



# Southwire® Machine Flex® Power PVC THHN

90°C Wet or Dry. 600 Volts. Flexible Stranded Copper Conductor. PVC Insulation and Nylon Jacket (THHN/THWN-2). Oil & Gasoline Resistant. Sunlight Resistant. Rated UL VW-1 and CSA FT1 & FT4 Flame Resistant.



Image not to scale. See Table 1 for dimensions.

## CONSTRUCTION:

1. **Conductor:** 8 - 4/0 AWG: Class K, flexible stranded bare copper. 250 - 750 kcmil: Class I, flexible stranded bare copper
2. **Insulation:** Polyvinyl Chloride (PVC) with Nylon sheath

## APPLICATIONS AND FEATURES:

Southwire's Machine Flex® power cables are suited for use in wet and dry areas, conduits, ducts, troughs, trays, aerial supported by a messenger, and where superior electrical properties are desired. These cables are capable of operating continuously at the conductor temperature not in excess of 90°C for normal operation in wet and dry locations, 130°C for emergency overload, and 150°C for short circuit conditions. 1/0 AWG & larger rated for CT use.

## SPECIFICATIONS:

- ASTM B3 Soft or Annealed Copper Wire
- ASTM B172 Standard Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Copper Conductors
- ASTM B174 Standard Specification for Bunch-Stranded Copper
- UL 83 Thermoplastic Insulated Wires and Cables
- UL 758 Standard for Appliance Wiring Material Style 2463 (80C, 600V)
- UL 1063 Machine Tool Wiring (MTW)
- UL 1685 FT4 Vertical-Tray Fire Propagation and Smoke Release Test (1/0 and Larger)
- ICEA S-95-658 (NEMA WC70) Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy
- **CE/RoHS-2 – The CE Marking has been applied solely to express the conformance to the material restrictions identified in the RoHS-2 (2011/65/EU) Directive**
- Made in America: Compliant with both Buy American and Buy America Act (BAA) requirements per 49 U.S.C. § 5323(j) and the Federal Transit Administration Buy America requirements per 49 C.F.R. part 661





**SAMPLE PRINT LEGEND:**

**8AWG-1AWG**

SOUTHWIRE #P# (UL) 1 AWG (42.406 mm<sup>2</sup>) CU TYPE THHN/THWN-2 600V 90(D)C DRY/90(D)C WET PRI/GRI VW-1 OR AWM [Applicable Styles] OR MTW SUN RES --- (CSA) T90 NYLON OR TWN75 FT1 FT4 --- CE RoHS-2 Made in USA. [SEQUENTIAL FOOTAGE MARKS]

**1/0 AWG - 500 KCMIL**

SOUTHWIRE #P# (UL) 500 KCMIL (253.35mm<sup>2</sup>) CU TYPE THHN/THWN-2 600V 90(D)C DRY/90(D)C WET PRI/GRI VW-1 FOR CT USE OR AWM [Applicable Styles] OR MTW SUN RES --- (CSA) T90 NYLON OR TWN75 FT1 FT4 --- CE RoHS-2 Made in USA. [SEQUENTIAL FOOTAGE MARKS]

**600 - 1000 KCMIL**

{SQFTG} SOUTHWIRE #P# (UL) XX KCMIL XX STRAND CLASS I (XXMM<sup>2</sup>) CU TYPE THHN/THWN-2 600V 90°C DRY/90°C WET PRI/GRI VW-1 FOR CT USE SUN RES OR AWM 1321 OR MTW --- (CSA) T90 NYLON OR TWN75 FT1 FT4 --- (NOM)-ANCE THWN/THHN 600V 90°C --- CE RoHS-2 MADE IN USA





**Table 1 – Weights and Measurements**

Stock Number	Cond. Size AWG/Kcmil	Color	Diameter Over Conductor inch	Conductor Stranding	Insulation Thickness mils	Approx. OD inch	Copper Weight lbs/1000ft	Overall Weight lbs/1000ft
TBA	8	BK	0.153	168	35	0.223	52	62
TBA	6	BK	0.190	273	35	0.264	83	98
672867	4	BK	0.235	413	50	0.335	130	153
TBA	2	BK	0.302	665	50	0.402	210	243
TBA	1	BK	0.329	836	60	0.449	260	302
677368	1/0	BK	0.400	1044	60	0.520	334	374
TBA	2/0	BK	0.430	1330	60	0.520	381	426
679607	4/0	BK	0.550	2109	60	0.664	676	746
649414	250	BK	0.605	627	70	0.747	763	857
672866	300	BK	0.638	741	70	0.780	929	1024
649415	350	BK	0.670	893	60	0.812	1084	1172
648948	500	BK	0.858	1221	70	0.998	1514	1641
649416	600	BK	0.963	1480	70	1.127	1859	2033
649549	750	BK	1.094	1850	80	1.258	2367	2569
674459	1000	BK	1.190	2516	80	1.350	3045	3255
674667	4	GN	0.235	413	50	0.335	130	153
664229	3	GN	0.270	525	50	0.366	169	197
456258	1	GN	0.329	836	60	0.449	260	302
674668	1/0	GN	0.400	1044	60	0.520	334	374
456257	2/0	GN	0.430	1330	60	0.520	381	426
664217	3/0	BN	0.490	1672	60	0.608	535	599
664226	3/0	GY	0.490	1672	60	0.608	535	599
664220	3/0	OE	0.490	1672	60	0.608	535	599
664223	3/0	YW	0.490	1672	60	0.608	535	599
456253	4/0	BN	0.550	2109	60	0.664	676	746
456256	4/0	GN	0.550	2109	60	0.664	676	746
456254	4/0	OE	0.550	2109	60	0.664	676	746
456255	4/0	YW	0.550	2109	60	0.664	676	746
672218	250	BN	0.605	627	70	0.747	763	857
673791	250	GN	0.605	627	70	0.747	763	857
673792	250	GY	0.605	627	70	0.747	763	857
672217	250	OE	0.605	627	70	0.747	763	857
672219	250	YW	0.605	627	70	0.747	763	857
674116	300	BN	0.638	741	70	0.780	929	1024
674121	300	GN	0.638	741	70	0.780	929	1024
674120	300	GY	0.638	741	70	0.780	929	1024
674117	300	OE	0.638	741	70	0.780	929	1024
674118	300	YW	0.638	741	70	0.780	929	1024
674662	350	BN	0.670	893	60	0.812	1084	1172
652964	350	GN	0.670	893	60	0.812	1084	1172
674666	350	GY	0.670	893	60	0.812	1084	1172





Stock Number	Cond. Size AWG/Kcmil	Color	Diameter Over Conductor inch	Conductor Stranding	Insulation Thickness mils	Approx. OD inch	Copper Weight lbs/1000ft	Overall Weight lbs/1000ft
674664	350	OE	0.670	893	60	0.812	1084	1172
138181	350	RD	0.670	893	60	0.812	1084	1172
674665	350	YW	0.670	893	60	0.812	1084	1172
646978	500	BN	0.858	1221	70	0.998	1514	1641
677701	500	GN	0.858	1221	70	0.998	1514	1641
646981	500	GY	0.858	1221	70	0.998	1514	1641
456464	500	GY/PE	0.858	1221	70	0.998	1514	1641
646979	500	OE	0.858	1221	70	0.998	1514	1641
456462	500	PE	0.858	1221	70	0.998	1514	1641
456461	500	PK	0.858	1221	70	0.998	1514	1641
456463	500	TN	0.858	1221	70	0.998	1514	1641
646980	500	YW	0.858	1221	70	0.998	1514	1641
678431	600	BN	0.963	1480	70	1.127	1859	2033
673748	600	GN	0.963	1480	70	1.127	1859	2033
678435	600	GY	0.963	1480	70	1.127	1859	2033
678432	600	OE	0.963	1480	70	1.127	1859	2033
678434	600	YW	0.963	1480	70	1.127	1859	2033
677721◇	750	BN	1.094	1850	80	1.258	2367	2569
671518◇	750	GN	1.094	1850	80	1.258	2367	2569
677725◇	750	GY	1.094	1850	80	1.258	2367	2569
677722◇	750	OE	1.094	1850	80	1.258	2367	2569
677723◇	750	YW	1.094	1850	80	1.258	2367	2569

All dimensions are nominal and subject to normal manufacturing tolerances  
 ◇ Cable marked with this symbol is a standard stock item





**Table 2 – Electrical and Engineering Data**

Cond. Size	Min. Bend Radius	Max Pull Tension	DC Resistance at 25°C	AC Resistance at 75°C	Inductive Reactance @ 60Hz	Allowable Ampacity Raceway 75°C	Allowable Ampacity Raceway 90°C
AWG/ Kcmil	Inches	Lbs	Ω/1000ft	Ω/1000ft	Ω/1000ft	Amp	Amp
8	0.8	132	0.715	0.861	0.052	50	55
6	1.0	209	0.450	0.541	0.051	65	75
4	1.3	333	0.282	0.340	0.048	85	95
2	1.6	530	0.179	0.216	0.045	115	130
1	1.6	669	0.137	0.164	0.046	130	145
1/0	2.0	844	0.113	0.136	0.044	150	170
2/0	2.0	1064	0.090	0.108	0.043	175	195
4/0	2.6	1692	0.057	0.069	0.041	230	260
250	2.9	2000	0.047	0.057	0.041	255	290
300	3.1	2400	0.039	0.048	0.041	285	320
350	3.2	2800	0.033	0.042	0.040	310	350
500	3.9	4000	0.023	0.031	0.039	380	430
600	5.6	4800	0.019	0.027	0.039	420	475
750	6.2	6000	0.016	0.024	0.038	475	535
1000	6.7	8000	0.012	0.020	0.037	545	615
4	1.3	333	0.282	0.340	0.048	85	95
3	1.6	420	0.226	0.272	0.047	100	115
1	1.6	669	0.137	0.164	0.046	130	145
1/0	2.0	844	0.113	0.136	0.044	150	170
2/0	2.0	1064	0.090	0.108	0.043	175	195
3/0	2.4	1342	0.072	0.087	0.042	200	225
3/0	2.4	1342	0.072	0.087	0.042	200	225
3/0	2.4	1342	0.072	0.087	0.042	200	225
3/0	2.4	1342	0.072	0.087	0.042	200	225
4/0	2.6	1692	0.057	0.069	0.041	230	260
4/0	2.6	1692	0.057	0.069	0.041	230	260
4/0	2.6	1692	0.057	0.069	0.041	230	260
4/0	2.6	1692	0.057	0.069	0.041	230	260
250	2.9	2000	0.047	0.057	0.041	255	290
250	2.9	2000	0.047	0.057	0.041	255	290
250	2.9	2000	0.047	0.057	0.041	255	290
250	2.9	2000	0.047	0.057	0.041	255	290
250	2.9	2000	0.047	0.057	0.041	255	290
300	3.1	2400	0.039	0.048	0.041	285	320
300	3.1	2400	0.039	0.048	0.041	285	320
300	3.1	2400	0.039	0.048	0.041	285	320
300	3.1	2400	0.039	0.048	0.041	285	320
300	3.1	2400	0.039	0.048	0.041	285	320
350	3.2	2800	0.033	0.042	0.040	310	350
350	3.2	2800	0.033	0.042	0.040	310	350





Cond. Size	Min. Bend Radius	Max Pull Tension	DC Resistance at 25°C	AC Resistance at 75°C	Inductive Reactance @ 60Hz	Allowable Ampacity Raceway 75°C	Allowable Ampacity Raceway 90°C
AWG/Kcmil	Inches	Lbs	Ω/1000ft	Ω/1000ft	Ω/1000ft	Amp	Amp
350	3.2	2800	0.033	0.042	0.040	310	350
350	3.2	2800	0.033	0.042	0.040	310	350
350	3.2	2800	0.033	0.042	0.040	310	350
350	3.2	2800	0.033	0.042	0.040	310	350
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
500	3.9	4000	0.023	0.031	0.039	380	430
600	5.6	4800	0.019	0.027	0.039	420	475
600	5.6	4800	0.019	0.027	0.039	420	475
600	5.6	4800	0.019	0.027	0.039	420	475
600	5.6	4800	0.019	0.027	0.039	420	475
600	5.6	4800	0.019	0.027	0.039	420	475
750	6.2	6000	0.016	0.024	0.038	475	535
750	6.2	6000	0.016	0.024	0.038	475	535
750	6.2	6000	0.016	0.024	0.038	475	535
750	6.2	6000	0.016	0.024	0.038	475	535
750	6.2	6000	0.016	0.024	0.038	475	535

† Ampacities based upon 2023 NEC Table 310.16 and do not take into account the overcurrent protection limitations in NEC 240.4(D) of 15 Amps for 14 AWG CU, 20 Amps for 12 AWG CU, and 30 Amps for 10 AWG CU (independent of the conductor temperature rating and stranding if size is present in table). Also, see NEC sections 310.15 and 110.14(C) for additional requirements.

† Ampacities have been adjusted for more than Three Current-Carrying Conductors.

\* Inductive impedance is based on non-ferrous conduit with one diameter spacing center-to-center.





**Stock Codes and Colors**

Size (Strand)	Black	Red	Brown	Orange	Yellow	Gray	Green	Pink	Purple	Tan	Gray/Purple	Green/Yellow
4 (413)	672867						674667					
3 (525)							664229					
2 (665)												
1 (836)							456258					
1/0 (1044)							674668					677368
2/0 (1330)							456257					
3/0 (1672)			664217	664220	664223	664226						
4/0 (2109)	679607		456253	456254	456255		456256					679606
250 (627)	649414		672218	672217	672219	673792	673791					677370
300 (741)	672866		674116	674117	674118	674120	674121					
350 (893)	649415	138181	674662	674664	674665	674666	652964					672017
500 (1221)	648948		646978	646979	646980	646981	677701	456461	456462	456463	456464	646982
600 (1480)	649416		678431	678432	678434	678435	673748					678436
750 (1850)	649549		677721	677722	677723	677725	671518					677726
1000 (2516)	674459											

