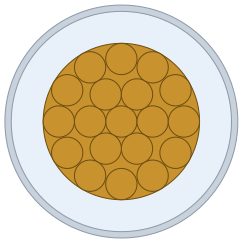
THHN / THWN-2 Thermoplastic-Insulated Building Wire

SORIVO Product Series: **600 V single-conductor building wire** | Rated Voltage 600 V | Standard UL 83 · UL 1063 | Sizes 14–8 AWG



- Nylon jacket — 0.10 mm (0.004 in)
- 19-strand bare copper, ASTM B787
- PVC insulation — 0.38 mm (0.015 in), 600 V

APPLICATION

Single-conductor 600 V building wire for branch circuits, feeders and control wiring pulled through conduit, raceway and cable tray in commercial, industrial and residential buildings. The same construction is printed and listed as THWN-2, so one spool serves dry, wet and oil-exposed areas.

CONSTRUCTION

Conductor
Bare annealed copper, 19 strands, combination unilay to ASTM B787

Insulation
PVC (polyvinyl chloride), colour-coded, 600 V

Jacket
Nylon, applied over the insulation for abrasion and cut-through resistance

MODEL DESIGNATION

THHN Thermoplastic High Heat-resistant Nylon-coated · **THWN-2** Thermoplastic Heat- and Water-resistant Nylon-coated, 90 °C wet

KEY FEATURES

- UL 83 building wire, also listed as MTW to UL 1063 (stranded constructions)
- 19-strand combination unilay conductor to ASTM B787 — pulls and terminates better than solid
- Ampacity published with the NEC 110.14(C) termination limit and the NEC 240.4(D) circuit cap, not as a bare number
- VW-1 flame rated to UL 1581; eleven standard colours

STANDARDS

- UL 83 — Thermoplastic-Insulated Wires and Cables
- UL 1063 — Machine-Tool Wire (MTW), stranded only
- ASTM B3 / B787 — soft annealed copper, 19-wire combination unilay
- NEC 310.16, 110.14(C), 240.4(D) — ampacity and overcurrent limits
- CSA C22.2 No. 75 — c(UL) T90 Nylon / TWN 75

TECHNICAL PARAMETERS

Rated Voltage
600 V — all applications

Temperature Rating
THHN: +90 °C dry / +75 °C wet
THWN-2: +90 °C dry and wet; +75 °C in oil

Conductor
Bare annealed copper, 19 strands, ASTM B787 unilay

Sizes
14, 12 and 10 AWG solid or stranded; 8 AWG stranded

Flame Rating
VW-1, all sizes — UL 1581 vertical wire flame test

Sunlight Resistance
8 AWG and larger only, per the printed legend; protect 14–10 AWG outdoors

Direct Burial
Not listed. Route in raceway, or specify a direct-burial-listed cable

COLOUR IDENTIFICATION

Black, white, red, blue, green, yellow, gray, brown, orange, violet and pink. Green is for the equipment grounding conductor, white and gray for the grounded conductor (NEC 250.119 / 200.6). Other colours available.

600 V	+90 °C	VW-1
UL 83	dry · 75 wet	flame rated

DIMENSIONS & ELECTRICAL DATA

Table 1 — 600 V single conductor, PVC insulation with nylon jacket

SIZE AWG	NOMINAL mm²	CONDUCTOR n × mm / dia. mm	PVC INSUL. mm (in)	NYLON mm (in)	OVERALL DIA. mm (in)	WEIGHT lb/1000 ft (kg/km)	R @20 °C Ω/km	R @75 °C Ω/1000 ft
14	2.08	19 × 0.38 / 1.90	0.38 (0.015)	0.10 (0.004)	3.0 (0.120)	16 (25)	8.28	3.14 (10.30)
12	3.31	19 × 0.47 / 2.35	0.38 (0.015)	0.10 (0.004)	3.5 (0.140)	23 (36)	5.21	1.98 (6.50)
10	5.26	19 × 0.60 / 3.00	0.51 (0.020)	0.10 (0.004)	4.3 (0.170)	38 (57)	3.28	1.24 (4.07)
8	8.37	19 × 0.75 / 3.75	0.76 (0.030)	0.13 (0.005)	5.6 (0.230)	62 (94)	2.06	0.778 (2.55)

Resistance at 20 °C is the calculated value from ideal copper resistivity over the nominal cross-section and is given for construction comparison only. The value to use for voltage drop and code calculations is the NEC Chapter 9 Table 8 figure at 75 °C, quoted here for stranded uncoated copper. Outer diameters are nominal; the delivered construction is measured and stated on the inspection certificate.

AMPACITY

Table 2 — NEC Table 310.16, not more than three current-carrying conductors in a raceway or cable, 30 °C ambient

SIZE AWG	60 °C A	75 °C A	90 °C A	NEC 240.4(D) OCPD max.	PRACTICAL BRANCH circuit
14	15	20	25	15 A	15 A
12	20	25	30	20 A	20 A
10	30	35	40	30 A	30 A
8	40	50	55	—	—

The 90 °C column is not a free upgrade. Under NEC 110.14(C) the conductor ampacity may not exceed the lowest temperature rating of any connected termination, conductor or device; for 14–10 AWG copper the branch-circuit overcurrent protection is further capped by NEC 240.4(D). The 90 °C column is used only for ampacity adjustment and correction.

TEMPERATURE RATINGS BY LISTING

Table 3 — one wire body, several printed listings, each with its own limit

LISTING	DRY LOCATION	WET LOCATION	IN OIL
THHN	+90 °C	+75 °C	—
THWN-2	+90 °C	+90 °C	+75 °C
MTW (UL 1063, stranded)	+90 °C (ampacity limited to 75 °C per NFPA 79)	+60 °C	+60 °C

MTW is listed for stranded constructions only, and its wet-location rating is 60 °C — lower than the THHN rating on the same wire. AWM (UL 758, 105 °C dry) is available on 14–6 AWG only; it is not part of this datasheet unless confirmed on the printed legend.

INSPECTION AND TEST PROGRAMME

Table 4 — what is checked on every length, and what is proved once on the design

CHECK	REFERENCE
ROUTINE — EVERY DELIVERY LENGTH	
Conductor resistance at 20 °C	UL 83 / ASTM B193
Spark test on the finished insulation	UL 83
Insulation and nylon wall, overall diameter	UL 83
TYPE TEST — PROVED ONCE ON THE DESIGN	
Dielectric withstand, dry and wet	UL 83
Cold bend and heat shock	UL 83
VW-1 vertical flame	UL 1581

> **Two numbers that are often confused.** The 20 °C resistance is a calculated property of the copper cross-section. The 75 °C resistance is the NEC Chapter 9 Table 8 limit that the authority having jurisdiction and the voltage-drop calculation work from. This datasheet quotes both and never blends them into one figure.

Disclaimer. The information in this datasheet is for guidance only and is subject to change without notice. Dimensions and masses are nominal and subject to manufacturing tolerance; confirm against the certificate of the delivered product. This document is uncontrolled once printed or forwarded — the current revision, issued under document number SORIVO-TM-THHN-001, governs. © 2026 SORIVO. All rights reserved. Ampacity values assume 30 °C ambient and not more than three current-carrying conductors in a raceway or cable; apply the NEC correction and adjustment factors for other conditions.