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WHITEPAPER | REV. 11.23.2021

Kitchen Counter Pop-Up Receptacle

Section 1: The Problem

For many years now, the standard for placing receptacles in kitchens has been to mount them on the countertop back wall, under the cabinet or on the side of the island in order to comply with NEC spacing requirements. These placements are critical, to accommodate the appliances most often used in the kitchens, typically equipped with 2 foot electrical cords. Shorter cords mean less opportunity for mishaps as a result of cords spread near the work area, and sometimes getting hooked and pulled. People do get injured in a variety of ways that are common with reports of serious accidents reported by the Consumer Product Safety Commission every year.

The increased design and use of center islands in kitchens has resulted in increased counter top space for food preparation and work, and as a result even more opportunity for accidents. Typically, receptacles get mounted mid-way between the counter top and the floor, in the side of the cabinetry. When appliances are in use, cords are stretched from the flat work surface area down the side of the island. This leads to accidental pulls. A cord snag from children running and playing close by can lead to appliances to become tangled and sometimes pulled down. In the case of a portable stove or hot plate, this sometimes results in an accidental burn. Or a child could get hit by heavy appliance.

Over the last few years, manufacturers have designed and built countertop receptacles. The thought was to increase convenience in kitchens designed to accommodate large center kitchen islands and also increase safety. They do both. Countertop receptacles allow cords to safely rest on top of the counters, without drooping over the side, reduce risk of snags that could lead to the injuries that are common, while providing proper spacing and convenience for food preparation and appliance use.

Section 2: CPSC Report

The Consumer Product Safety Commission (CPSC) consistently receives reports of serious injuries occurring in the kitchen as described. It is estimated that close to 10x this amount occurs and goes unreported. The CPSC is an independent government agency tasked with promoting the safety of consumer products. It conducts research into unreasonable risks of injury, develops safety standards, and publishs reports concerning their findings on specific products and product families.

The agency published a report in June 2021 detailing injuries that have occurred in kitchens due to either cord pulls, trips, or snags. A vast majority of these injuries occur to children under 5 years old, whose inquisitive nature leads them to pull on dangling cords. That can result in them getting burnt with scalding liquid such as boiling water or hot oil or grease, or it may lead to a serious injury if the whole appliance were to fall and strike them in the head or torso.

One purpose of creating these kitchen countertop devices was to provide consumers with a safer and more convenient alternative to traditional receptacles in order to prevent these types of injuries. With appliance cords safely located on top of the counters, the possibility of any accidental tripping, pulling or snagging has been minimized, providing a safer overall experience for consumers within their own kitchens.

Section 3: What is the NEC code?

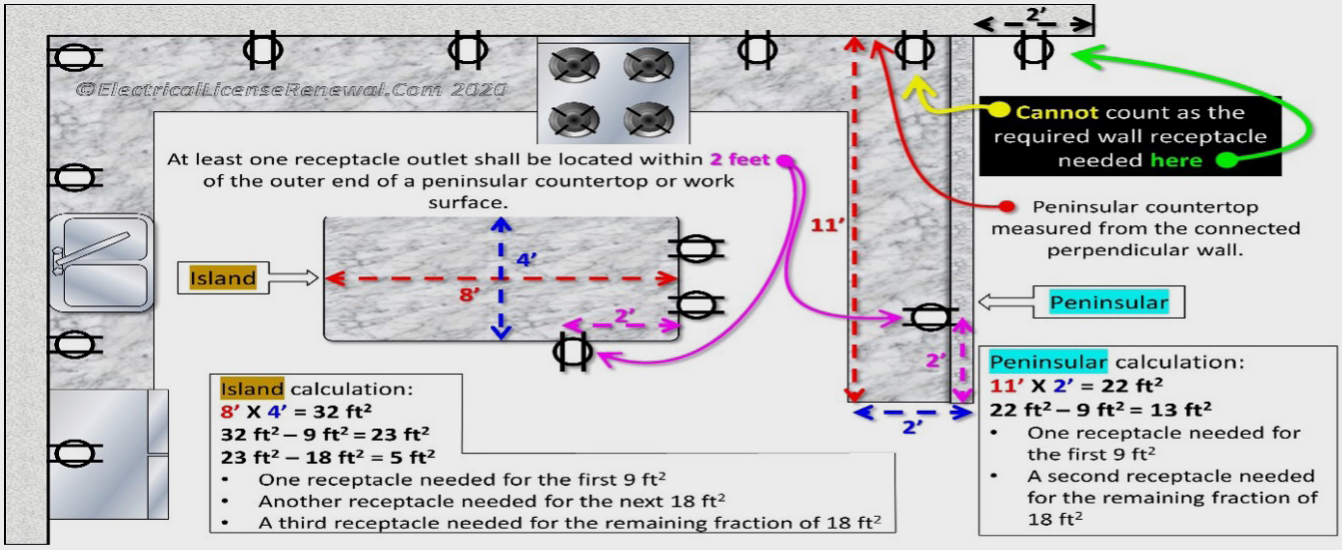
The National Electrical Code (NEC) lays out the acceptable standards for wiring and electrical installations across the United States. The NEC is updated and published every three years by National Fire Protection Association (NFPA). It is constantly evolving to be at the forefront of consumer and product safety in the electrical industry. The NEC has specialized sections dedicated to a wide range of devices but the focus here is with the rules regarding receptacles located within the kitchen.

Section 4: Kitchen Receptacle Codes

The NEC regulates receptacles with an eye towards consumer safety and fire prevention, including their installation and location, how far apart they must be, and the height at which they are located. To understand the code surrounding kitchen receptacles being used in counters, islands, and perpendicular islands, we must first understand how it is measured.

A perpendicular island is measured in terms of its square footage. Begining in 2017, the NEC code 210.52 (C) (3) chose to measure perpendicular islands from their connected perpendicular wall rather than the connecting edge. This move made the square footage of these islands larger and therefore required more receptacles to be installed on them. In reference to these newly adopted perpendicular island rules, the NEC 210.52(C) (2) of 2020 states that there must be at least one receptacle for the first 9 square feet of a perpendicular island and then an additional receptacle every 18 square feet following that. Therefore, any island over 27 square feet would require at least 3 receptacles for compliance with NEC code. The 210.52(C) (1) rules concerning the number of receptacles states that no point on the counter, island etc. can be more than 2 feet from a receptacle, which leaves you with a max distance between receptacles of 4 feet. Regarding height, NEC code 210.52 (C) (5) states that a receptacle cannot be more than 20 inches above a countertop and not more than 12 inches below the countertop. That leaves a small window of acceptable space for a receptacle to be located, exactly where a kitchen countertop receptacle would be beneficial.

The NEC further requires insection 210.52 (C) (2) that there must be at least one receptacle located within the first 2 feet from the outer edge of an island, which basically follows from 210.52 (C) (1) about the distance between receptacles. Choosing a countertop receptacle allows homeowners to have their receptacles located in a much more convenient location for frequent use while staying code compliant.



UL and The NEC

The NEC refers to "Receptacles in Countertops" Article 406.5(E). Specifically, the receptacle must be part of a list assembly designed for use in kitchen countertops. The testing involved deals with exposure to larger liquid spills, and must be GFCI protected. As a result, UL has testing for product in kitchen countertops, UL498 Section 146 Spill Test.

The device must be able to withstand a 1/2 gallon liquid spill directly on the device while in the open position and still function, passing a dielectric withstand test of Section 64. Tested as such, this is the only product category accepted by the NEC for this application.

Many confuse this category with the work surface assemblies group. That is not approved for kitchen use, but for desktops and furniture, typically not near a sink. The testing here is with only 8 ounces of liquid, simulating a coffee cup spill only. Most of these are plug in styles, similar to taps and surge strips. Some are designed for use with the outlet facing upwards, which is not acceptable in a kitchen. Installers have attempted to use pop-up floor boxes, citing that they are scrub water tested. Although the test is a good one, it is done in the closed position, to simulate floor mopping and cleaning. Floor boxes are not approved for use on top of kitchen counters.

Section 5: Kitchen Countertop Receptacle Benefits

Installing any sort of kitchen countertop receptacle allows consumers to enjoy both convenience and safety when using corded appliances in their kitchen. Installation is simple and can be done by a certified electrician in virtually any countertop. Once a stone cutter cores the proper opening in the counter, most installations are a simple drop-in. The termination is traditional wiring like a receptacle.

Manufacturers offer several design styles of assemblies: round, square, or rectangle, in both flush or surface mount. Configurations include 15 or 20 amp. Various manufacturers offer different features and benefits regarding outlets, durability and ease of installation. The variety of countertop receptacles on the market today come in a range of different finishes that can blend nicely into color and tecture designs for the right look in any kitchen home in any kitchen.

Some are kitchen receptacle assemblies designed to be plugged in with a cord, while others are hardwired. To conform to the NEC and count as a receptacle, the installation must be permanent. That means the device must be hardwired into the electrical system. The Code also requires that the product be GFCI-protected either from the panel, a feed through GFCI on the circuit, or at the assembly itself.

The main allure of using a kitchen countertop receptacle is the added safety benefits that it adds to a consumer's kitchen. By using a kitchen countertop receptacle, the risk of any pull or trip hazards are greatly reduced. The kitchen countertop receptacle brings an air of convenience and safety to any kitchen and allows consumers to use their appliances freely and without worry.

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