



# 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]

**Table 1 – Weights and Measurements**

Stock Number	Cond. Size AWG/Kcmil	Cond. Strands No.	Diameter Over Conductor inch	Insul. Thickness mil	Approx. OD inch	Approx. Weight lb/1000ft
TBA	8	168	0.153	35	0.223	62
TBA	6	273	0.190	35	0.264	98
672867	4	413	0.235	50	0.335	153
664229	3	525	0.270	50	0.366	197
TBA	2	665	0.302	50	0.402	243
TBA	1	836	0.329	60	0.449	302
677368	1/0	1044	0.400	60	0.520	374
TBA	2/0	1330	0.430	60	0.520	426
664217	3/0	1672	0.490	60	0.608	599
679607	4/0	2109	0.550	60	0.664	746
649414	250	627	0.605	70	0.747	857
672866	300	741	0.638	70	0.780	1024
649415	350	893	0.670	60	0.812	1172
648948	500	1221	0.858	70	0.998	1641
649416	600	1480	0.963	70	1.127	2033
649549◇	750	1850	1.094	80	1.258	2569
674459	1000	2516	1.190	80	1.350	3255

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

† 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	BLACK	BROWN	ORANGE	YELLOW	GRAY	GREEN/YELLOW	GREEN	RED
#4	672867	TBA	TBA	TBA	TBA	TBA	674667 ◊	TBA
#3	TBA	TBA	TBA	TBA	TBA	TBA	664229	TBA
#2	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
1/0	TBA	TBA	TBA	TBA	TBA	677368	674668	TBA
3/0	TBA	664217	664220	664223	664226	TBA	TBA	TBA
4/0	679607	TBA	TBA	TBA	TBA	679606	TBA	TBA
250 Kcmil	649414	672218	672217	672219	673792 ◊	677370	673791 ◊	TBA
300 Kcmil	672866	674116	674117	674118	674120	TBA	674121	TBA
350 Kcmil	649415 ◊	674662 ◊	674664 ◊	674665 ◊	674666 ◊	672017	652964 ◊	138181
500 Kcmil	648948 ◊	646978 ◊	646979 ◊	646980 ◊	646981 ◊	646982 ◊	677701	TBA
600 Kcmil	649416 ◊	678431 ◊	678432 ◊	678434 ◊	678435 ◊	678436	673748	TBA
750 Kcmil	649549	677721	677722	677723	677725	677726	671518	TBA
1000 Kcmil	674459	TBA	TBA	TBA	TBA	TBA	TBA	TBA

◊ Cable marked with this symbol is a standard stock item

