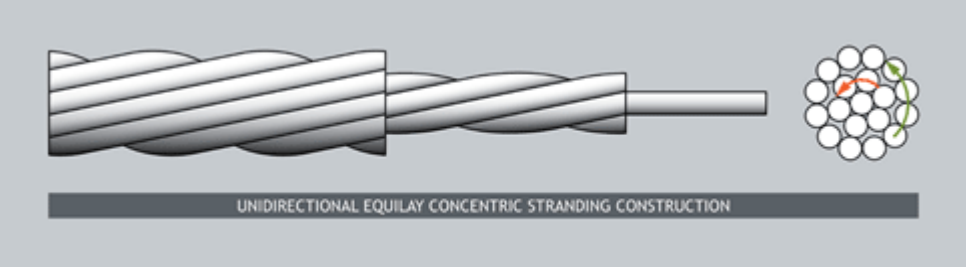
Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.

International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwiregroup.com

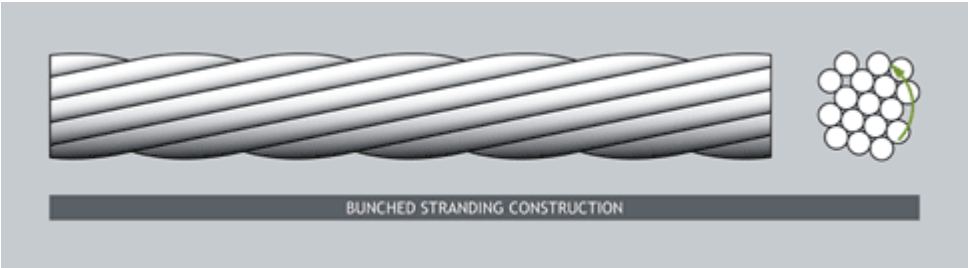
Wire and Cable Facts / Strand Configurations

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.

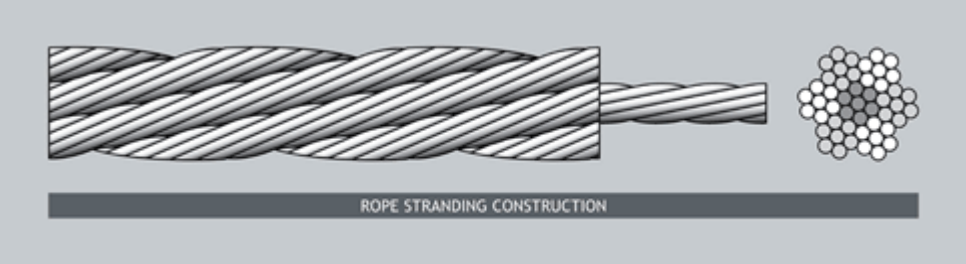


Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.
International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwiregroup.com

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.

Custom constructions are available, please contact our Sales Department

The information provided on this page is for reference purposes only.

International Wire Group, Inc. • 12 Masonic Ave • Camden, N.Y. U.S.A.
Phone: 315-245-2000 • Web: www.internationalwire.com

At IWG, we are more than wire...

International Wire Group

From Our Quality Products To Yours

We are people!

Our proud, skilled, and diverse workforce is the heart of IWG.

Our Core Values *are our guiding principals.*

Safety First, Quality Always

The safety of our employees is at the core of everything we do. People are the resource of our success.

Integrity

Our conduct demonstrates integrity and commitment to ethics, safety, health and the environment.

Leadership

Leadership and excellence in performance are sought and rewarded. As an Organization we continually strive to improve our performance.

Innovation

Our products and services reflect dedication to quality, innovation and value.

Relationships

Customers are the reason we exist. Its is through our talent, passion and commitment that we strive to exceed their expectations.

Teamwork

We treat one another with respect, promote teamwork, and encourage personal freedom and growth.