

TABLE 392.22(B)(1) Allowable Cable Fill Area for Single-Conductor Cables in Ladder, Ventilated Trough, or Wire Mesh Cable Trays for Cables Rated 2000 Volts or Less

Maximum Allowable Fill Area for Single-Conductor Cables in Ladder, Ventilated Trough, or Wire Mesh Cable Trays					
Inside Width of Cable Tray		Column 1 Applicable for 392.22(B)(1)(b) Only		Column 2 ^a Applicable for 392.22(B)(1)(c) Only	
mm	in.	mm ²	in. ²	mm ²	in. ²
50	2	1,400	2.0	1,400 – (28 Sd) ^b	2.0 – (1.1 Sd) ^b
100	4	2,800	4.5	2,800 – (28 Sd)	4.5 – (1.1 Sd)
150	6	4,200	6.5	4,200 – (28 Sd) ^b	6.5 – (1.1 Sd) ^b
200	8	5,600	8.5	5,600 – (28 Sd)	8.5 – (1.1 Sd)
225	9	6,100	9.5	6,100 – (28 Sd)	9.5 – (1.1 Sd)
300	12	8,400	13.0	8,400 – (28 Sd)	13.0 – (1.1 Sd)
400	16	11,200	17.5	11,200 – (28 Sd)	17.5 – (1.1 Sd)
450	18	12,600	19.5	12,600 – (28 Sd)	19.5 – (1.1 Sd)
500	20	14,000	21.5	14,000 – (28 Sd)	21.5 – (1.1 Sd)
600	24	16,800	26.0	16,800 – (28 Sd)	26.0 – (1.1 Sd)
750	30	21,000	32.5	21,000 – (28 Sd)	32.5 – (1.1 Sd)
900	36	25,200	39.0	25,200 – (28 Sd)	39.0 – (1.1 Sd)

^aThe maximum allowable fill areas in Column 2 shall be calculated. For example, the maximum allowable fill, in mm², for a 150-mm wide cable tray in Column 2 shall be 4200 minus (28 multiplied by Sd) [the maximum allowable fill, in square inches, for a 6-in. wide cable tray in Column 2 shall be 6.5 minus (1.1 multiplied by Sd)].

^bThe term Sd in Column 2 is equal to the sum of the diameters, in mm, of all cables 507 mm² (in inches, of all 1000 kcmil) and larger single-conductor cables in the same cable tray with small cables.

392.30 Securing and Supporting.

(A) Cable Trays. Cable trays shall be supported at intervals in accordance with the installation instructions.

(B) Cables and Conductors. Cables and conductors shall be secured to and supported by the cable tray system in accordance with the following, as applicable:

- (1) In other than horizontal runs, the cables shall be fastened securely to transverse members of the cable tray.
- (2) Supports shall be provided to prevent stress on cables where they enter raceways from cable tray systems.
- (3) The system shall provide for the support of cables and raceway wiring methods in accordance with their corresponding articles. Where cable trays support individual conductors or multiconductor cables and where the conductors or multiconductor cables pass from one cable tray to another, or from a cable tray to raceway(s) or from a cable tray to equipment where the conductors are terminated, the distance between the cable trays or between the cable tray and the raceway(s) or the equipment shall not exceed 1.8 m (6 ft). The conductors shall be secured to the cable tray(s) at the transition, and they shall be protected, by guarding or by location, from physical damage.
- (4) Cable ties shall be listed and identified for the application and for securement and support.

The 6-foot distance limit specified in 392.30(B)(3) applies to mechanically discontinuous cable tray segments for individual conductors including trays containing multiconductor cables. Cables installed within cable tray systems must meet the

support requirements of the applicable NEC article that covers the cables. This requirement either limits the gap distance in cable tray runs and between the cable tray and the equipment enclosures or requires intermediate cable supports at the appropriate distances in place of the cable tray.

See also

336.10(7) for further information regarding multiconductor Type TC tray cable used with discontinuous cable tray

392.44 Expansion Splice Plates. Expansion splice plates for cable trays shall be provided where necessary to compensate for thermal expansion and contraction.

392.46 Bushed Conduit and Tubing. A box shall not be required where cables or conductors are installed in bushed conduit and tubing used for support or for protection against physical damage or where conductors or cables transition to a raceway wiring method from the cable tray. Conductors shall be permitted to enter equipment in accordance with 392.46(A) or (B).

(A) Through Bushed Conduit or Tubing. Individual conductors or multiconductor cables with entirely nonmetallic sheaths shall be permitted to enter enclosures where they are terminated through nonflexible bushed conduit or tubing installed for their protection provided they are secured at the point of transition from the cable tray and the conduit or tubing is sealed at the outer end using an approved means so as to prevent debris from entering the equipment through the conduit or tubing.