Exception to (5): Flexible cords, flexible cables, and power supply cords shall be permitted if contained within an enclosure for use in other spaces used for environmental air as permitted by 300.22(C)(3).

(6) Where installed in raceways, except as otherwise permitted in this *Code*
(7) Where subject to physical damage

Informational Note: See UL 817, *Cord Sets and Power-Supply Cords*, and UL 62, *Flexible Cords and Cables*, for proper application.

Flexible cords and power supply cables are not limited to use with portable equipment. However, 400.12 prohibits the use of flexible cords and flexible power supply cables as a substitute for the fixed wiring of a structure or where concealed behind building walls, floors, or ceilings (including structural, suspended, or dropped-type ceilings).

The requirements of 400.10 and 400.12 need to be applied together, rather than independently. While 400.10(A)(6) permits the use of cords to supply utilization equipment that is frequently replaced or serviced, it does not specifically permit that use for an installation that is prohibited by 400.12. As an example, a listed piece of utilization equipment may be provided with a cord and attachment cap for connection to a receptacle. That is a general permitted use covered in 400.10(A)(6). However, the fact that this listed utilization equipment is equipped with a cord cannot be viewed just in the context of 400.10(A)(6). The prohibited uses in 400.12 also must be observed, and there is not a specific permitted use in 400.10 that allows listed cord-and-plug-connected equipment to be installed contrary to any of the prohibited uses in 400.12. The cord of that listed utilization equipment is not permitted to be attached to building surfaces; run through holes in walls, floors, or ceilings; or installed above a suspended ceiling unless the exceptions to 400.12(4) and (5) can be applied.

Cords run through openings in the sides, top, or bottom of cabinets, such as cords of dishwashers or combination microwave/range hood units, are not considered to be run through holes in walls, floors, or ceilings. Caution must be taken to ensure that where cords are used in this manner the opening through which the cord is passed does not present a physical damage threat to the cord.

See also

240.5, 590.4(B), and **590.4(C)** for the uses of multiconductor flexible cords for feeder and branch-circuit installations and for overcurrent protection requirements for flexible cord

410.62 for cord-connected luminaires

422.16(B)(2)(4) and **(5)** for the protection of dishwasher and trash compactor supply cords that pass through an opening in a cabinet

400.13 Splices. Flexible cord shall be used only in continuous lengths without splice or tap where initially installed in applications permitted by 400.10(A). The repair of hard-service cord and junior hard-service cord (see Trade Name column in Table 400.4) 14 AWG and larger shall be permitted if conductors are spliced in accordance with 110.14(B) and the completed splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.

This section permits repair of a damaged cord in such a manner that the cord will retain its original operating and use integrity. However, if the repaired cord is reused or reinstalled at a new location, the in-line repair is no longer permitted, and the cord can be used only in lengths that do not contain a splice.

The use of repaired extension and power tool cords on construction sites is covered under U.S. Occupational Health and Safety Administration (OSHA) regulations. While the repair of extension or power tool cords is not expressly prohibited, an OSHA letter of interpretation on this topic dated April 4, 2010, states that "the repairs must return the equipment to the state in which it was initially approved." More information on this topic can be found at www.osha.gov.

400.14 Pull at Joints and Terminals. Flexible cords and flexible cables shall be connected to devices and to fittings so that tension is not transmitted to joints or terminals.

Exception: Listed portable single-pole devices that are intended to accommodate such tension at their terminals shall be permitted to be used with single-conductor flexible cable.

Informational Note: Some methods of preventing pull on a cord from being transmitted to joints or terminals include knotting the cord, winding with tape, and using support or strain-relief fittings.

400.15 In Show Windows and Showcases. Flexible cords used in show windows and showcases shall be Types S, SE, SEO, SEOO, SJ, SJE, SJEO, SJEOO, SJO, SJOO, SJT, SJTO, SJTOO, SO, SOO, ST, STO, STOO, SEW, SEOW, SEOOW, SJEW, SJEOW, SJEOOW, SJOW, SJOOW, SJTW, SJTOW, SJTOOW, SOW, SOOW, STW, STOW, or STOOW.

Exception No. 1: For the wiring of chain-supported luminaires.

Exception No. 2: As supply cords for portable luminaires and other merchandise being displayed or exhibited.

Flexible cords identified for hard usage or extra-hard usage are required in show windows and showcases, because cords in such locations are exposed to wear and tear from continual housekeeping and display changes, which can cause the worn cord to make contact with combustible materials such as fabrics or paper products, increasing the fire hazard risk.

400.16 Overcurrent Protection. Flexible cords not smaller than 18 AWG, and tinsel cords or cords having equivalent characteristics of smaller size approved for use with specific appliances, shall be considered as protected against overcurrent in accordance with 240.5.

400.17 Protection from Damage. Flexible cords and flexible cables shall be protected by bushings or fittings where passing through holes in covers, outlet boxes, or similar enclosures.