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ZIP BOX® BLUE™ NONMETALLIC OUTLET AND SWITCH BOXES PER THE 2002 NATIONAL ELECTRICAL CODE (NEC)

NEC Table 314.16(B) Volume Allowance Required Per Conductor

Size of Conductor (AWG)	Free Space Within Box for Each Conductor
18	1.5 in^3 (24.6 cm^3)
16	1.75 in^3 (28.7 cm^3)
14	2.0 in^3 (32.8 cm^3)
12	2.25 in^3 (36.9 cm^3)
10	2.5 in^3 (41.0 cm^3)
8	3.0 in^3 (49.2 cm^3)
6	5.0 in^3 (82.0 cm^3)

Section 314.16

314.16 Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies.

Boxes and conduit bodies shall be of sufficient size to provide free space for all enclosed conductors. In no case shall the volume of the box, as calculated in (A) below, be less than the fill calculation as calculated in (B) below.

A) Box Volume Calculations. The volume of a wiring enclosure (box) shall be the total volume of the assembled sections, and, where used, the space provided by plaster rings, domed covers, extension rings, etc., that are marked with their volume in cubic inches or are made from boxes the dimensions of which are listed in Table 314.16(A).

(1) Standard Boxes. The volumes of standard boxes that are not marked with a cubic inch capacity shall be as given in Table 314.16(A).

(2) Other Boxes. Boxes 1650 cm^3 (100 in^3) or less, other than those described in Table 314.16(A) and nonmetallic boxes shall be durably and legibly marked by the manufacturer with their cubic inch capacity. Boxes described in Table 314.16(A) that have a larger cubic inch capacity than is designated in the table shall be permitted to have their cubic inch capacity marked as required by this section.

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(B) Box Fill Calculations. The volumes in paragraphs 314.16(B), (1) through (5) below, as applicable, shall be added together. No allowance shall be required for small fittings such as locknuts and bushings.

(1) Conductor Fill. Each conductor that originates outside the box and terminates or is spliced within the box shall be counted once, and each conductor that passes through the box without splice or termination shall be counted once. The conductor fill shall be computed using Table 314.16(B). A conductor, no part of which leaves the box, shall not be counted.

(2) Clamp Fill. Where one or more internal cable clamps, whether factory or field supplied, are present in the box, a single volume allowance in accordance with Table 314.16(B) shall be made based on the largest conductor present in the box. No allowance shall be required for a cable connector with its clamping mechanism outside the box.

(3) Support Fittings Fill. Where one or more luminaire (fixture) studs or hickeys are present in the box, a single volume allowance in accordance with Table 314.16(B) shall be made for each type of fitting based on the largest conductor present in the box.

(4) Device or Equipment Fill. For each yoke or strap containing one or more devices or equipment, a double volume allowance in accordance with Table 314.16(B) shall be made for each yoke or strap based on the largest conductor connected to a device(s) or equipment supported by that yoke or strap.

(5) Equipment Grounding Conductor Fill. Where one or more equipment grounding conductors enters a box, a single volume allowance in accordance with Table 314.16(B) shall be made based on the largest equipment grounding conductor present in the box. Where an additional set of equipment grounding conductors, as permitted by Section 250.146(D), Exception No. 4, is present in the box, an additional volume allowance shall be made based on the largest equipment grounding conductor in the additional set.

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NEC Section 314.17 Pertaining to Nonmetallic Outlet Boxes

314.17. Conductors Entering Boxes, Conduit Bodies, or Fittings. Conductors entering boxes, conduit bodies or fittings shall be protected from abrasion, and shall comply with 314.17(A) through (D) below.

(C) Nonmetallic Boxes. Nonmetallic boxes and conduit bodies shall be suitable for the lowest temperature-rated conductor entering the box. Where nonmetallic boxes and conduit bodies are used with open wiring or concealed knob-and-tube wiring, the conductors shall enter the box through individual holes. Where flexible tubing is used to encase the conductors, the tubing shall extend from the last insulating support to no less than 6mm (1/4 in.) inside the box and beyond any cable clamp. Where nonmetallic sheathed cable or multi-conductor Type UF cable is used, the sheath shall extend not less than 6mm (1/4 in.) inside the box and beyond any cable clamp. In all instances, all permitted wiring methods shall be secured to the boxes.

Exception Where nonmetallic-sheathed cable or multi-conductor UF cable is used with boxes no larger than a nominal size 57mm x 100mm (2 1/4 in. by 4 in.) mounted in walls or ceilings, and where the cable is fastened within 200mm (8 in.) of the box measured along the sheath and where the sheath extends through a cable knockout no less than 6mm (1/4 in.), securing the cable to the box shall not be required. Multiple cable entries shall be permitted in a single cable knockout opening.

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