

ARTICLE

382

Nonmetallic Extensions

Part I. General

382.1 Scope. This article covers the use, installation, and construction specifications for nonmetallic extensions.

382.6 Listing Requirements. Concealable nonmetallic extensions and associated fittings and devices shall be listed. The starting/source tap device for the extension shall contain and provide the following protection for all load-side extensions and devices:

- (1) Supplementary overcurrent protection
- (2) Level of protection equivalent to a Class A GFCI
- (3) Level of protection equivalent to a portable GFCI
- (4) Line and load-side miswire protection
- (5) Provide protection from the effects of arc faults

Part II. Installation

382.10 Uses Permitted. Nonmetallic extensions shall be permitted only in accordance with 382.10(A), (B), and (C).

(A) From an Existing Outlet. The extension shall be from an existing outlet on a 15- or 20-ampere branch circuit. Where a concealable nonmetallic extension originates from a non-grounding-type receptacle, the installation shall comply with 250.130(C), 406.4(D)(2)(b), or 406.4(D)(2)(c).

(B) Exposed and in a Dry Location. The extension shall be run exposed, or concealed as permitted in 382.15, and in a dry location.

(C) Residential or Offices. For nonmetallic surface extensions mounted directly on the surface of walls or ceilings, the building shall be occupied for residential or office purposes and shall not exceed three floors above grade. Where identified for the use, concealable nonmetallic extensions shall be permitted more than three floors above grade.

Informational Note No. 1: See 310.14(A)(3) for temperature limitation of conductors.

Informational Note No. 2: See 362.10 for definition of *First Floor*.

382.12 Uses Not Permitted. Nonmetallic extensions shall not be used as follows:

- (1) In unfinished basements, attics, or roof spaces
- (2) Where the voltage between conductors exceeds 150 volts for nonmetallic surface extensions and 300 volts for aerial cable
- (3) Where subject to corrosive vapors
- (4) Where run through a floor or partition, or outside the room in which it originates

382.15 Exposed.

(A) Nonmetallic Extensions. One or more extensions shall be permitted to be run in any direction from an existing outlet, but not on the floor or within 50 mm (2 in.) from the floor.

(B) Concealable Nonmetallic Extensions. Where identified for the use, nonmetallic extensions shall be permitted to be concealed with paint, texture, concealing compound, plaster, wall-paper, tile, wall paneling, or other similar materials and installed in accordance with 382.15(A).

382.24 Bends.

(A) Nonmetallic Extensions. A bend that reduces the normal spacing between the conductors shall be covered with a cap to protect the assembly from physical damage.

(B) Concealable Nonmetallic Extensions. Concealable extensions shall be permitted to be folded back over themselves and flattened as required for installation.

382.30 Securing and Supporting.

(A) Nonmetallic Extensions. Nonmetallic surface extensions shall be secured in place by approved means at intervals not exceeding 200 mm (8 in.), with an allowance for 300 mm (12 in.) to the first fastening where the connection to the supplying outlet is by means of an attachment plug. There shall be at least one fastening between each two adjacent outlets supplied. An extension shall be attached to only woodwork or plaster finish and shall not be in contact with any metal work or other conductive material other than with metal plates on receptacles.

(B) Concealable Nonmetallic Extensions. All surface-mounted concealable nonmetallic extension components shall be firmly anchored to the wall or ceiling using an adhesive or mechanical anchoring system identified for this use.

382.40 Boxes and Fittings. Each run shall terminate in a fitting, connector, or box that covers the end of the assembly. All fittings, connectors, and devices shall be of a type identified for the use.

382.42 Devices.

(A) Receptacles. All receptacles, receptacle housings, and self-contained devices used with concealable nonmetallic extensions shall be identified for this use.

Δ (B) Receptacles and Housings. Receptacle housings and self-contained devices designed either for surface or for recessed mounting shall be permitted for use with concealable nonmetallic extensions. Receptacle housings and self-contained devices shall incorporate means for facilitating entry and termination of concealable nonmetallic extensions and for electrically connecting the housing or device. Receptacle and self-contained devices shall comply with 406.4. Power and communications

outlets installed together in common housing shall be permitted in accordance with 800.133(A)(3), Exception No. 2.

382.56 Splices and Taps. Extensions shall consist of a continuous unbroken length of the assembly, without splices, and without exposed conductors between fittings, connectors, or devices. Taps shall be permitted where approved fittings completely covering the tap connections are used. Aerial cable and its tap connectors shall be provided with an approved means for polarization. Receptacle-type tap connectors shall be of the locking type.

Part III. Construction Specifications (Concealable Nonmetallic Extensions Only)

382.100 Construction. Concealable nonmetallic extensions shall be of a multilayer flat conductor design consisting of a center ungrounded conductor enclosed by a sectioned grounded conductor and an overall sectioned equipment grounding conductor.

382.104 Flat Conductors. Concealable nonmetallic extensions shall be constructed, using flat copper conductors equivalent to 14 AWG or 12 AWG conductor sizes, and constructed per 382.104(A), (B), and (C).

A multilayer flat conductor is a complete assembly of branch-circuit conductors, thinner than a business card and yet flexible enough to bend to any angle required for a customized installation. Exhibit 382.1 is one example of a concealable nonmetallic extension circuit conductor assembly of flat conductors meeting the requirements of Article 382.

A concealable extension is a five-layer design for circuit integrity and protection. Flat-sectioned equipment grounding conductor (EGC) layers fully encase the ungrounded conductor and grounded conductor layers of the cable. By design, any penetration in the flat wire cable assembly will penetrate the EGC layer first, then the grounded conductor layer, then the ungrounded conductor layer. A penetration will result in a short circuit between the three conductors described that will

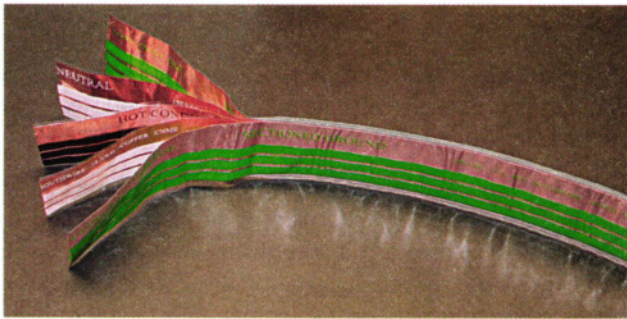


EXHIBIT 382.1 One example of a flat conductor cable assembly used as a concealable nonmetallic extension. (Courtesy of FlatWire Technologies, a division of Southwire®)

immediately trip the overcurrent protective device (OCPD), causing automatic disconnection of the circuit.

(A) Ungrounded Conductor (Center Layer). The ungrounded conductor shall consist of one or more ungrounded flat conductor(s) enclosed in accordance with 382.104(B) and (C) and identified in accordance with 310.6(C).

(B) Grounded Conductor (Inner Sectioned Layers). The grounded conductor shall consist of two sectioned inner flat conductors that enclose the center ungrounded conductor(s). The sectioned grounded conductor shall be enclosed by the sectioned equipment grounding conductor and identified in accordance with 200.6.

(C) Equipment Grounding Conductor (Outer Sectioned Layers). The equipment grounding conductor shall consist of two overall sectioned conductors that enclose the grounded conductor and ungrounded conductor(s) and shall comply with 250.4(A)(5). The equipment grounding conductor layers shall be identified by any one of the following methods:

- (1) As permitted in 250.119
- (2) A clear covering
- (3) One or more continuous green stripes or hash marks
- (4) The term "Equipment Grounding Conductor" printed at regular intervals throughout the cable

382.112 Insulation. The ungrounded and grounded flat conductor layers shall be individually insulated and comply with 310.14(A)(3). The equipment grounding conductor shall be covered or insulated.

382.120 Marking.

(A) Cable. Concealable nonmetallic extensions shall be clearly and durably marked on both sides at intervals of not more than 610 mm (24 in.) with the information required by 310.8(A) and with the following additional information:

- (1) Material of conductors
- (2) Maximum temperature rating
- (3) Ampacity

(B) Conductor Identification. Conductors shall be clearly and durably identified on both sides throughout their length as specified in 382.104.

ARTICLE 384

Strut-Type Channel Raceway

Part I. General

384.1 Scope. This article covers the use, installation, and construction specifications of strut-type channel raceway.